District of Columbia
Area Designations for the
2008 Ozone National Ambient Air Quality Standards

The table below identifies the areas and associated counties or parts of counties in the District of Columbia that EPA is designating as nonattainment for the 2008 ozone national ambient air quality standards ("2008 ozone NAAQS" or "2008 NAAQS"). In accordance with section 107(d) of the Clean Air Act (CAA), EPA must designate an area (county or a part of a county[1]) "nonattainment" if it is violating the 2008 ozone NAAQS or if it is contributing to a violation of the 2008 ozone NAAQS in a nearby area. The technical analyses supporting the boundaries for the individual nonattainment areas are provided below.

Nonattainment Areas in District of Columbia:

Area	District of Columbia Recommended Nonattainment Counties	EPA's Designated Nonattainment Counties
Washington, DC-MD-VA*	District of Columbia:	District of Columbia:

The Washington, DC-MD-VA area is a multi-state nonattainment area. Tables 1a through 1c in the Technical Analysis for the Washington-Baltimore-Northern Virginia, DC-MD-VA-WV Combined Statistical Area (CSA), below, identifies the counties in the other states that EPA intends to designate as part of the nonattainment area.

The analysis below provides the basis for nonattainment area boundaries. It relies on our analysis of whether and which monitors are violating the 2008 ozone NAAQS, based on certified air quality monitoring data from 2008-2010 and an evaluation of whether nearby areas are contributing to such violations. EPA has evaluated contributions from nearby areas based on a weight of evidence analysis considering the factors identified. EPA issued guidance on December 4, 2008 that identified these factors as ones EPA would consider in determining nonattainment area boundaries and recommended that states consider these factors in making their designations recommendations to EPA.[2]

1. Air quality data (including the design value calculated for each Federal Reference Method (FRM) monitors or Federal Equivalent Method (FEM) monitor in the area);
2. Emissions and emissions-related data (including location of sources and population, amount of emissions and emissions controls, and urban growth patterns);
3. Meteorology (weather/transport patterns);
4. Geography and topography (mountain ranges or other basin boundaries);
5. Jurisdictional boundaries (e.g., counties, air districts, existing nonattainment areas, Indian country, metropolitan planning organizations (MPOs)).

Ground-level ozone is not emitted directly into the air, but is created by chemical reactions between oxides of nitrogen (NOx) and volatile organic compounds (VOC) in the presence of sunlight. Because NOx and VOC emissions from a broad range of sources over a wide area typically contribute to

[1] Under section 302(d) of the CAA, the District of Columbia is considered a state. In this analysis the terms "state," a "county" and/or an "independent city" when used in a broad sense may also refer to the District of Columbia when required by context.

[2] The December 4, 2008 guidance memorandum "Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standards" refers to 9 factors. In this technical support document we have grouped the emissions-related factors together under the heading of "Emissions and Emissions-Related Data," which results in 5 categories of factors.

violations of the ozone standards, EPA believes it is important to consider whether there are contributing emissions from a broad geographic area. Accordingly, EPA chose to examine the 5 factors with respect to the larger of the CSA or Core Based Statistical Area (CBSA) within which is located the violating monitor(s).[3] All data and information used by EPA in this evaluation are the latest available to EPA and/or provided to EPA by states or tribes.

In EPA's designations guidance for the 2008 ozone NAAQS EPA recommended examining CSA/CBSAs because certain factors used to establish CSAs and CBSAs are similar to the factors EPA is using in this technical analysis to determine if a nearby area is contributing to a violation of the 2008 ozone NAAQS. EPA used the same basic approach in the designation process for the 1997 ozone NAAQS. Where a violating monitor is not located in a CSA or CBSA, EPA's guidance recommended using the boundary of the county containing the violating monitor as the starting point for considering the nonattainment area's boundary.

[3] Lists of CBSAs and CSAs and their geographic components are provided at www.census.gov/population/www/metroareas/metrodef.html . The lists are periodically updated by the Office of Management and Budget. EPA used the most recent update, based on 2008 population estimates, issued on December 1, 2009 (OMB Bulletin No. 10-02).

Technical Support Document— Area Designations for the Washington-Baltimore-Northern Virginia, DC-MD-VA-WV Combined Statistical Area (CSA)
2008 Ozone National Ambient Air Quality Standards

Scope:

This Technical Support Document (TSD) is for designation of the final nonattainment and "unclassifiable/attainment" areas and the establishment of the boundaries thereof within the Washington-Baltimore-Northern Virginia, DC-MD-VA-WV CSA (hereafter the Washington-Baltimore-NV CSA or just "this/the CSA").

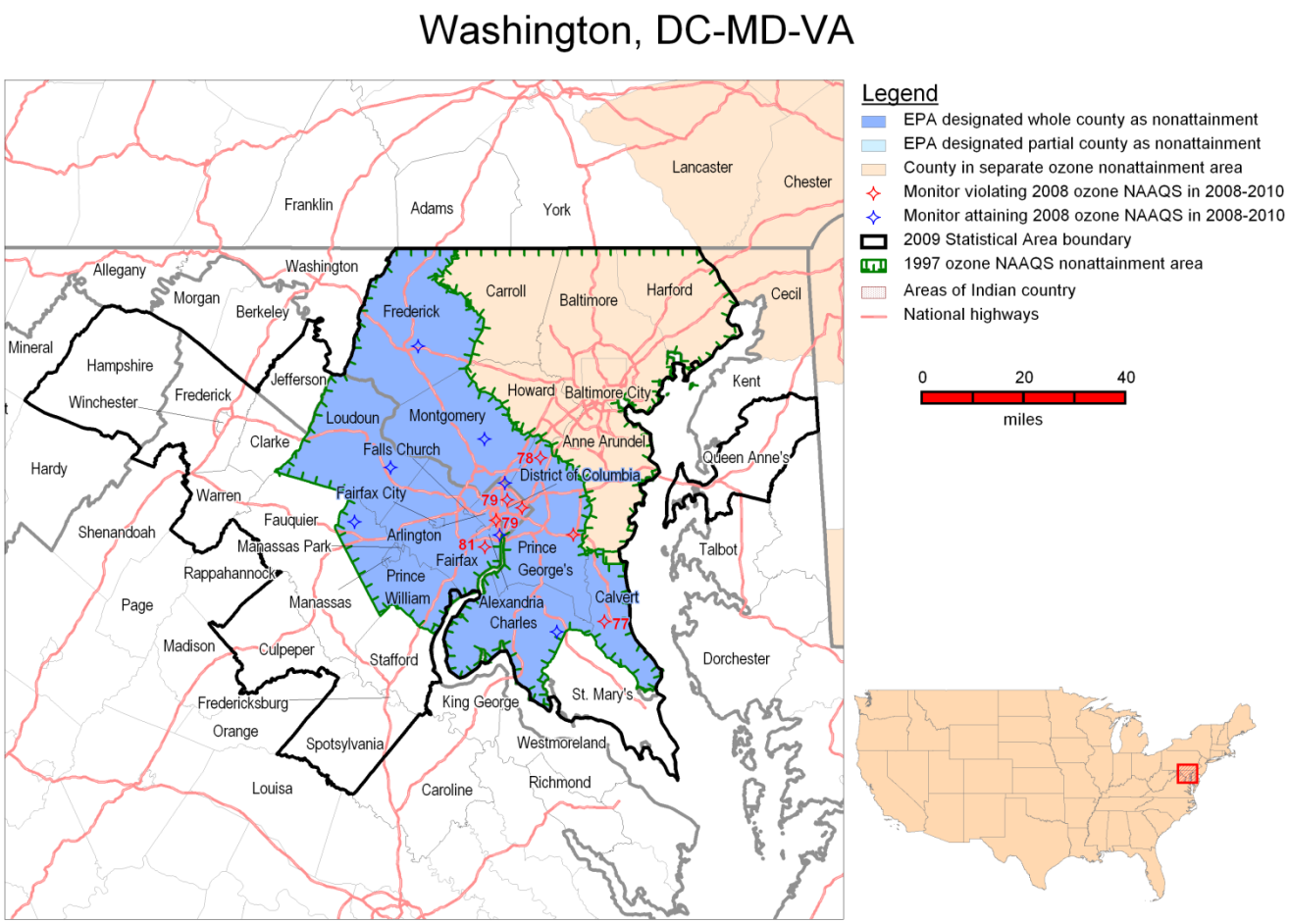
Summary:

Maps of Final Nonattainment Areas:

Washington, DC-MD-VA area

Figure 1a is a map of the Washington, DC-MD-VA nonattainment area under the 2008 ozone NAAQS. The map provides other relevant information including the locations and design values of air quality monitors, county and other jurisdictional boundaries, the CSA boundary, prior nonattainment area boundaries for 1997 ozone NAAQS, and major transportation arteries. It also shows the attaining/violating status for 2008-2010 for the remainder to the remainder of the Washington-Baltimore-Northern Virginia, DC-MD-VA-WV CSA as well as all or parts of the York-Hanover, PA CBSA, Lancaster, PA CBSA, Chambersburg, PA CBSA, Hagerstown-Martinsburg MD-WV CBSA, Richmond, VA CBSA, Philadelphia-Camden-Vineland CSA as well as other counties in Pennsylvania, Maryland, and Virginia.

Figure 1a. The Washington, DC-MD-VA Nonattainment Area



The boundary for the Washington, DC-MD-VA nonattainment area under the 2008 ozone NAAQS for the 2008 ozone NAAQS consists of:

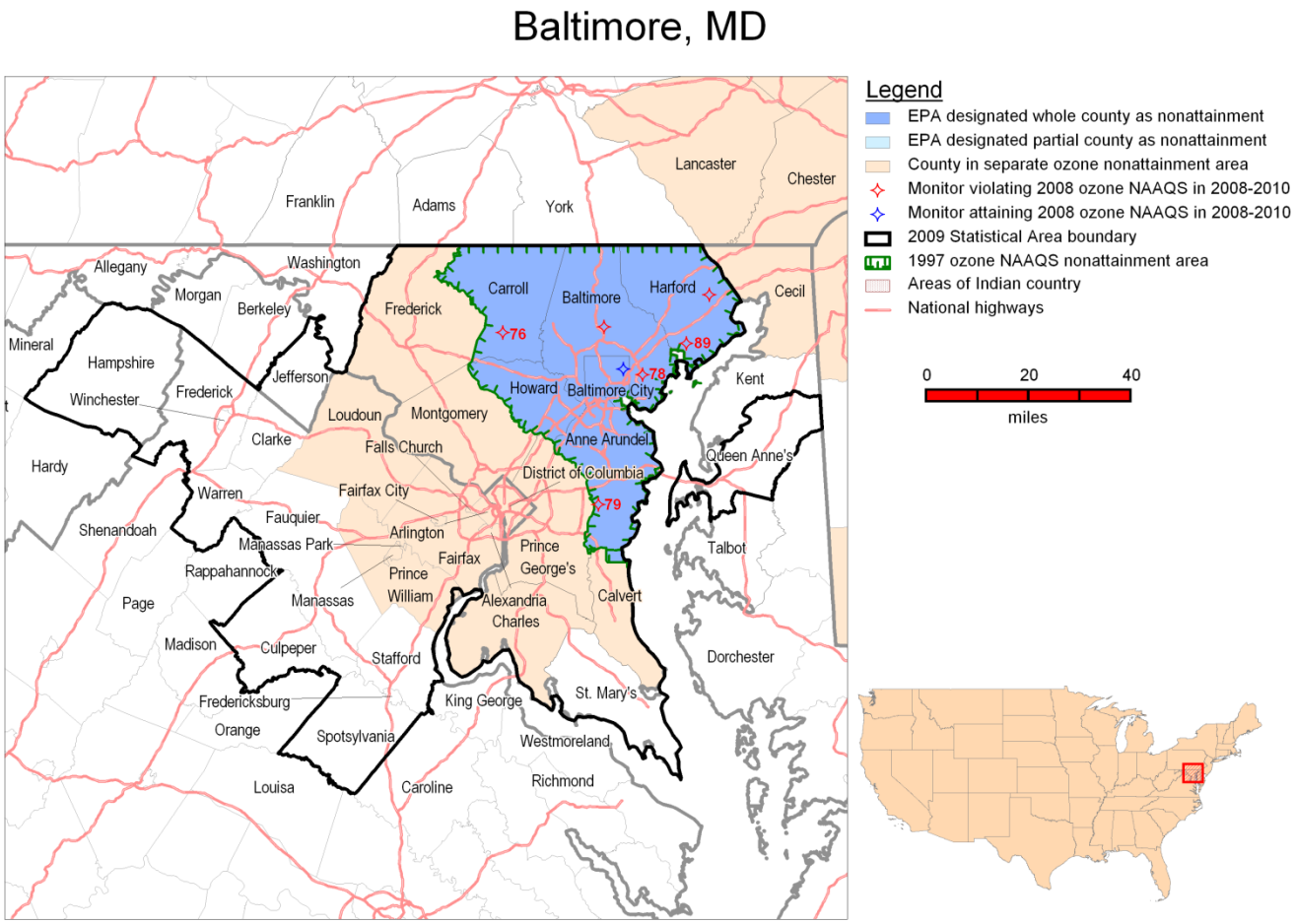
(1) The Counties of Arlington, Fairfax, Loudoun, and Prince William, and the Cities of Alexandria, Fairfax, Falls Church, Manassas, and Manassas Park in Virginia;

(2) The entire District of Columbia; and
(3) The Counties of Calvert, Charles, Frederick, Montgomery, and Prince George's in Maryland.

Figure 1b is a map of the Baltimore MD nonattainment area under the 2008 ozone NAAQS. The map provides other relevant information including the locations and design values of air quality monitors, county and other jurisdictional boundaries, the CSA boundary, prior nonattainment area boundaries for 1997 ozone NAAQS, and major transportation arteries. It also shows the attaining/violating status for 2008-2010 for the remainder to the remainder of the Washington-Baltimore-Northern Virginia, DC-MD-VA-WV CSA as well as all or parts of the York-Hanover, PA CBSA, Lancaster, PA CBSA, Chambersburg, PA CBSA, Hagerstown-Martinsburg MD-WV CBSA, Richmond, VA CBSA, Philadelphia-Camden-Vineland CSA as well as other counties in Pennsylvania, Maryland, and Virginia.

Baltimore Area

Figure 1b. The Baltimore, MD Nonattainment Area



The boundary for the Baltimore, MD nonattainment area under the 2008 ozone NAAQS consists of Anne Arundel, Baltimore, Carroll, Harford, and Howard Counties and Baltimore City.

Tables

Tables 1a to 1c below identifies the areas and associated counties or parts of counties in the District of Columbia, State of Maryland **and** Commonwealth of Virginia that EPA has determined must be designated as nonattainment for the 2008 ozone national ambient air quality standards ("2008 ozone NAAQS" or "2008 NAAQS") and the nonattainment areas in which each will be placed. In accordance with section 107(d) of the Clean Air Act (CAA), EPA designates an area (county or a part of a county) "nonattainment" if it is violating the 2008 ozone NAAQS or if it is contributing to a violation of the 2008 ozone NAAQS in a nearby area. The technical analyses supporting the boundaries for the individual nonattainment areas are provided below.

Table 1a. Nonattainment Areas in District of Columbia.		
Area	The District of Columbia's Recommended Nonattainment	EPA's Nonattainment Counties

	Counties	
Washington, DC-MD-VA*	District of Columbia:	District of Columbia:

Table 1b. Nonattainment Areas in Maryland.		
Area	Maryland's Recommended Nonattainment Counties	EPA's Nonattainment Counties
Washington, DC-MD-VA*	Calvert County Charles County Frederick County Montgomery County Prince George's County	Calvert County Charles County Frederick County Montgomery County Prince George's County
Baltimore, MD	Anne Arundel County Baltimore City Baltimore County Carroll County Harford County Howard County	Anne Arundel County Baltimore City Baltimore County Carroll County Harford County Howard County

Table 1c. Nonattainment Areas in Virginia.		
Area	Virginia's Recommended Nonattainment Counties	EPA's Nonattainment Counties
Washington, DC-MD-VA*	Alexandria City Arlington County Fairfax City Fairfax County Falls Church City Loudoun County Manassas City Manassas Park City Prince William County	Alexandria City Arlington County Fairfax City Fairfax County Falls Church City Loudoun County Manassas City Manassas Park City Prince William County

*The Washington, DC-MD-VA nonattainment area is a multi-state nonattainment area.

Remainder of the Washington-Baltimore-NV CSA:

The remaining Counties and Cities in the Maryland, Virginia and West Virginia that are part of the Washington-Baltimore-NV CSA are designated "unclassifiable/attainment."

Background – State Recommendations, EPA's Proposed Modifications and State Responses:

The District of Columbia's Recommendations:

March 2009:

On March 11, 2009, the District of Columbia recommended the entire District of Columbia be designated nonattainment as part of a nonattainment area which includes at a minimum the entire "Washington DC-MD-VA MSA" but the District also supported using larger combined statistical areas based upon sound science. The District supported its recommendation with air quality data that showed monitors in the District were violating the 2008 ozone NAAQS and an analysis of emissions showing that the District itself contributed less than 10 percent of 2002ozone precursor emissions within the "Metropolitan Washington Area" and thus would need reductions in a broader area than just the District to attain the 2008 ozone NAAQS.[1]

In response to EPA's December 9, 2011, letter to the Mayor of the District of Columbia[2] regarding EPA's proposed modifications to the District's recommendations, on March 12, 2012, the District replied to EPA's December 9, 2012 letter.[3]

Maryland's Recommendations:

The March 2009 recommendations:

On March 10, 2009[4], Maryland recommended retention of the current nonattainment boundaries "if EPA is confident that strong national rules would be in place three years in advance of attainment dates for nonattainment areas in Maryland." These nonattainment areas included the current Baltimore nonattainment area and boundaries, the Maryland portions of the current Washington DC-MD-VA nonattainment area, and Cecil County as part of a Philadelphia based nonattainment area. With these recommendations, Maryland also recommended that Washington County be part of a nonattainment area based upon Hagerstown, Maryland, and an "Eastern Shore" nonattainment area comprising Kent and Queen Anne's Counties.

In the alternative, Maryland supports the "implementation of a large regional nonattainment area encompassing a significant portion of the U.S. East Coast" "if EPA is not confident that strong national rules will be in place" in order to "force regional controls and reductions in transported pollution" in an time frame appropriately related to the dates by which areas in Maryland are required to attain the 2008 NAAQS. Under this alternative, Maryland would support a nonattainment designation for all counties and cities in the State.

Maryland noted that most of the State is already heavily regulated due to existing ozone and fine particle requirements. Maryland stated that its scientific research, which uses airplanes, ozone-measuring balloons, and laser measuring techniques, shows that air transported into Maryland often carries levels of ozone already exceeding the standard. Maryland concluded that it will need to rely heavily on reductions in transported pollution to meet the 2008 NAAQS. Maryland concluded that because of "incoming" ozone levels above the standard, strong national rules will be needed for areas like Maryland to attain the 2008 NAAQS. Maryland provided a map which represented the spatial extent of 2008

[1] The District cited the 2002 emissions inventory contained within its State Implementation Plan (SIP) revision dated May 23, 2007 for the Washington DC-MD-VA Nonattainment Area. This 2002 emissions inventory was for the Washington DC-MD-VA nonattainment area under the 1997 ozone NAAQS (of 40 CFR 50.9) and thus covered an area smaller than the current Washington-Arlington-Alexandria Metropolitan Statistical Area. Refer to 76 FR 58116, September 20, 2011.

[2] Letter dated December 9, 2011, from Shawn M. Garvin, Regional Administrator, EPA Region III, to the Honorable Vincent C. Gray, Mayor of the District of Columbia.

[3] Refer to Letter dated March 12, 2012, from Christophe A. G. Tulou, Director District department of the Environment, to Shawn M. Garvin, Regional Administrator, EPA Region III.

[4] March 10, 2009 Letter from the Honorable Martin J. O'Malley, Governor of Maryland, to William T. Wisniewski, Acting Regional Administrator, EPA Region III.

ozone levels in Maryland, Delaware, New Jersey and southeastern Pennsylvania to show that large areas outside of Maryland have levels above the 2008 NAAQS.

Maryland also provided a summary table of modeled 2009 design values for Delaware and Maryland based upon work performed by the Bureau of Air Quality Analysis and Research, Division of Air Resources, New York State Department of Environmental Conservation.

In a December 9, 2011 letter to the State of Maryland,[5] EPA proposed to modify and respond to Maryland's recommendations as follows:

(1) EPA would not designate Kent, Queen Anne's and Washington Counties as nonattainment for the reasons provided in our cover letter.

(2) EPA would retain the current nonattainment area boundaries for portions of Maryland current**ly** designated nonattainment under the 1997 ozone NAAQS for the reasons provided in Parts I and II to the "Technical Analysis" below.

(3) EPA intended to modify Maryland's recommendations for Anne Arundel, Baltimore, Calvert, Carroll, Cecil, Charles, Frederick, Harford, Howard, Montgomery, and Prince George's Counties and Baltimore City insofar as EPA declined to base its decisions upon the likelihood that additional "strong national rules" will be in-place at some time in the future.

(4) EPA believed it cannot concur with a recommendation to designate as nonattainment a large portion of the East Coast of the U.S. due to transport from such an area and that EPA did not intend to designate a large nonattainment area as suggested by Maryland.

EPA noted that Maryland's support of its recommendations is dated (as a recommendation made two years ago will be) because it relied upon 2008 and 2009 design value data and projections. As EPA noted previously, EPA must consider the best information available at the time EPA promulgates designations. Because the 2010 design values are available, EPA must consider this information and based upon this information believes that the extent of areas still violating the 2008 NAAQS is less than it was two years ago.

March 7, 2012:

In response to EPA's December 9, 2011, letter to the Governor of Maryland regarding EPA's proposed modifications to Maryland's recommendations, on March 7, 2012, Maryland reaffirmed as its recommendation for a multi-state nonattainment area.[6] Maryland specifically recommended the following 17 States for inclusion in such an area: The District of Columbia[7], Maryland, Delaware, New Jersey, New York, Pennsylvania, Virginia, West Virginia, Ohio, North Carolina, Tennessee, Missouri, Illinois, Indiana, Kentucky, Michigan and Wisconsin. Maryland provided a "5-factor analysis" in support of this recommendation. As an *alternative* to the 17-State nonattainment area, Maryland recommended that at a minimum the entire Washington-Baltimore-NV, DC-MD-VA-WV CSA be designated nonattainment. Maryland provided a "5-factor analysis" in support of this recommendation.

After March 7, 2012:

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[5] Letter dated December 1, 2011 from the Honorable Martin J. O'Malley, Governor of Maryland, to Shawn M. Garvin, Regional Administrator USEPA Region 3, Recommending Revised area Designations for Maryland for the 2008 Ozone NAAQS, item number EPA-HQ-OAR-2008-0476-0492 in the docket for this action.

[6] Letter dated March 7, 2012, from Robert M. Summers, Ph.D., Secretary, Maryland Department of the Environment to Shawn M. Garvin, Regional Administrator, EPA Region III.

[7] Under CAA section 302(d) the District of Columbia is considered a "State" for the purposes of Title I and other Titles of the CAA. Hereafter in these responses to Maryland's submittal, the term "State(s)" will refer to any "State" or the District generically whereas the term "District of Columbia" or just "the District" will refer to the District of Columbia itself.

Subsequent to March 7, 2012, the Maryland Department of the Environment provided materials to supplement its "5-factor analyses" supporting its March 7, 2012 recommendations. These were:

(1) "Where does the air pollution in the OTR come from and what do we need to do to fix it?," Tad Aburn, Director, Air and Radiation management Administration, presented at the OTC Annual meeting June 9 and 10, 2010.[8] This document discussed the "elevated reservoir," the NLLV, long-range transport, the correlation between ozone reductions and the number of EGUs installing controls due to the NOx SIP call, the "leeside" trough, linkage between all emissions in the 1997 Washington DC-MD-VA Nonattainment area, and a call for controls throughout the eastern part of the country.

(2) "Moving Forward to Address Regional Transport," Tad Aburn, Air Director, MDE, February 8, 2012, MARAMA Science Meeting.[9] This document discussed recent ozone data for the ten monitors in the OTR (2011 data), remaining possible local controls, the relative ratio of Baltimore emissions to other areas, emissions of top four States contributing to Maryland ozone, the "elevated reservoir," the NLLV, long-range transport, Washington DC-MD-VA Nonattainment area contribution and the "bay breeze," city to city transport, aloft measurements of up to 0.070 to 0.080 ppm after 2004, local emissions estimated to contribute 10 to 20 percent, the need for "super-regional" NOx controls, results of OTC scenario 4 modeling and with 5 percent additional beyond scenario 4 controls result in little ozone reductions, a call for Federal NOx measures on six source categories that represent 75 percent of the NOx left to regulate.[10]

(3) "Making Progress on Cleaner Air, What We've Achieved Under the Clean Air Act Amendments of 1990, and Where We Need to Go, Getting to the New Ozone Standards, A Pathway Forward," November 10th, 2010.[11] This November 10th, 2010 presentation: discussed trends in regulatory measures and ozone levels since 1990; predicted probable nonattainment areas under the 2008 ozone NAAQS, concluded that additional controls within the OTR are still critical but may only reduce about 1/3 of the ozone problem in most OTC cities; and concluded that national/super-regional controls are now essential because incoming ozone is already measured at levels above a 60-70 ppb standard and thus contribution from outside the OTR represents approximately 2/3 of the ozone problem in most OTC cities. OTC identified priority source categories from the June 2010 OTC Resolution urging EPA to adopt national rules to reduce interstate NOx emissions from EGUs, from more stringent On-Road Vehicle Standards, from ICI Boilers, Cement Kilns, Marine Engines and Locomotives because these categories represent 75 percent of the NOx left to regulate, models of transport westerly and NLLJ, the "elevated reservoir," the NLLJ, long-range transport, and reductions in ozone concentrations in both the "elevation reservoir" and at ground level attributable to the NOx SIP call.

(4) "Modeling Committee Update," OTC Air Directors' Meeting, April 24th, 2012." This document discussed 8-hour ozone trends, how design values changed (based upon 2011 preliminary data), potential nonattainment areas under the 2008 ozone NAAQS, hypothetical 2012 design values discounting 2009 data, and schedules for OTC air quality modeling.

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[8] Also available on-line at http://www.otcair.org/upload/Documents/Meeting%20Materials/ConceptualModel_20090602%20TAD%20FOR%20OTC%20Final.pdf.

[9] Also available on line at http://www.marama.org/presentations/2012_Science/Aburn_Science2012#542,1,Slide.

[10] Subsequent to the State's March 7, 2012 letter Maryland also submitted in a separate 4-page document which consisted solely of pages 33 through 36 of this document.

[11] Also available on line at http://www.otcair.org/upload/Documents/Meeting%20Materials/OTC%20Overall%20Progress%20Report%20-%20Fall%202010.pdf.

EPA considered these documents as they related to elements of Maryland's March 7, 2012 response to EPA.

Most of the salient points of these presentations were also discussed in Maryland's March 7, 2012 letter.

Maryland also submitted a document estimating reasonable further progress reductions in a nonattainment area with the borders of the 1997 Baltimore nonattainment area (that under the 1997 ozone NAAQS) and a nonattainment area comprised of the entire Washington-Baltimore-NV CSA and a document of a "Aspirational Conformity Regulation." EPA did not base its decisions on the former but rather used the 5-factor analysis to determine which portions of this CSA should be designated nonattainment. As to the latter, EPA did not base its decision on it because it represents a control regulation not yet implemented whereas the CAA requires EPA to base its decisions on current contribution.

Regarding a 17-State Nonattainment area:

In letters discussed previously in this document, Maryland and the District of Columbia recommended that EPA designate the entire State as part of a large multi-state nonattainment area including all or portions of 16 other states, and the District of Columbia. EPA has addressed comments in the *Responses to Significant Comments on the State and Tribal Designation Recommendations for the 2008 Ozone National Ambient Air Quality Standards* document in the docket for these designations. In section 3.1.2 of the "*Responses to Significant Comments"* document, EPA addresses the concept of a large, multi-state nonattainment area and states that we do not believe that creation of a super-regional nonattainment area to address pollution transport is the appropriate approach. As an initial matter, section 107(d)(1) provides that areas designated nonattainment should include any "nearby" area contributing to a violation of the NAAQS. We believe that broad super-regional areas go beyond this by including areas that are not necessarily "nearby" but contribute to nonattainment through long-range transport. The CAA has separate provisions to address this phenomenon. Section 110(a)(2)(D) requires states to address ozone transport that contributes to a violation of the NAAQS in another State. In addition, section 184, creates the northeast ozone transport region and also grants EPA authority to establish additional transport regions, as appropriate. Finally, we note that the approach taken by EPA is consistent with the approach Congress specified for serious and above areas for the 1-hour NAAQS, where in section 107(d)(4)A), Congress set the CMSA boundaries as the presumptive boundaries of the nonattainment area. In *Catawba Co. v. EPA*[12], the Court upheld that "contribute" under §107(a)(1)(A) of the CAA does not necessarily mean "any contribution" to nonattainment but rather a *degree of contribution sufficient to deem an area nonattainment*, that is, sufficient enough to warrant designation as nonattainment. "Section 107(d) is ambiguous as to how EPA should measure contribution and *what degree of contribution is sufficient to deem an area nonattainment…" Catawba County v. EPA*, 571 F.3d 20, 39 (D.C. Cir. 2009) (Internal citation omitted but with emphasis added). "Thus, reasonably exercising the discretion that Congress delegated to it, EPA interpreted "contribute" to mean "sufficiently contribute," and then applied the C/MSA presumption and nine-factor test precisely to identify those areas that meet that definition." *Id.*

[12] *Catawba County v. EPA*, 571 F.3d 20, (D.C. Cir. 2009)

Virginia's Recommendations:
March 2009:

On March 11, 2009[13], Virginia recommended the four areas in Virginia for nonattainment. These were a Hampton Roads area, a Fredericksburg area, a Richmond area and a Northern Virginia area consisting of only a portion of Virginia within the "Washington DC-MD-VA" Metropolitan Statistical Area (MSA). Virginia supplied a "5-factor analysis" in support of its recommendations.

November 2011 and later:

On November 21, 2011[14], Virginia updated its prior recommendations. Virginia specifically noted that of the four areas Virginia recommended for a nonattainment designation in 2009 two – the Hampton Roads and Fredericksburg areas – had come into attainment based upon 2008 to 2010 air quality monitoring data. In addition, Virginia noted that the Richmond area was in attainment of the 2008 ozone NAAQS based upon 2009-2011 air quality data and requested that the Richmond area not be designated nonattainment.

Virginia did not send a reply in response to EPAs December 9, 2011, letter to the Governor of Virginia[15] which did not propose to modify any of Virginia's recommendations,

Subsequent to EPAs December 9, 2011 letter, the Virginia Department of Environmental Quality provided a supplemental analysis in response other States' revised recommendations for a combined Washington-Baltimore-NV CSA.

Common elements of Recommendations:
All the recommendations are based upon 2008 to 2010 air quality data to identify the violating monitors.[16] These data are from FRM monitors or FEM monitors sited and operated in accordance with 40 CFR part 58.

Technical Analysis for the Washington-Baltimore-Northern Virginia CSA –the Washington, DC-MD-VA and Baltimore Areas:

[13] A letter dated March 11, 2009 from David K. Paylor, Director, Virginia Department of Environmental Quality, to William T. Wisneiwski, Acting Regional Administrator, EPA region III.
[14] Letter dated November 21, 2011, from Michael G. Dowd, Air Quality Division Director, Virginia Department of Environmental Quality, to Diaina Esher, Director, Air Protection Division, EPA Region III.
[15] Letter dated December 9, 2011, from Shawn M. Garvin, Regional Administrator, EPA Region III, to the The Honorable Robert McDonnell, Governor of Virginia.
[16] Although Virginia certified air quality data for all their monitors for the 2011 ozone season, Virginia's November 21, 2011 revised recommendation referred to use of the 2011 data with respect to the Richmond VA area. With respect to the Virginia's portion of the Washington-Baltimore-NV CSA, the 2011 data does not alter the numbers of monitors violating of attaining the 2008 ozone NAAQS and therefore does not materially affect the decisions regarding the baoundaries of nonattainment areas within this CSA.

Factor Assessment

EPA's analyses below provide the basis for the final nonattainment area boundaries. It relies on our analysis of whether and which monitors are violating the 2008 ozone NAAQS, based on certified air quality monitoring data from 2008-2010, and an evaluation of whether nearby areas are contributing to such violations. EPA has evaluated contributions from nearby areas based on a weight of evidence analysis considering the 5-factors identified below. EPA issued guidance on December 4, 2008 that identified these factors as ones EPA would consider in determining nonattainment area boundaries and recommended that states consider these factors in making their designations recommendations to EPA.[17]

1. Air quality data (including the design value calculated for each Federal Reference Method (FRM) monitor or Federal Equivalent Method (FEM) monitor in the area);
2. Emissions and emissions-related data (including location of sources and population, amount of emissions and emissions control, and urban growth patterns);
3. Meteorology (weather/transport patterns);
4. Geography and topography (mountain ranges or other basin boundaries);
5. Jurisdictional boundaries (e.g., counties, air districts, existing nonattainment areas, Indian country, metropolitan planning organizations (MPOs)).

Ground-level ozone is not emitted directly into the air, but is created by chemical reactions between oxides of nitrogen (NOx) and volatile organic compounds (VOC) in the presence of sunlight. Because NOx and VOC emissions from a broad range of sources over a wide area typically contribute to violations of the ozone standards, EPA believes it is important to consider whether there are contributing emissions from geographic areas near the violating monitor.

In EPA's designations guidance for the 2008 ozone NAAQS EPA recommended examining CSA/CBSAs because certain factors used to establish CSAs and CBSAs are similar to the factors EPA is using in this technical analysis to determine if a nearby area is contributing to a violation of the 2008 ozone NAAQS. EPA used the same basic approach in the designation process for the 1997 ozone NAAQS. Where a violating monitor is not located in a CSA or CBSA, EPA's guidance recommended using the boundary of the county containing the violating monitor as the starting point for considering the nonattainment area's boundary.

The Composition of the Washington-Baltimore-Northern Virginia, DC-MD-VA-WV CSA:

The Washington, DC-MD-VA and Baltimore nonattainment areas are part of the Washington-Baltimore-Northern Virginia, DC-MD-VA-WV CSA. This consists of the following CBSAs:[18]

(1) The Baltimore-Towson, MD Metropolitan Statistical Area (MSA)[19,20] - Anne Arundel, Baltimore, Carroll, Harford, Howard, and Queen Anne's Counties and Baltimore City in Maryland;

(2) The Culpeper, VA Micropolitan Statistical Area (Culpeper, VA CBSA) – Culpeper County in Virginia;

[17] The December 4, 2008 guidance memorandum "Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standards" refers to 9 factors. In this technical support document we have grouped the emissions-related factors together under the heading of "Emissions and Emissions-Related Data," which results in 5 categories of factors.

[18] Source: OMB Bulletin No. 10-02, December 1, 2009.

[19] Metropolitan and Mircopolitan Statistical Areas are each types of CBSAs. Hereafter, MSA will refer to only to a Metropolitan Statistical Area, and, CBSA will refer to both Mircopolitan and Metropolitan Statistical Areas generally and also be used in lieu of Mircopolitan Statistical Area and Metropolitan Statistical Area when referring to a specific area..

[20] Generally hereafter the "Baltimore-Towson, MD CBSA."

(3) The Lexington Park, MD Micropolitan Statistical Area (Lexington Park, MD CBSA) - St. Mary's County in Maryland;

(4) The Washington-Arlington-Alexandria, DC-VA-MD-WV MSA (Washington DC-MD-VA-WV CBSA): The Maryland Portion: the Counties of Frederick, Montgomery, Calvert, Charles, and Prince George's; the entire District of Columbia; the Virginia Portion: the Counties of Arlington, Clarke, Fairfax, Fauquier, Loudoun, Prince William, Spotsylvania, Stafford, and Warren, and the Cities of Alexandria, Fairfax, Falls Church, Fredericksburg, Manassas, and Manassas Park; and the West Virginia Portion: Jefferson County.

(5) The Winchester, VA-WV MSA - Frederick County and Winchester City in Virginia and Hampshire County in West Virginia.

Core Cities/Counties in this CSA:

Under OMB's December 27, 2000 (65 FR 82228), Notice of decision "Standards for Defining Metropolitan and Micropolitan Statistical Areas" a CBSA is built around either an urbanized area or urbanized cluster with central counties and outlying counties. A central county is associated with the urbanized area or urban cluster that accounts for the largest portion of the county's population. The central counties associated with a particular urbanized area or urban cluster are grouped to form a single cluster of central counties for purposes of measuring commuting to and from potentially qualifying outlying counties. A county qualifies as an outlying county of a CBSA if it meets the following commuting requirements: (a) at least 25 percent of the employed residents of the county work in the central county or counties of the CBSA; **or** (b) at least 25 percent of the employment in the county is accounted for by workers who reside in the central county or counties of the CBSA. The counties included in a CBSA **must be contiguous**. Two adjacent CBSAs will merge to form one CBSA if the central county or counties (as a group) of one CBSA qualify as outlying to the central county or counties (as a group) of the other CBSA using the measures that define an outlying county of a CBSA. Any two adjacent CBSAs will form a Combined Statistical Area (CSA) if the employment interchange measure[21] between the two areas is at least 25; **or,** if the adjacent CBSAs that have an employment interchange measure of at least 15 and less than 25 they will combine if local opinion, as reported by the congressional delegations in both areas, favors combination. See, 65 FR 82228 at 82236-82237.

In this TSD the following central city/counties in the Baltimore-Towson MD CBSA will be considered to be "core counties/city" of the 1997 Baltimore Nonattainment area: Anne Arundel, Baltimore, Howard Counties and Baltimore City.

Likewise, the following central cities/counties of the Washington-Arlington-Alexandria, DC-VA-MD-WV CBSA will be considered to be the "core cities/counties" in the 1997 Washington DC-MD-VA Nonattainment area: the District of Columbia, DC; Prince George's County, MD; Arlington County, VA; Fairfax County, VA; Loudoun County, VA; Prince William County, VA; Alexandria City, VA; Fairfax City, VA; Falls Church City, VA; Manassas City, VA; and Manassas Park City, VA.[22]

EPA Guidance and Historical Approaches:

The December 4, 2008 guidance memorandum "Area Designations for the 2008 Revised Ozone National Ambient Air Quality Standards" recommended for CSAs that the analysis should start with the

[21] The employment interchange measure is a measure of ties between two adjacent entities. The employment interchange measure is the sum of the percentage of employed residents of the smaller entity who work in the larger entity and the percentage of employment in the smaller entity that is accounted for by workers who reside in the larger entity. 65 FR 82228 at 82238.

[22] This is the CBSA core less Stafford County, VA.

CSA boundary associated with violating monitors. The Washington-Baltimore-NV CSA consists of five CBSAs comprising 34 counties and independent cities plus the District of Columbia.[23]

As will be discussed under Factor 1 in a following section of this document, the monitors violating the 2008 NAAQS are located in two areas still designated nonattainment under the 1997 ozone NAAQS – the current Baltimore nonattainment area and the current Washington DC-MD-VA nonattainment area. (Further details of the designation of areas under the 1997 ozone NAAQS are discussed under Factor 5 "*Jurisdictional boundaries.*")

EPA used the same basic approach in the designation process for the 1997 ozone NAAQS as EPA is using for the 2008 ozone NAAQS. Therefore, EPA has previously considered the same factors for setting the boundaries of the current Baltimore and Washington DC-MD-VA nonattainment areas. For purposes of analysis, a reasonable step is to break the area into smaller pieces that reflect the boundaries used to designate areas under the 1997 ozone NAAQS. In other words, start with a presumption that the boundaries of the current Baltimore and Washington DC-MD-VA nonattainment areas include the counties and independent cities which contribute to the currently violating monitors, and then apply the five factors to see if the current Baltimore and Washington DC-MD-VA nonattainment areas should be contracted, expanded, realigned, or even merged based upon differences in current conditions as opposed to conditions as of 2004 when areas were designated for the 1997 ozone NAAQS.

Grouping of Areas for Presentation:

For the purposes of **the presentation of** this analysis, the Washington-Baltimore-NV CSA will be broken into the following subcomponents:

(1) The Baltimore Nonattainment Area as it was defined under the 1997 ozone NAAQS[24] (1997 Baltimore nonattainment area) consisting of Anne Arundel, Baltimore, Carroll, Harford, and Howard Counties and Baltimore City in Maryland.[25] This is the Baltimore-Towson, MD CBSA less Queen Anne's County in Maryland.

(2) The Washington DC-MD-VA Nonattainment Area as it was defined under the 1997 ozone NAAQS (1997 Washington DC-MD-VA nonattainment area)[26] consisting of: the Maryland Portion: Frederick, Montgomery, Calvert, Charles, and Prince George's Counties; the entire District of Columbia; and the Virginia Portion: Arlington, Fairfax, Loudoun, Prince William Counties, and the Cities of Alexandria, Fairfax, Falls Church, Manassas, and Manassas Park.

(3) Fredericksburg, VA Area consisting of Fredericksburg City and Spotsylvania and Stafford Counties in Virginia.[27]

(4) The Frederick County, VA Area consisting of Frederick County and Winchester City in Virginia.[28]

(5) Eight other counties: Queen Anne's County in Maryland (which was a portion of the Kent County and Queen Anne's County Area under the 1997 ozone NAAQS)[29]; St. Mary's County in Maryland;

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[23] Under section 302(d) of the CAA, the District of Columbia is considered a state. In this analysis the terms "state," a "county" and/or an "independent city" when used in a broad sense may also refer to the District of Columbia when required by context.

[24] Codified at 40 CFR 50.9.

[25] Sources: 40 CFR 81.321 and to 69 FR 23838, April 30, 2004.

[26] Sources: 40 CFR 81.09, 81.321 and 81.347and to 69 FR 23838, April 30, 2004.

[27] This was a separately defined nonattainment and later maintenance area under the 1997 ozone NAAQS. Sources: 40 CFR 81.347 and 69 FR 23838, April 30, 2004.

[28] This was a separately defined attainment/unclassifiable area under the 1997 ozone NAAQS. Sources: 40 CFR 81.347 and 69 FR 23838, April 30, 2004.

Clarke, Culpeper, Fauquier, and Warren Counties in Virginia; and Hampshire and Jefferson Counties in West Virginia.

As will discussed under the Factor 1 – Air Quality Data section of this TSD below, the 1997 Baltimore area and the 1997 Washington DC-MD-VA nonattainment area contain all the monitors within the entire CSA that area violating the 2008 ozone NAAQS.

EPA's overall assessment of the factors for the Washington-Baltimore-NV CSA is as follows:

Factor Assessment

Factor 1: Air Quality Data

For this factor, EPA considered 8-hour ozone design values in parts per million (ppm) for air quality monitors in counties in the Washington-Baltimore-NV CSA area based on data for the 2008-2010 period, that is, based upon a monitor's 2010 design value, which are the most recent years with fully-certified air quality data. A monitor's design value is the metric or statistic that indicates whether that monitor attains a specified air quality standard. The 2008 ozone NAAQS are met when the annual fourth-highest daily maximum 8-hour average concentration, averaged over 3 years is 0.075 ppm, or less. A design value is only valid if minimum data completeness criteria are met. See, 40 CFR part 50 Appendix P. Where several monitors are located in a county (or a designated nonattainment area or maintenance area), the design value for the county or for an area (which in general can be any grouping of counties or be some currently defined area such as a CBSA, CSA or current or former nonattainment area) is determined by the monitor in that county/area with the highest design value.

The 2010 design values for the ozone NAAQS for counties in the Washington-Baltimore-NV CSA are shown in Tables 2. The "AQS ID No." is the identification number assigned to the monitor in EPA's Air Quality System (AQS). The "short name" is a semi-descriptive name often used in various State and/or EPA records. Note that only counties in the Washington-Baltimore-NV CSA that have ozone monitors are included in Table 2.

Table 2. Monitor data for the Washington-Baltimore-NV CSA.

County (Co.)/City, State	Monitor AQS ID No.	Short Name	State Recommended Nonattainment?	1997 Nonattainment (NA)/attainment Area	8-hr Ozone Design Values, 2008-2010 (ppm)
District of Columbia Monitors in the Washington-Baltimore-NV CSA:					
District of Columbia	110010025	Takoma	Yes	Washington NA	0.075
	110010041	River Terrace		Washington NA	0.077
	110010043	McMillan Reservoir		Washington NA	0.079
Maryland Monitors in the Washington-Baltimore-NV CSA:					
Anne Arundel Co., MD	240030014	Davidsonville	Yes	Baltimore NA	0.079
Baltimore Co., MD	240051007	Padonia	Yes	Baltimore NA	0.077

[29] Sources: 40 CFR 81.321 and to 69 FR 23838, April 30, 2004.

	240053001	Essex		Baltimore NA	0.078
Calvert Co., MD	240090011	Calvert Co.	Yes	Washington	0.077
Carroll Co., MD	240130001	South Carroll	Yes	Baltimore NA	0.076
Charles Co., MD	240170010	Southern Maryland	Yes	Washington NA	0.075
Frederick Co., MD	240210037	Frederick Co.	Yes	Washington NA	0.075
Harford Co., MD	240251001 240259001	Edgewood Aldino	Yes	Baltimore NA Baltimore NA	**0.089** 0.078
Montgomery Co., MD	240313001	Rockville	Yes	Washington NA	0.074
Prince George's Co., MD	240330030 240338003	Howard University – Beltsville Prince George's County Equestrian Center[30]	Yes	Washington NA Washington NA	0.078 0.077
Baltimore City, MD	245100054	Furley E.S.Rec Center	Yes	Baltimore NA	0.067
Virginia Monitors in the portion of the Washington-Baltimore-NV CSA:					
Arlington Co., VA	510130020	Arlington	Yes	Washington NA	0.079
Fairfax Co., VA	510590030	Franconia	Yes	Washington NA	0.081
Fauquier Co., VA	510610002	Sumerduck	No	Fauquier Co. Attainment	0.065
Frederick Co., VA	510690010	Butler Manuf. Co Near Rest	No	Frederick Co. (VA) Attainment	0.068
Loudoun Co., VA	511071005	Ashburn	Yes	Washington NA	0.075
Prince William Co., VA	511530009	James S. Long Park	Yes	Washington NA	0.070
Stafford Co., VA	511790001	Widewater	No	Fredericksburg NA/maintenance	0.070
Alexandria City, VA	515100009	Alexandria	Yes	Washington NA	0.074
West Virginia has no monitors in this CSA.					

Note: Data Source: ozone_dv75_20082010.xls (downloaded on 9/22/2011 from http://www.epa.gov/airtrends/values.html).

A county or city that shows a violation of the 2008 ozone NAAQS must be included in a nonattainment area. See, section 107(d)(1)(A) of the CAA which requires designation of nonattainment for any area that does not meet a NAAQS. A county (or partial county) must also be designated nonattainment if it contributes to a violation in a nearby area. Each county without a violating monitor that is located near a county with a violating monitor has been evaluated based on the weight of evidence of the five factors and other relevant information to determine whether it sufficiently contributes to a nearby violation.

[30] Due to the length, may be shortened to "Pr. George's Co Eq Ctr" at time hereafter.

Identification of Violating Monitors:

Nine counties within the Washington-Baltimore-NV CSA contain a monitor violating the 2008 Ozone NAAQS. These monitors are contained solely within the boundaries of those areas designated nonattainment under the 1997 Ozone NAAQS; these are the 1997 Washington, DC-MD-VA nonattainment area and the 1997 Baltimore nonattainment area. (See, 40 CFR 81.309, 81.321 and 81.347.) All other monitors within the CSA, but outside the boundaries of designated nonattainment areas under the 1997 ozone NAAQS are attaining the 2008 Ozone NAAQS. Therefore, the following jurisdictions must be designated by operation of law as nonattainment,[31] within one or more nonattainment area(s) within the Washington-Baltimore-NV CSA: (1) The District of Columbia; (2) Anne Arundel, Baltimore, Calvert, Carroll, Harford, Prince George's Counties in Maryland; and (3) Arlington and Fairfax Counties in Virginia.

Analysis of the Concentrations as indicated by Design Values within the Washington-Baltimore-NV CSA:

The highest concentrations within the Washington-Baltimore-NV CSA are found at the Edgewood site (or Edgewood monitor) in Harford County, MD and the Franconia site in Fairfax County, VA which have design values of 0.089 and 0.081 ppm, respectively. The fact that the Edgewood site has a high value is not surprising because this monitor was located for the objective of measuring highest concentrations on an urban scale. One can reasonably infer that this monitor was sited to be downwind of Baltimore City and other parts of the Baltimore-Towson, MD CBSA. See, Table 3-2a. in "Ambient Air Monitoring Network Plan For Calendar Year 2011," by the Ambient Air Monitoring Program, Air and Radiation Administration Management, Maryland Department of the Environment, May 27, 2010.[32] Appendix 1 of this analysis contains a summary of relevant regulatory and guidance documents related to selection of sites for ozone monitors and to monitoring objectives.

In the 1997 Washington DC-MD-VA nonattainment area, the Howard University -Beltsville site has a dual monitoring objective of population exposure and highest concentration. This site would fulfill the requirement that the Washington-Arlington-Alexandria, DC-VA-MD-WV Metropolitan Statistical Area have such a site. Refer to Appendix 1 of this analysis. See, Table 3-2a. in "Ambient Air Monitoring Network Plan For Calendar Year 2011," by the Ambient Air Monitoring Program, Air and Radiation Administration Management, Maryland Department of the Environment, May 27, 2010. One can reasonably infer that that this monitor was sited to monitor the expected highest concentrations downwind of the densely populated urban core surrounding the District of Columbia.

In their 5-factor analyses submitted with the State's March 7, 2012 letter,[33] Maryland supplied extensive information and data to show why the Edgewood monitor had a higher design value than other monitors in the CSA. This information related to transport of ozone and its precursors on various scale and the effect that the Appalachian Mountains and the Chesapeake Bay have on transport or on the concentration of ozone at monitors in Maryland and in particular at the Edgewood monitor.

Generally, within the Washington-Baltimore-NV CSA the highest design values occur in two separate areas: (1) the first of these areas of peak design values is centered on the monitors in Fairfax County, the District of Columbia and Anne Arundel County with design values of 0.079 to 0.081 ppm; (2) the second areas of peak ozone concentrations is northeast of Baltimore City and centered on the Edgewood

[31] EPA would expand the boundaries of nonattainment to include the whole county or the District of Columbia containing a violating monitor because the States or the District of Columbia so recommended.

[32] Source: MDPlan2010.pdf (Downloaded 12/9/2011 from http://www.epa.gov/ttn/amtic/plans.html).

[33] Letter dated March 7, 2012, from Robert M. Summers, Ph.D., Secretary, Maryland Department of the Environment to Shawn M. Garvin, Regional Administrator, EPA Region III.

monitor in Harford County with a design value of 0.089 ppm. These two areas are "circled" with a red, solid line in Figure 2a below.

Near each of these areas of peak ozone concentrations are monitors each with a design value of 0.077 ppm or 0.078 ppm. Near the Fairfax County-District of Columbia-Anne Arundel County group are the two monitoring sites in Prince George's County, MD. In close proximity to and northeast of the Edgewood site are the Aldino monitor site in Harford County and the two monitoring sites (Essex and Padonia) in Baltimore County. Outside these areas, the design values fall off to attaining monitors. Monitors attaining the 2008 ozone NAAQS are found north, northwest, west, southwest and south of the curve formed by the Calvert County, MD—Fairfax County, VA—Carroll—Baltimore (Padonia) —Harford Counties, MD monitors. (The curve of the Calvert County, MD—Fairfax County, VA—Carroll—Baltimore (Padonia) —Harford Counties, MD monitors is shown in Figure 2b below with a solid, pink line.)

Just outside this curve of violating monitors are three monitors each with a design value of 0.075 ppm (just attaining the 2008 NAAQS) – the ones in Charles County, MD, Loudoun County, VA and Frederick County, MD. These attaining monitors are joined by a red, dashed line in Figure 2b.

Adjacent States:

South, southwest, west, and northwest of these three monitors are a number of monitors generally 0.005 ppm below the 2008 NAAQS. These are the monitors in Fauquier, Frederick, Prince William and Stafford Counties in Virginia. (These three are joined by a dotted, green line in Figure 2b.) There are also attaining monitors in the northern tip of Caroline County, VA, Berkeley County, WV and Washington County, MD. Table 3 provides basic data for these other monitors:

Table 3. Three Attaining Monitors Outside the Washington-Baltimore-NV CSA.

County/City, State	Monitor AQS ID No.	Short Name	State Recommended Nonattainment?	8-hr Ozone Design Values, 2008-2010 (ppm)	EPA final designation
Caroline County, VA	510330001	Corbin	No	0.073	Attainment
Berkeley County, WV	540030003	Martinsburg Ball Field	No	0.070	Attainment
Washington County, MD	240430009	Hagerstown	Yes or no[34]	0.072	Attainment

Note: Data Source: ozone_dv75_20082010.xls (downloaded on 9/22/2011 from http://www.epa.gov/airtrends/values.html).

The District of Columbia and Maryland both recommended a very large, 17-State nonattainment area. Maryland in particular questioned why States immediately adjacent to the Washington-Baltimore-NV CSA did not meet the geographic close proximity prong of CAA section 107(d)(1)(A). While EPA believes that the entire States of Delaware, Pennsylvania, Virginia and West Virginia do not meet section 107(d)'s requirements to be considered areas "contributing" to nonattainment in "nearby areas," EPA's reasoning for entire States does not necessarily suffice for adjacent CBSAs or counties not in a CBSA. EPA therefore considered ozone design value concentrations in other adjacent counties and CBSAs. The basic air quality data for such areas is provided in Table 4 below:

Table 4. Other Monitors in Adjacent Areas Outside the Washington-Baltimore-NV CSA.

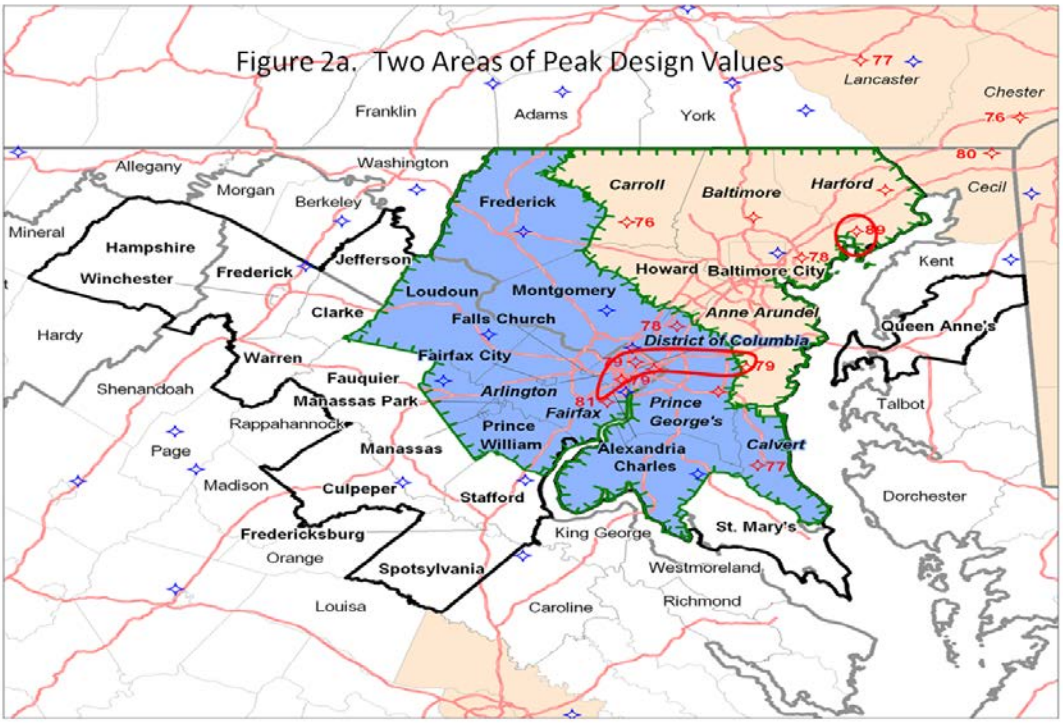
CBSA or	Monitor AQS ID	8-hr Ozone Design Values,	EPA final

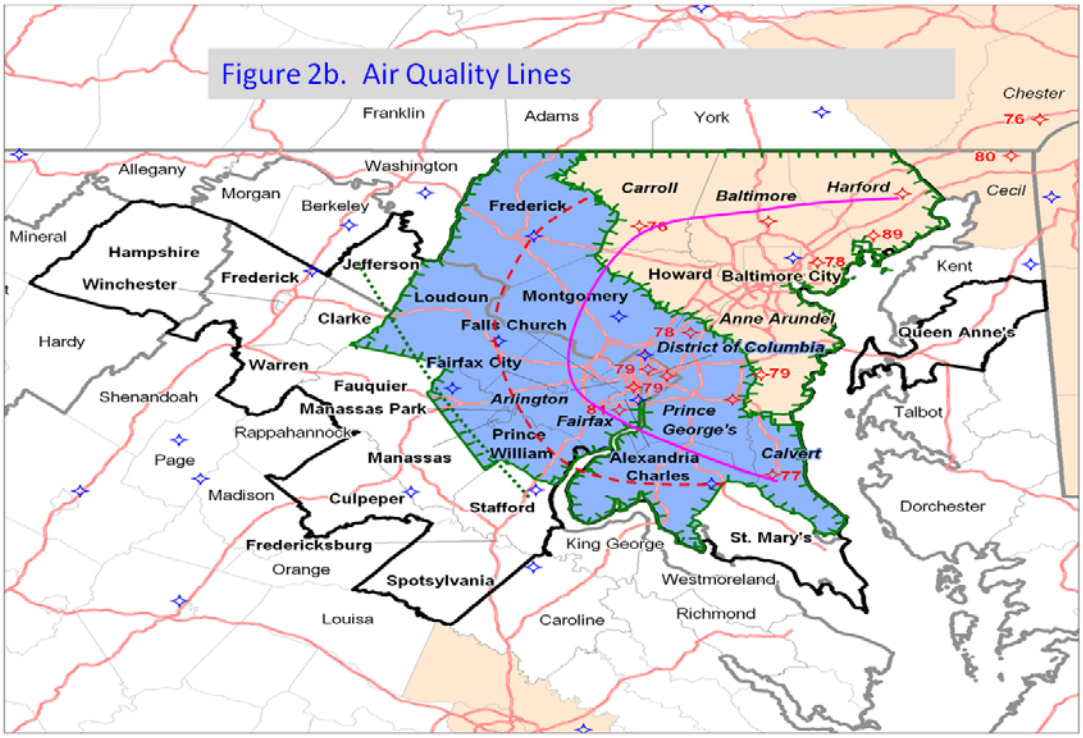
[34] Only if all of Maryland was part of a 17 State nonattainment area did Maryland recommend nonattainment.

County/City, State	No.	2008-2010 (ppm)	designation
New Castle County, DE	1000-1007 or 100031013	0.075	Nonattainment[Note 4-2]
Chester County, PA	420290100	0.076	Nonattainment[Note 4-2]
Cecil County, MD	240150003	0.080	Nonattainment[Note 4-2]
Dover CBSA (Kent Co.), DE	100010002	0.074	Attainment
Chambersburg (Franklin Co.), PA CBSA	420550001		Attainment
York-Hanover CBSA (Adams and York Cos.),PA	421330008 421330011 420010002	0.071 0.074 0.073	Attainment
Lancaster County/CBSA, PA	420710007 420710012	0.077 0.075	Nonattainment
Kent County, MD	240290002	0.075	Attainment
Page County, VA	511390004	0.066	Attainment
Madison County, VA	511130003	0.073	Attainment
Hanover County, VA[Note 4-1]	510850003	0.075	Attainment

Notes:
Sources: Data Source: ozone_dv75_20082010.xls (downloaded on 9/22/2011 from http://www.epa.gov/airtrends/values.html).
4-1: Part of the Richmond, VA CBSA.
4-2: As part of the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE nonattainment area

These patterns of ozone design values suggest that there could be two separate areas with a linkage between high emissions of ozone precursors in within some geographic region such as the core of the Baltimore-Towson CBSA or Washington CBSA and peak ozone design values in that geographic region such as at the Edgewood monitor or the Franconia. One such geographic region might be the area northwest of Baltimore City centered on the Edgewood monitoring site in Harford County, MD. The Edgewood monitoring site is circled (in red) in Figure 2a below, the north-easternmost county in the Washington-Baltimore-NV CSA. The peak ozone area for the second such geographic region might be the group of monitors consisting of the monitors in Fairfax County, VA, the District of Columbia, and possibly the monitor in Anne Arundel County, MD. These are also "circled" in Figure 2a below with a surrounding red solid line.





Design Value Changes – 2003 to 2010:

Table 5 shows the 2003 design values used to designate and classify areas under the 1997 ozone NAAQS, the 2008 design values used by the States to make their 2009 recommendations for the 2008 ozone NAAQS and the 2010 design values. The first and second highest design values in the Washington-Baltimore-NV CSA are emphasized in bold, underlined type; design values within 0.002 ppm of the second highest value are emphasized in bold type.

Table 5. Air Quality Data – Design Values for 2003, 2008 and 2010.

County	State Recommended Nonattainment for 2008 NAAQS?	2003 8-hour ozone design value (ppm)[34]	2008 8-hour Ozone design value (ppm)[35]	2010 8-hour Ozone design value (ppm)[36]
Baltimore nonattainment area:				
Anne Arundel Co., MD	Yes	**0.098**	**0.087**	**0.079**
Baltimore Co., MD	Yes	0.093	0.085	0.078
Carroll Co., MD	No	0.089	0.083	0.076
Harford Co., MD	Yes	**0.103**	**0.091**	**0.089**
Baltimore City, MD	Yes	0.082	Inc. D	0.067
Washington DC-MD-VA nonattainment area				
District of Columbia, DC	Yes	0.094	**0.087**	**0.079**
Calvert Co., MD	No	N/D	0.079	0.077
Charles Co., MD	No	0.094	0.082	0.075
Frederick Co., MD	No	0.088	0.082	0.075
Montgomery Co., MD	No	0.088	Inc. D	0.074
Prince George's Co., MD	Yes	0.093	**0.087**	0.078
Arlington Co., VA	Yes	**0.099**	0.085	0.079
Fairfax Co., VA	Yes	0.097	**0.087**	**0.081**
Loudoun Co., VA	Yes	0.092	0.083	0.075
Prince William Co., VA	Yes	0.087	0.078	0.070
Alexandria City, VA	Yes	0.092	0.081	0.074
Frederick Co., VA Area				
Frederick, VA	No	0.085	0.073	0.068
Fredericksburg, VA Area				
Stafford, VA	No	0.088	0.081	0.070
Other Counties				
Fauquier, VA	No	<0.085	0.071	0.065

[34] "Chapter 2 8-Hour Ozone Nonattainment Designations and Classifications" docket item EPA-HQ-OAR-2003-0083-1812 in docket EPA-HQ-OAR-2003-0083 (downloaded November 15, 2011) and available on-line at Regulations.gov.
[35] Data Source: dv_ozone_2006_2008.xls (downloaded on 11/29/2011 from http://www.epa.gov/airtrends/values.html.
[36] Data Source: ozone_dv75_20082010.xls (downloaded on 9/22/2011 from http://www.epa.gov/airtrends/values.html.

Note: "N/D" means no data; "Inc. D" means there was incomplete data to calculate a design value; "<0.085" means the design value was under the 1997 ozone NAAQS and the county was designated attainment.

For designations under the 1997 ozone NAAQS, the Edgewood site in Harford County had a design value (for the period 2000-2002) of 0.103 ppm, and all other monitored counties in the 1997 Baltimore nonattainment area except that in Baltimore City violated the 1997 ozone NAAQS with a design value of 0.085 ppm or more.[37] Likewise, for designations under the 1997 ozone NAAQS, Arlington County, VA had the highest design value of 0.099 ppm for the period 2001-2003; for the 2001-2003 period, all other counties currently having monitors in the current Washington DC-MD-VA nonattainment area except Calvert County (which did not have a monitor with 3 years of valid data for 2000-2002) violated the 1997 ozone NAAQS with a design value of 0.085 ppm or more.[38] For the designations under the 1997 ozone NAAQS, the design value for the 1997 Baltimore nonattainment area was 0.004 ppm greater than the design value for the 1997 Washington DC-MD-VA nonattainment area. Both areas were classified as moderate nonattainment areas.[39]

For their 2009 recommendations, the States generally relied upon 2008 design values. Three monitors in the 1997 Washington DC-MD-VA nonattainment area had a design value of 0.087 ppm (for 2006-2008) which set the design value within the 1997 Washington DC-MD-VA nonattainment area at 0.087 ppm. The Edgewood site in Harford County, MD had a design value for the same period of 0.091 ppm which set the design value within the 1997 Baltimore nonattainment area at 0.091 ppm. The difference in 2008 design values between these two nonattainment areas designated under the 1997 ozone NAAQS was still 0.004 ppm.

Currently, for the period 2008-2010, the difference in design values for these two monitors has grown to 0.008 ppm.

The trend in design values has been downward since 2003. In 2008, no monitor in the current Baltimore and Washington DC-MD-VA nonattainment areas were attaining the 2008 NAAQS of 0.075 ppm; nor was the monitor in the Fredericksburg, VA Area. Now some of the counties and cities on the edge are attaining the 2008 NAAQS, and some interior areas, such Alexandria City, VA and Montgomery County, MD, are as well. Admittedly, due to year to year fluctuations in weather from one ozone season to the next, the design values will also fluctuate in response, but over longer periods of time a definite overall trend will be apparent if there is progress. The counties and cities in the Washington-Baltimore-NV CSA saw a decrease in design values of 0.006 to 0.014 ppm over the period 2003 to 2008. Most counties and cities in the Washington-Baltimore-NV CSA over the last two years (2008 to 2010) saw design value decreases of 0.006 to 0.011 ppm; however, during the last two years, two saw decreases of only 0.002 ppm. These were the monitors in Harford and Charles Counties in Maryland.

Of particular note are the design values in Frederick and Charles Counties in Maryland. These are within 0.002 ppm of attaining the 2008 NAAQS. As such, these counties might be classified as marginal nonattainment areas if each were a separate nonattainment area. The CAA contains a presumption that marginal areas are expected to attain the relevant ozone NAAQS without any additional controls beyond those already promulgated; currently promulgated federal mobile source measures are one source of reductions available for marginal areas to attain the 2008 NAAQS and continue to occur as the fleet of older highway motor vehicles and other mobile source engines are

[37] "Chapter 2 8-Hour Ozone Nonattainment Designations and Classifications" docket item EPA-HQ-OAR-2003-0083-1812 in docket EPA-HQ-OAR-2003-0083 (downloaded November 15, 2011) and available on-line at Regulations.gov (http://www.regulations.gov).

[38] *Ibid.*

[39] *Ibid.* See also, 69 FR 23858, April 30, 2004.

replaced by new highway motor vehicles and other mobile source engines required to meet newer, more stringent emission standards.

Also of note is the apparent trend at the Davidsonville monitoring site in Anne Arundel County, MD. The trend at this monitor seems to track that of the current Washington DC-MD-VA nonattainment area. In 2003, this monitor's design value was 0.001 ppm less than the design value of 0.099 ppm for Arlington County, VA and 0.005 ppm of that in Harford County, MD (which established the design value for the 1997 Baltimore nonattainment area). In 2008 this monitor's design value was equal to that for the 1997 Washington DC-MD-VA nonattainment area and 0.004 ppm less than that of Harford County. For 2010, this monitor's design value was 0.002 ppm less than the design value of 0.081 ppm in Fairfax County, VA,[40] and 0.010 ppm of that in Harford County, MD. This monitor seems to track (that is, is always equal or less than) the peak in the current Washington DC-MD-VA nonattainment area and, as with the peak in the current Washington DC-MD-VA nonattainment area, has diverged from the trend in the Harford County, MD. Such a result might suggest that the air quality data at the monitor in Anne Arundel County is more influenced by emissions in the current Washington DC-MD-VA nonattainment area than emissions in the rest of the current Baltimore nonattainment area.[41]

The 2008 to 2010 air quality data strongly suggest that there are two main peak points of ozone concentrations in the Washington-Baltimore-NV CSA. The first is in Harford County, Maryland in the northeast of the Washington-Baltimore-NV CSA. The second peak area is located at the Fairfax County monitor in Virginia and this peak extends into Arlington County, VA, the District of Columbia and possibly into Anne Arundel County Maryland.

A similar situation existed in 2004 when EPA designated areas for the 1997 ozone NAAQS. Harford County had the highest design value (0.103 ppm) of any monitor in the current CSA. Arlington County had the highest design value (0.099 ppm) in the 1997 Washington DC-MD-VA nonattainment area; Fairfax County, VA and Anne Arundel County, MD both had design values close (0.097 and 0.098 ppm, respectively) to that in Arlington County, VA.

For 2008, the pattern was repeated. Harford County had the highest design value (0.091 ppm) of any monitor in the current CSA. Fairfax County, VA, the District of Columbia and Prince George's County, MD all had the highest design (0.087 and 0.098 ppm, respectively) in the 1997 Washington DC-MD-VA nonattainment area and Anne Arundel County, MD had the same design value. All monitors in the 1997 Washington DC-MD-VA nonattainment area are showing currently attainment of the 1997 ozone NAAQS. Except for the monitors in Harford County, MD all other monitors (including that in Anne Arundel County, MD) in the 1997 Baltimore MD nonattainment area are currently showing attainment of the 1997 ozone NAAQS.

The design values in this CSA over the last 7 years suggested that there are two central peak areas of nonattainment within the Washington-Baltimore-NV CSA. The first is in Harford County, MD in the far northeast portion of the Washington-Baltimore-NV CSA. The second is in the vicinity of Fairfax and Arlington Counties in Virginia and extends into the District of Columbia, and into Anne Arundel and Prince George's Counties in Maryland. See Figure 2a.

[40] The Preliminary TSD for the December 9, 2011 letters sent to the States incorrectly stated this Davidsonville monitor was 0.002 ppm less than the design value in Arlington County.

[41] As will be discussed under Factor 3 – Meteorology – consideration of prevailing winds on exceedance days support a conclusion that this monitor is more closely tied to the rest of the Baltimore area but also in part to Montgomery and Prince George's Counties in Maryland.

Detailed Analysis based Upon Exceedance Day Values:

EPA received comments from Maryland, the public and others regarding the adequacy of surface wind roses to represent wind patterns on days the 2008 ozone NAAQS is exceeded.[42] As a result of such comments, EPA re-evaluated the five-factors for this CSA in light of meteorology data resulting from use of the National Oceanic and Atmospheric Administration's (NOAA) Hybrid Single Particle Lagrangian Integrated Trajectory (HYSPLIT) Model to supplement the Factor 3 Meteorology portion of the analysis of the Preliminary TSD.[43]

To allow consideration of air movement above the surface layer we ran the HYSPLIT model to obtain trajectories for three heights – 100 meters, 500 meters and 1,000 meters. We ran the HYSPLIT to obtain 1,000 meter runs in order to better understand aloft movement of air that can be expected to mix down as the night-time inversion breaks-up. EPA considered 5 years, 2006 through 2010 inclusive, of exceedance day data of complete, certified data for the current monitors in the CSA. Due to the number of monitors and exceedance days (over 980 monitor-day combinations) EPA did not (and could not due to time constraints) run trajectories for each exceedance day at each monitor in the CSA.

To narrow down the level of effort, EPA examined the air quality data (Factor 1) in more detail.

We examined the 2006 to 2010 8-hour ozone concentrations for the monitors in the "violating center"[44] of the CSA and grouped the data by days when the 2008 ozone NAAQS was exceeded. When selecting monitors for which to run the HYSPLIT model EPA had to consider the density of the monitoring network and the following issues:

(1) a needed decision to designate all or a substantial portion of this CSA as one nonattainment area as recommended by two States or split the CSA into more than one nonattainment and attainment areas as recommended by two States;
(2) the need to develop a conceptual model of the relationship between meteorology (wind directions on exceedance days) and ozone concentrations within the CSA in light of Maryland's (and other parties') comments on meteorology;
(3) the observation that the design value for the current Washington DC-MD-VA nonattainment area by the Davidsonville monitor in Anne Arundel County "tracks" that in the 1997 Washington DC-MD-VA nonattainment area indicating this county may be linked to emission in this area;
(4) comment by the States that EPA's preliminary analysis[45] appeared to indicate that counties forming the borders between the Baltimore-Towson and the Washington DC-MD-VA-WV CBSAs, such as, Anne Arundel County, Prince George's County and others could be placed in more than one nonattainment area and thus the CSA should contain one nonattainment area;[46]
(5) Maryland's comment that the uniformity of design values across the CSA for all monitors except the Edgewood monitor demonstrates that the two regions should be designated as one nonattainment area; and,

[42] For example, refer to documents EPA-HQ-OAR-2008-0476-0405 and EPA-HQ-OAR-2008-0476-0456 and to the Response to Public Comments Document] in the docket for this action.

[43] "Preliminary Technical Support Document, December 2011, entitled, Maryland Area Designations for the 2008 Ozone National Ambient Air Quality Standards, prepared by the Region 3 USEPA" document number EPA-HQ-OAR-2008-0476-0235 in the docket for this action.

[44] Basically all monitors in the CSA were considered except the monitor in Frederick County, VA.

[45] For example, refer to Preliminary Technical Support Document, December 2011, entitled, "Maryland Area Designations for the 2008 Ozone National Ambient Air Quality Standards," prepared by US EPA Region 3 which is document number EPA-HQ-OAR-2008-0476-0235 in the docket for this action. Similar TSDs were prepared for EPA's December 9, 2011 responses to the District of Columbia and to Virginia – refer to document numbers EPA-HQ-OAR-2008-0476-0231 and EPA-HQ-OAR-2008-0476-0237.

(6) Maryland's extensive information on meteorological and related geographical factors regarding transport in general and frequency and severity of exceedances at the Edgewood monitor.

To consider these issues and State submitted data, EPA therefore needed to examine the air quality data in vastly more detail than in the case of many other areas in the country where perhaps there is only one violating monitor, perhaps the relationship between a few counties' emissions and one or only one or two monitors are at issue, or where substantial geographic barriers constrain air movement.

EPA obtained the 2006 through 2010 (inclusive) air quality monitoring data for each monitor by day for the Baltimore CBSA and for the Washington DC-MD-VA-WV CBSA. This data provides the 2006 through 2010 data for all the violating monitors currently in the CSA. This data was downloaded on February 1, 2012, from http://www.epa.gov/airdata/ad_data_daily.html by selecting "Ozone" for the "Pollutant," "2006, 2007, 2008, 2009 or 2010" (as applicable) for the "Year," "Baltimore-Towson, MD" or "Washington-Arlington-Alexandria DC-MD-VA-WV" for "Select a City (defined as a CBSA)," and "All Sites" for the "Monitor Site" (with exceptional events data). A copy of the downloaded spreadsheet files has been placed in the docket for this action. This 2006 through 2010 (inclusive) data also includes daily 8-hour maximum ozone concentrations for the monitors in the CSA close to exceeding the 2008 ozone NAAQS such as those in Charles, Frederick and Montgomery Counties in Maryland, Loudoun County and Alexandria City in Virginia, the Takoma monitor in the District as well as many monitors with design values at or below 0.070 ppm. The only monitor within the CSA for which EPA did not obtain daily 8-hour maximum ozone concentrations for 2006 through 2010 was that in Frederick County, VA.[47] In the 2006 to 2010 (inclusive) period for the monitors examined, EPA identified over 980 distinct instances of monitor-days.

Extraction and Grouping by Episodes:

EPA extracted for each monitor the date and the maximum 8-hour ozone concentration and grouped these by "episode." In this document an "exceedance day" is for a monitor a day or date on which that monitor recorded a maximum 8-hour ozone concentration at or above 0.076 ppm. For the CSA or a CBSA, an exceedance day is a day or date on which at least one monitor in that CSA or CBSA, respectively, recorded a maximum 8-hour ozone concentration at or above 0.076 ppm. An "episode" is a period of at least one day or more than one consecutive days on which at least one monitor in the CSA or a CBSA recorded a maximum 8-hour ozone concentration at or above 0.076 ppm.

Summary data for each episode in the years 2006, 2007, 2008, 2009 and 2010 is provided in Table A2-1 of Appendix 2 of this document. For each exceedance day for the CSA, the maximum 8-hour ozone concentration is provided for each monitor exceeding the 2008 ozone NAAQS (that is, a value of 0.076 ppm or more) for each monitor EPA has provided the following subset of data: the date, the AQS ID No. (expressed with hyphens, e.g., 24-025-1001 versus 240251001), the maximum 8-hour ozone concentration, the units of measure (ppm), the corresponding daily Air Quality Index (AQI) value the number of daily 1-hour ozone readings ("Daily Obs Count") and percent completeness ("Percent Complete") for that day, the AQS parameter code and description ("Descript"), the name of the State and the name of the County or City in which the monitor is located. The data is arranged by year, by date and grouped by episode. The data in this Table A2-1 is only for those monitors in place as of 2008

[47] EPA did not obtain this due to the parameters EPA used to filter the data; EPA filtered the AQS data by specifying by "Select a City (defined as a CBSA)." EPA did not intend to examine the air quality on a day by day basis for monitors with a design value at or below 0.070 ppm because these were well below the NAAQS and because EPA obtained the day by day data for the purpose of identifying the days the ozone NAAQS was exceeded for those monitors violating the 2008 ozone NAAQS. Therefore, EPA did not exclude the data for Frederick County, VA but rather incidentally obtained the day by day data for the other monitors with a design value well below the 2008 ozone NAAQS.

to 2010 because these are the monitors the design values of which were used to determine which monitors and counties contained a violating monitor.

Table A2-2 in Appendix 2 to this document contains a subset of the episode days listed in Table A2-1 for the three year period 2008 to 2010. EPA chose episodes from 2008 to 2010 because this was the most recent three year period of certified data available. Unlike Table A2-1 which provides data for only monitors that exceeded 0.075 ppm on a day, Table A2-2 also has the maximum 8-hour ozone concentration for all monitors in the Baltimore-Towson and Washington DC-MD-VA-WV CBSAs.

For each monitor EPA has provided the following subset of data: the date, the AQS ID No. (expressed with hyphens, e.g., 24-025-1001 versus 240251001), the maximum 8-hour ozone concentration, the units of measure (ppm), the corresponding daily Air Quality Index (AQI) value, the number of daily 1-hour ozone readings ("Daily Obs Count") and percent completeness ("Percent Complete") for that day, the AQS parameter code and description ("Descript"), the name of the State and the name of the County or City in which the monitor is located. The data is arranged by year, by date and grouped by episode. EPA chose episodes that represented a variety of wind patterns as predicted by the HYSPLIT model and chose episodes that represented the worst conditions based upon length of the episodes in days, the number of different monitors recording an exceedance on at least one day of the episode, and the maximum concentrations recorded by monitors.[48] EPA also chose other episodes during which the Edgewood monitor recorded an exceedance because Maryland presented extensive data regarding meteorological-topographical factors that disproportionately affect that monitor. EPA therefore obtained HYSPLIT model back-trajectories predictions for virtually all (if not all) exceedance days for this monitor. The purpose of examining a subset of all the episodes was to examine the concentration gradients occurring within the CSA and the concentrations measured on the ground at the monitors predicted to be on the up-wind boundary of the CSA. EPA examined these to see if the Edgewood monitor was atypical in that it might record higher concentrations than other monitors in close proximity and to see how ozone concentrations waxed and waned in relation to the more densely populated/higher emissions counties and cities within the CSA and in relation to upwind-edge and downwind-edges of the CSA. EPA performed these analyses because a simple design value plot across the CSA does not represent daily, peak, 8-hour ozone concentration gradients except only on a very gross level of resolution as a design value represents a three-year average of only one value per year for each monitor.

Maryland also submitted its analysis of transport of ozone across various boundaries – CBSA and, State – and scales – city-to-city and from Missouri to Maryland (discussed further under Factor 3 – Meteorology). Maryland provided its analysis of the "elevated reservoir" and cited three monitors in close proximity that are located at high-elevations (relatively to monitors within the CSA).[49] These monitors are the "Piney Run" monitor (AQS ID No. 24-023-0002) in Garrett County, MD, the "Big Meadows" monitor (AQS ID No. 51-113-0003) within the Madison County portion of Shenandoah National Park (SNP), and the "Methodist Hill" monitor (AQS ID No. 42-055-0001) in Franklin County, PA. EPA therefore examined 2008 to 2010 data for these monitors and placed the entire 2008 to 2010 monitoring data in the docket for this action. A subset of this data is provided in Table A2-3 in Appendix 2 of this document. This subset is for the episode days of the 2008 to 2010 episodes listed in Table A2-1 and in cases for the day before the start of the episode. For each monitor EPA has provided the following subset of data: the date, the AQS ID No. (expressed with hyphens, e.g., 24-025-1001

[48] In some respects these criteria are all inclusive in that examination of the episode data in Table A2-1 will show that the largest number of different monitors exceeding 0.075 ppm and the higher concentrations are found on days during multi-day episodes. Extra weight was given to an episode if a monitor recorded a concentration that was among the four-highest for that monitor during that year.

[49] For example, refer to page 17 of "Moving Forward to Address Regional Transport," Tad Aburn - Air Director, MDE, February 8, 2012 - MARAMA Science Meeting, a copy of which has been placed in the docket.

versus 240251001), the maximum 8-hour ozone concentration, the units of measure (ppm), the AQS parameter code and description ("Descript"), the name of the State and the name of the County or City in which the monitor is located. The data is arranged by date.

In past designations, EPA has rarely considered this level of detail for every designation decision, but to reiterate, the decisions for this CSA are not typical due to: the State submitted information regarding meteorology and its effects on the Edgewood monitor; the differing recommendations by two States seeking a single nonattainment area for the CSA and another two seeking retention of the 1997 Washington DC-MD-VA nonattainment boundaries.

Design value and exceedance day trends for the 2006 to 2010 period:

As noted in Tables 2 and 5, the highest design value for the Washington-Baltimore-NV CSA is and has been set by the Edgewood monitor in Harford County, MD. The same monitor sets the design value (DV) for the 1997 Baltimore nonattainment area. For the 1997 Washington DC-MD-VA nonattainment area, the location of the design value monitor has shifted over time. For 2008-2010, the Franconia monitor in Fairfax County, VA has a DV of 0.081 ppm. Based upon the 2008-2010 DVs, other monitors in this CSA with a DV close to the Franconia monitor are the Davidsonville, McMillan Reservoir and Arlington monitors, each with a DV of 0.079 ppm. Close behind are the Aldino, Howard U.–Beltsville and Essex monitors each with a DV of 0.078 ppm.

Table 6 provides the DVs for these monitors and a few others since the 2006 to 2008 period:

Table 6. Design Values for Select Monitors

			Design value (ppm)		
State	Monitor	AQS ID No.	2006-2008	2007-2009	2008-2010
District of Columbia	McMillan Res	110010043	0.087	0.080	0.079
Anne Arundel	Davidsonville	240030014	0.087	0.080	0.079
Baltimore	Essex	240053001	0.085	0.078	0.078
Harford	Edgewood	240251001	0.091	0.087	0.089
Harford	Aldino	240259001	0.089	0.082	0.078
Prince George's	HU-Beltsville	240330030	0.083	0.078	0.078
Prince George's	Pr Geo. Eq. Ctr.	240338003	0.087	0.078	0.077
Arlington	Arlington	510130020	0.085	0.079	0.079
Fairfax	Franconia	510590030	0.085	0.080	0.081

Data Sources:
dv_ozone_2006_2008.xls (downloaded on 11/29/2011 from http://www.epa.gov/airtrends/values.html).
Ozone_DesignValues_20072009_FINALr03dec10.xls (downloaded on 3/30/2012 from http://www.epa.gov/airtrends/values.html)
ozone_dv75_20082010.xls (downloaded on 9/22/2011 from http://www.epa.gov/airtrends/values.html.

For the same set of monitors, Table 7 provides the approximate number of exceedances of the 0.075 ppm standard per year.

Table 7. Approximate Number of Exceedance Days per Year for Select Monitors[50]						
Monitor	AQS ID No.	2006	2007	2008	2009	2010
McMillan Res.	11-001-0043	22	14	8	2	16
Davidsonville	24-003-0014	14	20	13	0	12
Essex	24-005-3001	19	13	11	1	15
Edgewood	24-025-1001	21	24	15	9	27
Aldino	24-025-9001	17	22	13	2	8
HU-Beltsville[51]	24-033-0030	22	14	9	1	16
Pr Geo. Co. Eq. Ctr.	24-033-8003	16	17	10	0	9
Arlington	51-013-0020	17	19	8	2	13
Franconia	51-059-0030	18	14	6	1	13

Table 8 provides the approximate number of exceedances for the 3-year periods 2006 to 2008, 2007 to 2009, 2008 to 2010 and grand total for 2006 to 2010:

Table 8. Approximate Number of Exceedances for Select Monitors[52]					
		Approximate Number of Exceedances			
Monitor	AQS ID No.	2006-2008	2007-2009	2008-2010	2006-2010
McMillan Res.	11-001-0043	44	24	26	62
Davidsonville	24-003-0014	47	33	25	59
Essex	24-005-3001	43	25	27	59
Edgewood	24-025-1001	60	48	51	96
Aldino	24-025-9001	52	37	23	62
HU-Beltsville	24-033-0030	45	24	26	62
Pr Geo. Co. Eq. Ctr.	24-033-8003	43	27	19	52
Arlington	51-013-0020	44	29	23	59
Franconia	51-059-0030	38	21	20	52

Data Sources:

[50] Derived by manual sorting and compiling of the data in Table A2-1 in Appendix 2 to this document. Numbers may therefore be approximate only.

[51] Short for Howard University – Beltsville.

[52] Derived by manual sorting and compiling of the data in Table A2-1 in Appendix 2 to this document. Numbers may therefore be approximate only.

(1) Files Balt-Tow CBSA 2006 ad_viz_plotval_data.csv, Balt-Tow CBSA 2007 ad_viz_plotval_data.csv, Balt-Tow CBSA 2008 ad_viz_plotval_data.csv, Balt-Tow CBSA 2009 ad_viz_plotval_data.csv and Balt-towson CBSA 2010 ad_viz_plotval_data.csv downloaded from http://www.epa.gov/airdata/ad_data_daily.html by selecting "Ozone" for the "Pollutant," "2006, 2007, 2008, 2009 or 2010" for the "Year," "Baltimore-Towson, MD" for "Select a City (defined as a CBSA)," and "All Sites" for the "Monitor Site" (with exceptional events data).

(2) Files Wash-AADC CBSA 2008 ad_viz_plotval_data.csv, Wash-AADC CBSA 2007 ad_viz_plotval_data.csv, Wash-AADC CBSA 2008 ad_viz_plotval_data.csv, Wash-AADC CBSA 2009 ad_viz_plotval_data.csv and Wash-AADC CBSA 2010 ad_viz_plotval_data.csv downloaded from http://www.epa.gov/airdata/ad_data_daily.html by selecting "Ozone" for the "Pollutant," "2006, 2007, 2008, 2009 or 2010" for the "Year," "Washington-Arlington-Alexandria DC-MD-VA-WV" for "Select a City (defined as a CBSA)," and "All Sites" for the "Monitor Site" (with exceptional events data).

(3) All files downloaded February 1, 2012.

A few conclusions that can be drawn from Tables 6, 7 and 8 are:

(1) From Table 7 – 2009 had an atypically low number of exceedances.
(2) From Table 6 – As a result of the 2009 ozone season data the design values dropped at all monitors for the period 2007 to 2009 from those in 2006-2008.
(3) From Table 6 – The difference between the Edgewood monitor and the highest design values in the Washington DC-MD-VA-WV CBSA grew from 0.004 ppm (0.091 – 0.087) for the 2006 to 2008 period to 0.008 ppm (0.087 – 0.080) for the 2007 to 2009 period.
(4) From table 7 – The number of exceedances per monitor in 2010 returned to levels somewhere between the levels of 2007 and 2008 except for the Edgewood monitor which had more exceedances in 2010 than any other year in the period before 2009.
(5) From Table 6 – Except for the Franconia and Edgewood two monitors, in spite of the increase in number of exceedances in 2010, design values for the period 2008 to 2010 remained stable or dropped in comparison to the period for 2007 to 2009. The Franconia monitor saw an increase of 0.001 ppm; for the Edgewood monitor the increase was 0.002 ppm.
(6) From Table 6 – The difference between the Edgewood monitor and the highest design value(s) in the Washington DC-MD-VA-WV CBSA grew from 0.007 ppm (0.087 – 0.080) for the 2007 to 2009 period to 0.008 ppm for the 2008 to 2010 period.
(7) From Table 7 – Prior to 2009, the Edgewood monitor was ranked first or second in number of exceedances per year and had a comparable number of exceedances per year to the next lower or higher ranked monitor (21 versus 22; 24 versus 22, and 15 versus 13).
(8) From Table 7 – For 2009 and after, the Edgewood monitor had far more exceedances by a factor of 4.5 (9 versus 2) times for 2009 and 1.6 times (27 versus 16) of the next highest monitor.
(8) From Table 8 – For any three-year period during 2006 through 2010, the Edgewood monitor has always had the most exceedances over any three-year period; one might expect the monitor with the higher design values to have more exceedances but this does not always hold up. For the 2007 to 2009 period, all the monitors within the Washington DC-MD-VA-WV CBSA listed in Tables 6 through 8 and the Davidsonville monitor had more exceedances in this period but had equal or lower design values for 2007 to 2009 than the Franconia monitor. For 2008 to 2010, the Franconia monitor had fewer aggregate exceedances than all but one[53] of the monitors within the Washington DC-MD-VA-WV CBSA and the Davidsonville monitor but still had a higher design value.
(9) The Edgewood monitor did not respond the same to whatever affected the design values and number of exceedances in 2009 and 2010 at other monitors.

By all accounts 2009 was a mild year insofar as conditions for ozone formation as shown by the number of exceedances recorded at various monitors. But the Edgewood monitor is the only one which recorded over four concentrations over 0.075 ppm during the 2009 ozone season.

[53] That being the Prince George's County Equestrian Center monitor.

In the current Baltimore-Towson CBSA as well as the CSA, the Edgewood monitor stands apart in both its current design value and number of exceedances in any three year period It has one and one-half times as many exceedances over the five-year period 2006 to 2010.

In the current Washington DC-MD-VA-WV CBSA, the Franconia monitor currently sets the DV for this area but has not always done so as shown in Table 6 and has not had the most exceedance days in any year nor any 3- or 5-year period.

Basic Statistics for the Edgewood monitor in Harford County, MD:

The number of exceedance days for the Edgewood monitor was counted to be 96 for the 5-year period 2006 through 2010. EPA decided that these should be grouped somehow to make displaying the back-trajectories for more than one day easier to understand because for the 5-year period 2006 through 2010 there would be 288 (96 x 3) back-trajectories if all three altitudes for all days were displayed in one overlay. One way to analyze the exceedance data is to perform some basic statistical analyses on the data. Using the five years of data for the Edgewood monitor the mean, the median and the standard deviation were determined. The mean value of the exceedances is 0.0858 ppm, the median 0.085 ppm and the standard deviation is 0.008066 ppm[54] (8 ppb). The distribution is somewhat skewed in that 50 values are below the mean and 46 are above the mean. The highest value, 0.113 ppm, is over 3 standard deviations from the mean whereas the lowest values, 0.076 ppm, lay only about 1.2 standard deviations off the mean.[55] However, 14 values are greater than the mean value plus 1 standard deviation (a value of 0.0939 ppm), and, 14 values are less than the mean value minus 1 standard deviation (a value of 0.077 ppm). Placing the data into quintiles[56], the values would be as follows:

Table 9. Quintiles for the Edgewood monitor.	
Group	Ozone concentration range
1. Bottom Quintile	0.076-0.078 ppm
2. Lower Quintile	0.079 to 0.082 ppm
3. Middle Quintile	0.082 to 0.087 ppm
4. Upper Quintile	0.087 to 0.090 ppm
5. Top Quintile	0.091 ppm or more

Because several quintiles would contain concentrations of 0.082 and 0.087 ppm, the data was split into the following five groups such that each group was defined by a unique range of concentrations. The final grouping selected was as follows:

Table 10. Quintiles for the Edgewood monitor.		
Group Number	Ozone concentration range	Number of values in Group
1. Bottom Quintile	0.076-0.078 ppm	19
2. Lower Quintile	0.079 to 0.082 ppm	16
3. Middle Quintile	0.082 to 0.087 ppm	21

[54] Using the Microsoft® Office Excel® "STDEV()" function.

[55] No doubt this fact could be due wholly or in part to fact that the mean and standard deviation were computed for only those values above the fixed value of 0.075 ppm of the entire set of ozone concentration readings.

[56] When distributed in groups of 19, 19, 20, 19 and 19.

4. Upper Quintile	0.087 to 0.090 ppm	21
5. Top Quintile	0.091 ppm or more	19

The data for this section was manually extracted from the data in Table A2-1 of Appendix 2 to this document. The full listing of Edgewood exceedance days upon which the statistics were based can be found in Tables A2-4 in Appendix 2 to this document. Numbers may therefore be approximate only.

Episodes per Year and Length of Episodes

As defined earlier in this document, an exceedance day is any day during which at least one monitor in the CSA recorded an 8-hour ozone concentration of 0.076 ppm or more. An ozone episode is a period of one or more consecutive days during which at least one exceedance was recorded in the CSA. The following table provides some summary statistics for exceedance days and episodes for the CSA for the period 2006-2010 (all data approximate).

Table 11. Episodes and Exceedance Days per Year 2006 to 2010[57]

Year	Number of Episodes	Number of Exceedance days	Length of Longest Episode(s)	Dates of Longest Episode(s)
2006	15	38	5 days	5/28-6/1; 7/17 to 7/21 and 8/22 to 8/26
2007	16	51	8 days	7/31 to 8/7
2008	16	25	4 days	7/15 to 7/18
2009	8	10	2 days	6/25 to 6/26
2010	20	42	7 days	8/28 to 9/3
Totals 2006 to 2010	65	166	8 days	- - - -

Severity of Episodes:

If exceedances of or greater than 0.095 ppm (the mean plus more than one standard deviation for the Edgewood data) are considered to be "especially high," then the monitors in the CSA recorded the following during the period 2006 to 2008:

Table 12. Episodes with Any Exceedance Day over 0.094 ppm[58]

Year	Dates	Peak Concentration	At Monitor (AQS ID #)	Number of exceedances $\geq$ 0.095 ppm during the year	Number of Different Monitors recording Value $\geq$ 0.095 ppm

[57] Derived by manual sorting and compiling of the data in Table 2A-1 of Appendix 2 of this document. Numbers may therefore be approximate only.

[58] Derived by manual sorting and compiling of the data in Table 2A-1 of Appendix 2 of this document. Numbers may therefore be approximate only.

2006	5/28-6/1	0.116	Widewater (511790001)	12	11
2006	6/21-6/22	0.096	Pr. Geo. Co. Eq. Ctr[59] (240338003)	2	2
2006	7/17-7/21	0.118	Alexandria (515100009)	16	10
2006	8/22-8/26	0.098	Essex (240053001)	2	2
Totals for 2006				32	----
2007	5/29-6/1	0.100	Aldino (240259001)	1	1
2007	6/7-6/8	0.108	Aldino (240259001)	2	2
2007	6/18-6/19	0.103	Davidsonville (240030014)	3	3
2007	7/7-7/10	0.113 (2 monitors)	Aldino & Edgewood (240259001 &240251001)	2	2
2007	7/14-7/17	0.095	Arlington (510130020)	1	1
2007	7/31-8/7	0.118	Davidsonville (240030014)	4	4
Totals for 2007				13	
2008	6/10	0.099	Padonia (240051007)	1	1
2008	6/12-6/14	0.097	Padonia (240051007)	3	3
2008	7/11-7/12	0.100	Edgewood (240051001)	1	1
2008	7/15-7/18	0.104	Arlington (510130020)	6	6
Totals for 2008				11	
2009	6/25-6/26	0.109	Edgewood (240051001)	1	1
Totals for 2009					
2010	7/3-7/8	0.100	McMillan Reservoir (110010043)	4	4
2010	7/23	0.101	Edgewood (240051001)	1	1
2010	8/9-8/11	0.115	Essex (240053001)	6	5

[59] Short for Pr. Georges Co. Equestrian Ctr.

2010	8/28-9/3	0.098	Calvert Co. (240090011)	2	2
Totals for 2010				13	
Totals 2006 to 2010				70	19 different monitors

Of these 70 exceedances over 0.094 ppm, Edgewood monitor recorded 14 (20%). Prince George's Co. Equestrian Center and Davidsonville each recorded 6; McMillan, Essex and Arlington each recorded 5; Aldino and Fairfax each recorded 4; Howard U.–Beltsville and Widewater[60] each recorded 3; nine other monitors each recorded 2 or 1.[61]

Comparing Tables 11 and 12 the highest recorded value often occurs during the longest episode of the year. The longer episodes often have the largest number of monitors recording "especially high" concentrations. Once again, based upon the Tables 11 and 12, 2009 would seem to have been a mild year insofar as conditions for ozone formation.

Conversely, there were around 17 single day episodes where only one monitor within the entire CSA recorded an exceedance of the 0.075 ppm standard. The highest concentration recorded on such days was 0.083 ppm with most recorded exceedances at or below 0.079 ppm. Eight of such days were at the Edgewood monitor.[62] In addition there were around five single day episodes where only a pair of monitors "close" to each other each recorded an exceedance. Such parings are Edgewood-Padonia, Edgewood-Aldino, Edgewood-Essex, Southern Maryland-Calvert Co. and Davidsonville-Prince George's Co. Equestrian Center.

The air quality data shows that the CSA averages 13 episodes per year and 33.2 exceedance days per year for the period 2006 to 2010. The maximal length of the episodes ranges from 4 to 8 days (2009 excluded) and around four episodes per year where concentrations in excess of 0.094 ppm can be expected (2009 excluded).

The air quality data also shows that the Edgewood monitor is atypical; while it may not record the highest value in any given episode or year it is more likely to record an "especially high" value as reflected by its 2008-2010 DV of 0.089 ppm and its 20% share of "excessively high" values. This monitor also is more likely to record an exceedance and more likely to be the only monitor to record an exceedance during a single day episode.

Episode Days and Extent of Exceedances:

Examination of this data suggests that the CSA is subject to various regimes that result in varying patterns of ozone levels within the CSA:

On some days only one or a few monitors exceeded 0.075 ppm; on other days, the extent of exceedances was more widespread or extremely widespread with higher levels across most if not all of the CSA. On some days the highest readings were found at one end – either the North easternmost portion clustered around the monitors North and East of Baltimore City or around the District of Columbia's and Arlington and Fairfax Counties' monitors.

[60] None in 2008 or later.

[61] These were: South Carroll, Rockville, Southern Maryland, Alexandria, Padonia, Calvert Co., James S. Long Park, Asburn and Furley E.S. Rec Center.

[62] The only pother monitors with two such days were Aldino and Rockville; the Franconia, River Terrace, Howard U—Beltsville, Frederick County and Widewater monitors each had one.

Some other conclusions can be reached: generally, especially high concentrations (in this case using Edgewood monitors' "top quintile" threshold those over 0.091 ppm[63]) are often recorded on days which are part of a multi-day episode (that is, two or more consecutive days with at least one exceedance recorded at least one monitor within the CSA); there are exceptions such as on July 23, 2010 where "Edgewood" recorded a concentration of 0.101 ppm, and July 10, 2008, (0.099 ppm at the "Padonia" monitor in Baltimore County),

The Edgewood Monitor May be Atypical

The "Edgewood" monitor does appear to be out of the ordinary besides in other ways besides its design value: This monitor does not necessarily record the highest 8-hour concentration of any CSA monitor for an ozone season but clearly has had a 4th high value each season that is greater than on average than other nearby monitors. For the period 2006 to 2008, this monitor did not have a number of exceedance days that stood apart from other monitors – in 2006 "Edgewood" recorded 21 exceedances versus the maximum of 22 elsewhere,[64] in 2007 Edgewood recorded 24 exceedances versus the next highest number of 22, and in 2008 "Edgewood" recorded 15 exceedances versus the next highest number of 13[65].[66] After 2008, the "Edgewood" monitor did start to record a higher number of exceedances – 9 in 2009[67] versus a maximum of 2 at three other monitors and in 2010 "Edgewood" recorded 27 exceedances versus a maximum of 16 elsewhere.[68] This monitor represented about 20% of the days where only one monitor within the CSA exceeded 0.075 ppm. There are many days where this monitor recorded a peak 8-hour concentration 10, 20 or even 30 ppb (0.010, 0.020 and 0.030 ppm) higher than other close monitors such as the "Essex," "Aldino" and "Padonia" monitors in Harford and Baltimore Counties. Maryland in their March 7, 20102 five-factor analyses presented evidence that a related topographical-meteorological phenomenon combine at the Edgewood location to result in higher levels of daily ozone concentrations at the Edgewood monitor than otherwise might occur. These phenomenons are discussed under Factor 3 Meteorology below. The results presented in this paragraph would suggest that Maryland's conclusion could be is correct under certain conditions.

However, as stated previously in this document, a county/independent city (or partial county) must also be designated nonattainment if it contributes to a violation in a nearby area. Each county without a violating monitor that is located near a county with a violating monitor has been evaluated based on the weight of evidence of the five factors and other relevant information to determine whether it contributes to the nearby violation. In a CSA where counties with violating monitors are adjacent to each other and where EPA in the past concluded that there were two separate nonattainment areas, even a county with a violating monitor needs to be evaluated to see if that county sufficiently contributes to violations at another nearby, violating county. Such an evaluation can guide a decision on grouping counties with violating monitors to set the boundaries of a nonattainment area (or areas) containing more than one violating monitor.

Factor 2: Emissions and Emissions-Related Data

[63] In the aggregate, all monitors in the CSA recorded around 986 exceedances during 2006-2010 with the top 197 (essentially the top quintile) concentrations being 0.088 ppm or higher.

[64] At the "McMillan Reservoir" monitor in the District of Columbia and the "Howard University-Beltsville" monitor in Prince George's County, MD.

[65] At the "Davidsonville" and "Aldino" monitors in Anne Arundel and Harford Counties, Maryland, respectively.

[66] At the "Aldino" monitor also in Harford County, MD.

[67] 2009 was a year where a low number of exceedances were generally seen.

[68] At the "McMillan Reservoir" and the "Howard University-Beltsville" monitors.

EPA evaluated emissions of ozone precursors (NO_x and VOC) and other emissions-related data that provide information on areas contributing to violating monitors.

Emissions Data

All Emissions Aggregated at the County/City Level:

EPA evaluated county-level emission data for NO_x and VOC derived from the 2008 National Emissions Inventory (NEI), version 1.5. This is the most recently available NEI. (See, http://www.epa.gov/ttn/chief/net/2008inventory.html). Sufficiently high emissions levels in a nearby area indicate the potential for the area to contribute to monitored violations. We will also consider any additional information we receive on changes to emissions levels that are not reflected in recent inventories. These changes include emissions reductions due to permanent and enforceable emissions controls that will be in place before final designations are issued and emissions increases due to new sources.

Table 13 shows emissions of NO_x and VOC given in tons per year (tpy) for violating and potentially contributing counties in the 1997 Baltimore MD and Washington DC-MD-VA nonattainment areas and other portions of the Washington-Baltimore-NV CSA.

Table 13. Total 2008 NO_x and VOC Emissions.

County/City	State Recommended Nonattainment?	NO_x (tpy)	VOC (tpy)
Baltimore MD Nonattainment Area:			
Anne Arundel County Co., MD	Yes	30,541	14,423
Baltimore City, MD	Yes	18,621	11,397
Carroll County, MD	Yes	6,617	3,948
Harford County, MD	Yes	5,854	6,396
Howard County, MD	Yes	9,219	7,848
Baltimore County, MD	Yes	29,392	16,807
Baltimore Subtotal:		100,244	60,819
Washington DC-MD-VA Nonattainment Area:			
District of Columbia, DC	Yes	11,332	11,362
Calvert County, MD	Yes	2,797	2,406
Charles County, MD	Yes	5,823	3,939
Frederick County, MD	Yes	9,389	6,460
Montgomery County, MD	Yes	21,097	20,426
Prince George's County, MD	Yes	24,043	18,882
Arlington County, VA	Yes	5,264	4,329
Fairfax County, VA	Yes	21,403	25,603
Loudoun County, VA	Yes	6,948	7,331
Prince William County, VA	Yes	7,698	8,603
Alexandria City, VA	Yes	3,349	2,625
Fairfax City, VA	Yes	326	794

Falls Church City, VA	Yes	138	324
Manassas City, VA	Yes	553	1,020
Manassas Park City, VA	Yes	92	285
Washington DC-MD-VA Subtotal:		120,252	114,389

Table 13 (continued). Total 2008 NO_x and VOC Emissions.

County	State Recommended Nonattainment?	NO_x (tpy)	VOC (tpy)
Fredericksburg, VA Area:			
Spotsylvania County, VA	No	3,539	4,226
Stafford County, VA	No	3,377	3,516
Fredericksburg City, VA	No	859	1,007
Fredericksburg, VA Subtotal:		7,775	8,749
Frederick County, VA Area:			
Frederick County, VA	No	2,838	4,714
Winchester City, VA	No	508	1,006
Frederick Co., VA Area Subtotal:		3,346	5,720
Other counties:			
Queen Anne's County, MD	No	2,725	2,402
St. Mary's County, MD	No	3,475	4,038
Clarke County, VA	No	941	949
Culpeper County, VA	No	1,726	2,109
Fauquier County, VA	No	3,383	3,389
Warren County, VA	No	1,463	1,773
Hampshire County, WV	No	734	2,078
Jefferson County, WV	No	1,566	1,481
All other counties subtotal:		16,013	18,218
	CSA Total:	247,630	207,894

Data sources:

(1) NOx emissions (tpy)-NEI08v1.5 – Total NOx emissions include Nonpoint, Nonroad, Onroad and Facility NOx emissions from ftp://ftp.epa.gov/EmisInventory/2008_nei/v1.5_GPR (May 19, 2011).
(2) VOC emissions (tpy)-NEI08v1.5 –Total VOC emissions include Nonpoint, Nonroad, Onroad and Facility VOC emissions from ftp://ftp.epa.gov/EmisInventory/2008_nei/v1.5_GPR (May 19, 2011)

In their March 7, 2012 submittal, Maryland supplied an amended inventory for certain Maryland counties to reflect the 2009 EGU emission caps imposed under the Maryland Healthy Air Act and implementing regulation.[69] The following Table 14 shows the effects that Maryland claimed.

Table 14. Total 2008 NO_x and VOC Emissions.

County/City	State Recommended Nonattainment?	NO_x (tpy)	VOC (tpy)
Baltimore MD Nonattainment Area:			
Anne Arundel County Co., MD	Yes	**22,110**	14,423
Baltimore City, MD	Yes	18,621	11,397
Carroll County, MD	Yes	6,617	3,948
Harford County, MD	Yes	5,854	6,396
Howard County, MD	Yes	9,219	7,848
Baltimore County, MD	Yes	**25,736**	16,807
Baltimore Subtotal:		**88,157**	60,819
Washington DC-MD-VA Nonattainment Area:			
District of Columbia, DC	Yes	11,332	11,362
Calvert County, MD	Yes	2,797	2,406
Charles County, MD	Yes	5,823	3,939
Frederick County, MD	Yes	9,389	6,460
Montgomery County, MD	Yes	**18,415**	20,426
Prince George's County, MD	Yes	**19,793**	18,882
Arlington County, VA	Yes	5,264	4,329
Fairfax County, VA	Yes	21,403	25,603
Loudoun County, VA	Yes	6,948	7,331
Prince William County, VA	Yes	7,698	8,603
Alexandria City, VA	Yes	3,349	2,625
Fairfax City, VA	Yes	326	794
Falls Church City, VA	Yes	138	324
Manassas City, VA	Yes	553	1,020
Manassas Park City, VA	Yes	92	285
Washington DC-MD-VA Subtotal:		**113,320**	114,389
Fredericksburg, VA Subtotal:		7,775	8,749
Frederick Co., VA Area Subtotal:		3,346	5,720
All other counties subtotal:		16,013	18,218
	CSA Total:	**228,611**	207,894

[69] Refer to regulation COMAR 26.11.27.01 through .04, and .06 "Emission Limitations for Power Plants" in the codification of the Maryland SIP at 40 CFR 52.1070(c) and also to 73 FR 51599, September 4, 2008.

The net overall effect is minimal in that the rankings by NOx overall emissions drop Montgomery County out of the top five and raises Baltimore City, MD from sixth to fifth as shown in Table 15.

Table 15. Ranking and NOx emissions of the Top Six NOx Emissions Counties

Area	Maryland Adjusted Value (tpy)	New Rank	2008 NEI Value (tpy)	Prior Rank
Baltimore County, MD	**25,736**	1	29,392	2
Anne Arundel County Co., MD	**22,110**	2	30,541	1
Fairfax County, VA	21,403	3	21,403	4
Prince George's County, MD	**19,793**	4	24,043	3
Baltimore City, MD	18,621	5	18,621	6
Montgomery County, MD	**18,415**	6	21,097	5

For NOx emissions, in the following discussion the 2008 NEI value or ranking will be in braces "{}". The 1997 Washington DC-MD-VA nonattainment area contains 49.6 % {48.5%} of the Washington-Baltimore-NV CSA's total NOx emissions and 55% of the Washington-Baltimore-NV CSA's total VOC emissions.

The 1997 Baltimore nonattainment area contains 38.6% {40.5%} of the Washington-Baltimore-NV CSA's total NOx emissions and 29% of the Washington-Baltimore-NV CSA's total VOC emissions. Together the 1997 Washington DC-MD-VA and Baltimore nonattainment areas contain 88.1% {89%} of the Washington-Baltimore-NV CSA's total NOx emissions and 84% of the Washington-Baltimore-NV CSA's total VOC emissions.

In the Washington-Baltimore-NV CSA, Anne Arundel, Baltimore, Prince George's and Montgomery Counties in Maryland, Baltimore City, MD and Fairfax County in Virginia comprise the "top six" [70] when ranking by VOC or by NOx emissions (with first being highest). Using the 2008 NEI data an area was in the "top five" within the Washington-Baltimore-NV CSA if it has NOx emissions of more than 20,000 tpy or VOC emissions of more than 14,000 tpy. Using Maryland's revised values, the difference between fifth and sixth for NOx emissions is insubstantial – only 1.1% of 18,415 tons per year. All of these areas contain a violating monitoring or are adjacent to at least one county with at least one monitor violating the 2008 ozone NAAQS.

The following comprise the next five highest ranked (that is, numbers 7 through 11 within the Washington-Baltimore-NV CSA) for VOC or NOx emissions (not listed in order of ranking): Frederick

[70] The groupings by ranking were set to divide the 34 jurisdictions into four groups. To some extent the groups fell out naturally and are composed as follows: The same five jurisdictions ranked first to fifth for both NOx and VOC emissions and thus defined the "top five." The same six jurisdictions fell within a rank of sixth through eleventh for both NOx and VOC emissions and thus defined the second group of sixth through eleventh. A "middle group" of those ranked between 12th and 23rd inclusive included the same twelve jurisdictions where: Calvert County, MD ranked at 22nd for both NOx and VOC emissions; and Queen Anne's County, MD ranked at 23rd for both NOx and VOC emissions. Jurisdictions with less than approximately 2,500 tpy NOx or 2,200 tpy VOC represent less than one per of the CSA total emissions and comprise those areas ranked 24th or lower.

and Howard Counties in Maryland, the District of Columbia, and, Loudoun and Prince William Counties in Virginia. An area ranking 7th through 11th within the Washington-Baltimore-NV CSA needed to have NOx emissions of between 6,900 and 11,332 tpy or VOC emissions of between 6,400 and 14,000 tpy. Of these, only the District of Columbia has two of three monitors violating the 2008 ozone NAAQS. Loudoun County, VA and Frederick County each has a monitor with a design value of 0.075 ppm which is only one ppm from violating the 2008 ozone NAAQS. All are adjacent to one or more counties or the District of Columbia which contain at least one monitor violating the 2008 ozone NAAQS.

Of these "top 11" counties for emissions, Frederick, Montgomery, Prince George's Counties in Maryland, the District of Columbia, and, Fairfax and Loudoun Counties in Virginia are clustered around the Fairfax County monitor which has a design value of 0.081 ppm.

Of the top eleven, only Baltimore County, MD is adjacent to Harford County, MD which contains the Edgewood monitor which has a design value of 0.089 ppm.

The low emissions of the Cities of Fairfax, Falls Church, Manassas and Manassas Park in Virginia result in low ranking for emissions when the jurisdictions in the Washington-Baltimore-NV CSA are ranked by emissions from highest to lowest. The Cities of Fairfax, Falls Church, and Manassas Park rank 32nd, 33rd, and 34th (of 34) in the Washington-Baltimore-NV CSA. Manassas City ranks 28th for VOC and 30th for NOx within the Washington-Baltimore-NV CSA. However, these are cities with very small land areas and are entirely surrounded or wedged in between larger counties. Table 16 compares the emissions and emission density of these cities with those jurisdictions that entirely surround these cities. Data for Alexandria City and with the District of Columbia are also presented to provide emissions densities for other highly urbanized areas.

Table 16. Total 2008 NO_x and VOC Emissions Densities of Selected Cities and Counties.

County	State Recommended Nonattainment?	NO_x (tpy)	VOC (tpy)	Land Area (sq. mi.)	Emissions Density NO_x (tpy/sq. mi.)	Emissions Density VOC (tpy/sq. mi.)
District of Columbia	Yes	11,332	11,362	67.9	166.89	167.34
Fairfax Co., VA	Yes	21,403	25,603	405.9	52.73	63.08
Fairfax City, VA	Yes	326	794	6.1	53.37	130.21
Falls Church City, VA	Yes	138	324	2.0	68.80	162.14
Arlington Co., VA	Yes	5,264	4,329	25.8	204.04	167.78
Prince William Co., VA	Yes	7,698	8,603	348.9	22.06	24.66
Manassas City, VA	Yes	553	1,020	10.1	54.74	100.98
Manassas Park City, VA	Yes	92	285	1.5	61.25	190.25
Alexandria City, VA	Yes	3,349	2,625	15.2	220.35	172.70
Notes: "sq. mi." means square miles.						

As can be seen from this table, the Cities of Fairfax, Falls Church, Manassas and Manassas Park have emissions densities in tons per year per square mile equal to or greater than the surrounding county in the cases of the Cities of Fairfax, Manassas and Manassas Park. In the case of Falls Church City, Falls Church has emissions densities greater than Fairfax County but less than Arlington County. Due to

Virginia's system of governance, these cities are inventoried separately; in most other states (Baltimore City in Maryland being one exception), such high density areas such as cities are not. The Cities of Fairfax, Falls Church, Manassas and Manassas Park can be considered to be high emissions areas on the basis of their emissions densities as opposed to their absolute emissions.

As for Arlington County and Alexandria City in Virginia, these rank, respectively, 14th and 21st for VOC emissions and 15th and 20th for NOx, respectively. These jurisdictions are small in absolute land area but the emissions densities are the highest in the both the DC-MD-VA nonattainment area and the Washington-Baltimore-NV CSA. Both are adjacent to other areas containing a monitor violating the 2008 NAAQS.

Of the remaining two counties, Charles and Calvert in the 1997 Washington DC nonattainment area, these two rank in the "middle group" (between 12th and 23rd inclusive): Calvert County, MD ranks low in this "middle group" – 22nd within the Washington-Baltimore-NV CSA for both NOx and VOC, respectively; Charles County, MD ranks higher than Calvert in this "middling" group – 18th and 14th for VOC and NOx emissions, respectively. Both are adjacent to counties with violating monitors. Of the two, Charles is more likely to be upwind of a violating monitor because it is southeast of the Fairfax County, VA monitor, west-southwest of the monitor in Calvert County, MD and south-southwest of the Equestrian Center monitor in Prince George's County, MD; Calvert County is due south of the monitor in Anne Arundel County, MD and south-southeast of the Equestrian Center monitor in Prince George's County, MD.

Of the remaining two counties, Harford and Carroll in the 1997 Baltimore nonattainment area, these two rank in the middle (between 12th and 23rd inclusive): Carroll County, MD ranks in the middle or high in this "middling" group – 17th and 12th for VOC and NOx emissions, respectively; Harford County, MD ranks higher than Carroll in this "middling" group – 12th and 13th for VOC and NOx emissions, respectively. Both are adjacent to counties with violating monitors. Of the two, Carroll County is more likely to be upwind of a violating monitor because it is west-southwest to west of the Padonia monitor in Baltimore County, MD. Harford County, MD is adjacent to Baltimore County, MD but one can expect that it is unlikely to be upwind of either violating monitor in Baltimore County because both monitors in Harford County were sited to be downwind of the urbanized core of both Baltimore City and County.

In general, the counties and cities in the 1997 Baltimore and Washington areas likely sufficiently contribute to nonattainment at one or more monitors in at least one of these two nonattainment areas because the County has a violating monitor, because the county or city is adjacent to a county with a violating monitor or the small city has emissions densities comparable to or higher than surrounding or adjacent areas.

Of the other areas or the counties listed under "other counties" in the preceding table most have low emissions and are remote from areas containing a monitor violating the 2008 NAAQS:

(1) The Frederick County, VA Area contains 1.5% {1.4%} and 2.8% of the Washington-Baltimore-NV CSA NOx and VOC emissions, respectively. As a whole this area would rank 18th for NOx emissions and 13th (the actual rank for Frederick County, VA alone) for VOC emissions. If the Frederick County, VA Area was included with the 1997 Washington DC-MD-VA nonattainment area, the emissions of the Frederick County, VA Area would be about 2.9 {2.7} and 4.8 percent of such an area's NOx and VOC emissions, respectively. (For example, for VOC emissions, 2.7% = 3,346/(3346+120,252) * 100.) This area is remote from any counties with violating monitors and is separated from the 1997 Washington DC-MD-VA nonattainment area by the sparsely populated Clarke and Warren Counties in Virginia.

(2) Hampshire County (emissions rankings within CSA: 25th for VOC & 29th for NOx) is remote from any violating monitor in the Washington-Baltimore-NV CSA and likewise has low emissions (1 percent

or less of the Washington-Baltimore-NV CSA's total for either NOx or VOC) in spite of its size (644 square miles). If included with the 1997 Washington DC-MD-VA nonattainment area, its emissions would be about 1.8 percent or less of such an area's NOx or VOC emissions, respectively. The nearest monitors in the Washington-Baltimore-NV CSA or elsewhere are those in Frederick County, VA and Berkeley County, WV. These have a design value well less than the 2008 NAAQS of 0.075 ppm. The design values are 0.068 ppm for Frederick County, VA and 0.070 ppm for Berkeley County, WV (Data source: Table 5 to ozone_dv75_20082010.xls (downloaded on 9/22/2011 from http://www.epa.gov/airtrends/values.html).

(3) Clarke (emissions rankings within CSA: 27th for VOC & 31st for NOx) and Warren (emissions rankings within CSA: 26th for both VOC for NOx) Counties in Virginia each comprise less than one percent of CSA total for either NOx or VOC emissions. If either were included with the 1997 Washington DC-MD-VA nonattainment area, the emissions of either would be less than 1.6 percent of such an area's NOx or VOC emissions, respectively. The nearest monitors within the CSA are attaining the 2008 NAAQS.

(4) Queen Anne's County MD (emissions rankings within CSA: 23th for both VOC & NOx) is at the bottom of the "middling" group (12th through 23rd inclusive) in the Washington-Baltimore-NV CSA. Its emissions are 1.1 to 1.2 percent of the Washington-Baltimore-NV CSA's total for NOx or VOC. If included with the 1997 Baltimore nonattainment area, its emissions would be about 3.0 {2.9} and 3.5 percent of such an area's NOx and VOC emissions, respectively. Its emissions would add about 2.7 to 3.8 percent. Queen Anne's County is in close proximity (that is separated from adjacent counties in the Washington-Baltimore-NV CSA by stretches of the Chesapeake Bay) to several violating monitors, namely the Essex monitor in Baltimore County and the monitor in Anne Arundel County. Because Queen Anne's County is in the Ozone Transport Region (OTR), section 184 of the CAA requires many sources of VOC and major stationary sources of NOx be controlled by reasonably available control technology (RACT) pursuant to sections 182(b)(2) and 182(f) and requires major stationary sources of VOC and NOx be subject to nonattainment new source review (NSR) requirements at the OTR major stationary source thresholds. Also motor vehicles in Queen Anne's County are subject to enhanced inspection and maintenance program (enhanced I/M) as required by section 184 of the CAA.[71]

(5) Jefferson County, WV (emissions rankings within CSA: 27th for VOC & 25th for NOx), if included with the 1997 Washington DC-MD-VA nonattainment area, would comprise about 1.4 {1.3} percent of such an area's NOx or VOC emissions, respectively.

(6) Fauquier County, VA emissions rankings within CSA: 20th for VOC & 18st for NOx is in the "middling" group (ranks 12th through 23rd inclusive) of the Washington-Baltimore-NV CSA. If included with the 1997 Washington DC-MD-VA nonattainment area, its emissions would be about 2.9 {2.7} and 2.9 percent of such an area's NOx and VOC emissions, respectively. However, Fauquier County is not adjacent to a county containing a monitor violating the 2008 NAAQS. Both the geographically nearest monitors (in Stafford and Prince William Counties, VA) have a design value of 0.070 ppm well below the 2008 NAAQS.

(7) Culpeper County, VA (emissions rankings within CSA: 24th for both VOC & NOx) is just below the "middling" group. If included with the 1997 Washington DC-MD-VA nonattainment area, its emissions would be about 1.5 {1.4 } and 1.8 percent of such an area's NOx and VOC emissions, respectively.

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[71] See, 61 FR 56183 at 56185, October 31, 1996 for details on the OTR enhanced I/M requirements in Maryland. The relevant provisions that define the geographic scope of Maryland's enhanced I/M program can be found in Code of Maryland Regulations (COMAR) 11.14.08.02B (19) and 11.14.08.03 in the approved Maryland SIP – see 40 CFR 51.1070(c). Copies of COMAR 11.14.08.02B(19) and 11.14.08.03 are available on-line via http://yosemite.epa.gov/r3/r3sips.nsf/SIPIndex!OpenForm

Culpeper County is even more remote than the adjacent Fauquier County from any county containing a monitor violating the 2008 NAAQS.

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(8) St. Mary's County, MD ranks in the "middle" within the Washington-Baltimore-NV CSA (17th for NOx and 16th for VOC) for NOx and VOC emissions. If included with the 1997 Washington DC-MD-VA nonattainment area, its emissions would be about 3.0 {2.8} and 3.4 percent of such an area's NOx and VOC emissions, respectively. St. Mary's County is adjacent to Calvert County which does contain a monitor violating the 2008 NAAQS.

(9) The Fredericksburg, VA Area contains the following areas: Stafford County (emissions rankings within CSA: 19th for both VOC & NOx); Spotsylvania County (emissions rankings within CSA: 16th for NOx and 15th for VOC); and Fredericksburg City (emissions rankings within CSA: 28th for NOx and 29th for VOC). The total emissions in the Fredericksburg, VA Area are about 6.5 and 7.7 percent of the 1997 Washington DC-MD-VA nonattainment area's NOx and VOC emissions, respectively. Alone, Spotsylvania County's emissions are about 3.4 {2.8} and 3.1 percent of the 1997 Washington DC-MD-VA nonattainment area's NOx and VOC emissions, respectively; the nearest monitors to Spotsylvania County are those in Fauquier and Stafford Counties in Virginia and Charles County in Maryland. The former two monitors are easily attaining the 2008 NAAQS. All of these three monitors are interposed between Spotsylvania County and violating monitors in the Washington-Baltimore-NV CSA. (Another monitor in an adjacent county is that in Caroline County, VA which is attaining the 2008 NAAQS with a design value of 0.073 ppm [Data source: Table 5 to ozone_dv75_20082010.xls (downloaded on 9/22/2011 from http://www.epa.gov/airtrends/values.html)]). If Spotsylvania County contributes to ozone levels in other counties its highest contribution is likely to any one of these three counties. If Spotsylvania and Stafford Counties were included in a nonattainment area encompassing the 1997 Washington DC-MD-VA nonattainment area or one consisting of both the 1997 Baltimore and Washington DC-MD-VA nonattainment areas, then Fredericksburg City should also be included because although its absolute emissions are low its emissions densities exceed that of each of the two surrounding counties.

If added to the 1997 Washington DC-MD-VA nonattainment area, the total emissions of Stafford County alone would be about 2.9 {2.8} and 3.0 percent of the combined area's NOx and VOC emissions, respectively. For the case where a combination of Stafford County and Fredericksburg City are included in such an expanded nonattainment area, their combined emissions would be about 3.7 {3.4} and 3.8 percent of such an area's NOx and VOC emissions, respectively. The monitor in Stafford County is in the northeast corner of the county and is interposed between much of the county's (or the combined emissions of the county plus Fredericksburg City) and the violating monitor in Fairfax County. The attaining monitor in Charles County, MD is interposed between Stafford County and the violating monitor in Calvert County, MD. Likewise, the attaining monitors in Stafford and Fauquier Counties in Virginia and the attaining monitor in Charles County Maryland are interposed between Spotsylvania County and Fredericksburg City and the violating monitors in Calvert County, MD and Fairfax County, VA.

Finally, of the city and two counties in the Fredericksburg Area only Stafford County is in the OTR.[72] Section 184 of the CAA requires that in attainment areas within the OTR many sources of VOC and

[72] The OTR was defined in 1990 by section 184 of the CAA to include the statistical area that included the District of Columbia. In 1990, only Stafford County was part of the statistical area that included the District of Columbia. EPA has always interpreted the scope of section 184(a) to include only those states specified by name, the District of Columbia and

major stationary sources in the OTR of NOx be controlled by reasonably available control technology (RACT) pursuant to sections 182(b)(2) and 182(f) and requires major stationary sources of VOC and NOx be subject to nonattainment NSR requirements at the OTR major stationary source thresholds. Also motor vehicles in Stafford County are subject to enhanced I/M as required by section 184 of the CAA.[73]

Mobile Source Emissions:

Both Maryland and the District expressed concern about the effects of mobile source emissions on nonattainment within the CSA in their March 7, 2012, and March 12, 2012, responses to EPA's December 9, 2011 letters,. Maryland's comment was that the mobile source NOx emissions become the largest source of NOx emissions "post Maryland's Healthy Air Act." Maryland commented that the split between the Baltimore and Washington "areas" is approximately 40% and 60%, respectively. The District urged EPA to weight mobile source emissions more heavily than was done in the Preliminary TSDs.

EPA examined the 2008 emissions data used for the analysis for EPA's preliminary TSD. EPA broke out the on-road mobile sources NOx emissions data for the CSA and found that the split between the aggregate on-road mobile source emissions of the current Washington and Baltimore Nonattainment areas is 61.6% in the current Washington DC-MD-VA Nonattainment area and 38.4% in the current Baltimore Nonattainment area. For the CSA, Table 17 provides a summary of the on-road mobile sources VOC and NOx emissions broken down by areas.

Table 17. Mobile Source Emissions in the Washington-Baltimore-NV CSA:

NOx			VOC		
Area	NOx (tpy)	Percent of CSA Total	Area	VOC (tpy)	Percent of CSA Total
Baltimore Area	37,192	32.9%	Baltimore Area	20,836.7	30.9%
Washington Area			Washington Area		
Maryland Portion	29,960	26.5%	Maryland Portion	18,418.2	27.3%
Virginia portion	23,476	20.8%	Virginia portion	14,464.6	21.5%
DC Portion	6,333	5.6%	DC Portion	4,041.3	6.0%
Washington Area sub-total	59,768	52.9%	Washington Area sub-total	36,924.2	54.8%
Fredericksburg, VA CBSA	5,431	4.8%	Fredericksburg, VA CBSA	3,387.0	5.0%
Frederick Co., VA area	1,675	1.5%	Frederick Co., VA area	921.1	1.4%

those portions of other States which shared the same statistical area as the District as of November 15, 1990. See for example, 40 CFR 51.120 (60 FR 4712, Jan. 24, 1995) which related to a SIP call on all the OTR States.

[73] See 61 FR 57343 at 57346, November 6, 1996 for details on the OTR enhanced I/M requirements for Virginia. The relevant provisions that define the geographic scope of Virginia's enhanced I/M program can be found in 9 VAC 5-91-20 and 9 VAC 5-91-30 in the approved Virginia SIP – see 40 CFR 51.2420(c). Copies of 9 VAC 5-91-20 and 9 VAC 5-91-30 are available on-line via http://yosemite.epa.gov/r3/r3sips.nsf/SIPIndex!OpenForm.

Other Virginia CSA Counties	4,978	4.4%	Other Virginia CSA Counties	2,918.4	4.3%
Other Maryland CSA Counties	3,101	2.7%	Other Maryland CSA Counties	1,728.8	2.6%
West Virginia Counties	918	0.8%	West Virginia Counties	714.3	1.4%
CSA Total	113,063	100.0%	CSA Total	67,430.4	100.0%

A full listing is provided in Table 3-1 of Appendix 3 to this TSD. It provides county/city specific values for the CSA counties as well as some outside counties.

Maryland's on-road NOx emissions are 62.1% of the CSA total and 69.3% of the aggregate on-road mobile source NOx emissions in the current Washington and Baltimore nonattainment areas. The two nonattainment areas under the 1997 ozone NAAQS account for 85.8 % of the NOx emissions and 85.7 % of the VOC emissions. On March 1, 2012, Virginia Department of Environmental Quality (VA DEQ) submitted a presentation[74] regarding the CSA. One slide shows how mobile source emissions declined since 2002; another slide noted that mobile source emissions are projected to continue to decline by 2017 with federal and state measures already in place. On one slide VA DEQ claimed that an analysis of transportation control measures undertaken for the Washington, DC transportation planning estimated that an expenditure of $85 million (annually) would reduce NOx emissions by only 220 tons per year.

EPA does not disagree that highway, mobile source emissions in the Washington DC-MD-VA nonattainment area (under the 1997 ozone standard) could well be 1.5 times those in the 1997 Baltimore ozone nonattainment area. However, mobile source emissions are well controlled by federal and state programs. Significant reductions can be expected in the coming years.

Population density and degree of urbanization

EPA evaluated the population and vehicle use characteristics and trends of the area as indicators of the probable location and magnitude of non-point source emissions. These include ozone-creating emissions from on-road and off-road vehicles and engines, consumer products, residential fuel combustion, and consumer services. Areas of dense population or commercial development are an indicator of area source and mobile source NO_x and VOC emissions that may contribute to ozone formation. Tables 18 and 19 show the population, land area, population density (in thousands of persons per square mile), and population growth information for each county/city in the Washington-Baltimore-NV CSA.

Table 18. Population and Growth in the Baltimore and Washington DC-MD-VA Nonattainment Area Portions of the Washington-Baltimore-NV CSA.

County	State Recommended Nonattainment?	2010 Population	Land Area (sq. mi.)*	2010 Population Density (1000 pop/sq mi)	Absolute change in population (2000-2010)	Population % change (2000-2010)
Baltimore MD Nonattainment Area:						
Anne Arundel Co., MD	Yes	537,656	452	1.19	46,325	+9%

[74] A copy of which has been placed in the docket.

Baltimore City, MD	Yes	620,961	87	7.14	(27,626)	-4%
Carroll Co., MD	Yes	167,134	453	0.37	15,557	+10%
Harford Co., MD	Yes	244,826	460	0.53	25,362	+12%
Howard Co., MD	Yes	287,085	253	1.13	37,565	+15%
Baltimore Co., MD	Yes	805,029	624	1.29	49,037	+6%
	Baltimore Subtotals:	2,662,691	2,330	1.14	146,220	+6%
Washington DC-MD-VA Nonattainment Area:						
District of Columbia, DC	Yes	601,723	68	8.86	30,000	+5%
Calvert Co., MD	Yes	88,737	237	0.37	13,573	+18%
Charles Co., MD	Yes	146,551	473	0.31	25,347	+21%
Frederick Co., MD	Yes	233,385	666	0.35	36,884	+19%
Montgomery Co., MD	Yes	971,777	506	1.92	94,282	+11%
Prince George's Co., MD	Yes	863,420	493	1.75	60,213	+7%
Arlington Co., VA	Yes	207,627	26	8.05	18,045	+10%
Fairfax Co., VA	Yes	1,081,726	406	2.67	106,808	+11%
Loudoun Co., VA	Yes	312,311	521	0.60	138,440	+80%
Prince William Co., VA	Yes	402,002	349	1.15	118,206	+42%
Alexandria City, VA	Yes	139,966	15	9.21	10,626	+8%
Fairfax City, VA	Yes	22,565	6	3.70	929	+4%
Falls Church City, VA	Yes	12,332	2	6.17	1,940	+19%
Manassas City, VA	Yes	37,821	10	3.74	2,466	+7%
Manassas Park City, VA	Yes	14,273	2	9.52	3,934	+38%
	Washington DC-MD-VA Subtotals:	5,136,216	3,779	1.36	661,693	+15%

Table 19. Population and Growth in Other Portions of the Washington-Baltimore-NV CSA.

County	State Recommended Nonattainment?	2010 Population	Land Area (sq. mi.)*	2010 Population Density (1000 pop/sq mi)	Absolute change in population (2000-2010)	Population % change (2000-2010)
Fredericksburg, VA Area:						
Spotsylvania Co., VA	No	122,397	412	0.30	30,891	+34%
Stafford Co., VA	No	128,961	280	0.46	35,437	+38%
Fredericksburg City, VA	No	24,286	11	2.29	4,922	+25%
	Fredericksburg, VA Subtotals:	275,644	702	0.39	71,250	+35%
Frederick County, VA Area:						
Frederick Co., VA	No	78,305	415	0.19	18,725	+31%
Winchester City, VA	No	26,203	9	2.82	2,510	+11%
	Frederick Co., VA Area Subtotals:	104,508	425	0.25	21,235	+26%
Other counties:						
Queen Anne's Co., MD	No	47,798	395	0.12	7,031	+17%
St. Mary's Co., MD	No	105,151	402	0.26	18,631	+22%

Culpeper Co., VA	No	46,689	382	0.12	12,215	+35%
Clarke Co., VA	No	14,034	178	0.08	1,333	+10%
Fauquier Co., VA	No	65,203	651	0.10	9,615	+17%
Warren Co., VA	No	37,575	216	0.17	6,025	+19%
Hampshire Co., WV	No	23,964	644	0.04	3,673	+18%
Jefferson Co., WV	No	53,498	212	0.25	11,059	+26%
All other counties subtotals:		393,912	3,080	0.13	69,582	+21%
CSA Totals:		8,572,971	10,315	0.83	969,980	+13%
* Values are rounded to nearest whole number; sub-totals and CSA total may not add-up due to rounding.						

Sources: U.S. Census Bureau population estimates for 2010 as of August 4, 2011 (http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=DEC_10_PL_GCTPL2.STO5&prodType=table).

Subsequent to its March 7, 2012 letter Maryland supplied growth data for counties and cities in the CSA. A copy of this data has been appended to this TSD as Appendix 4. For the most part Maryland's data compared 2000 against 2007 or 2009 to compute the population change. These data were from either Maryland's MD Statistical Handbook or from a Virginia government sources. The exceptions were for Fairfax, King George's and Loudoun Counties in Virginia for which Maryland cited U.S. Census Bureau as the source. For Fauquier County, VA Maryland submitted data posted on-line at "http://www.fauquiercounty.gov/government/departments/commdev/ index.cfm?action =demographics" which provided a July 1, 2010 population estimate. The differences between Maryland's values for Fairfax, Frederick (VA) and Loudoun Counties and those in Tables 18 and 19 are apparently revised Census Bureau values for 2000.

Table 20. Maryland's data for four Virginia Counties:

County	Population Data			
	2010	2000	Change 2000-2010	Percent change, 2000 to 2010
King George's Co. VA	23,584	16,803	6,781	40.4%
Fairfax County, VA	1,081,726	969,749	111,977	11.5%
Frederick County, VA	78,305	59,209	19,096	32.3%
Loudoun	Not provided	Not provided	142,712	84.1%

EPA notes Maryland's submission but is not going to use Maryland's data for most areas because EPA would like to compare like periods to like periods (2000 to 2010) and use the most recent data (2010).

EPA does note Maryland's data for Fairfax, Frederick (VA) and Loudoun Counties but notes the differences really do not change the comparisons: for instance, whether Loudoun County's growth rate was 80% or over 84% still makes its growth rate far larger than any other county or city in the CSA. Fairfax County's rate is still between 11 and 12 % which is also well above the average growth rate for the entire CSA. Frederick County's rate is still well over the CSA average and is essentially unchanged when in relation to other counties as it retains its relative ranking in relation to other counties – that is, it is still ahead of Jefferson County, WV and behind Spotsylvania County, VA. For the Fauquier County data, the population given by Maryland is apparently a July 1, 2010 estimate.

The following discussion will therefore use the data from Tables 18 and 19 to allow "like to like" comparisons.

The 1997 Washington DC-MD-VA nonattainment area contains 59.9% of the Washington-Baltimore-NV CSA's total population and 68.2% of the Washington-Baltimore-NV CSA's total absolute change in population. The Cities of Fairfax, Falls Church, Manassas and Manassas Park once again have lower absolute populations and change in population but these areas are generally more densely populated than the surrounding county or nearby counties. The exception is Falls Church City which has a density less than Arlington County on one side (6.17 versus 8.05) but twice as high as Fairfax County (6.17 versus 2.67) on its other side. Some densely populated cities had low growth rates less than the area's overall rate while others such as Falls Church were slightly greater than the area's overall rate while Manassas Park's was over twice the area's overall rate. Of the other portions, those with the highest population densities grew at a rate less than the area's overall rate, and, conversely those with population densities less than the area's overall average grew more quickly. The fastest growing areas are in Virginia (Loudoun and Prince William Counties) both of which border Fairfax County which has a monitor violating the 2008 NAAQS. Just over half (55%) of the population live in the areas – the District of Columbia and Fairfax, Arlington Charles, Prince George's and Calvert Counties – that contain one or more monitors violating the 2008 NAAQS. Adding in those who live in areas adjacent to these areas with violating monitors (that is the entire 1997 Washington DC-MD-VA nonattainment area less Frederick County Maryland) encompasses 95 percent of the 1997 nonattainment area's population; Frederick County however is adjacent to Carroll County, MD that contains a monitor violating the 2008 NAAQS.

The 1997 Baltimore nonattainment area contains 38.1% of the Washington-Baltimore-NV CSA's total population and 15.1% of the Washington-Baltimore-NV CSA's total absolute change in population. Of the areas in the 1997 Baltimore nonattainment area, Howard and Harford Counties had growth rates appreciably higher than the area's overall rate. Carroll County is the least densely populated area in the nonattainment area and had a growth rate greater than the area's overall rate. Well over half (63%) the area's population lives in Harford and Baltimore Counties, and, Baltimore City and thus are in close proximity to the Edgewood monitor with the highest design value in the Washington-Baltimore-NV CSA's and the 1997 Baltimore nonattainment area. Well over half (64%) the area's population lives in Howard and Baltimore Counties and Baltimore City, and thus are in close proximity to the monitors in Baltimore County. Anne Arundel County is adjacent to the heavily populated Prince George's County, MD and Howard County, MD the latter of which had the highest growth rate in the Baltimore nonattainment area and had a growth rate comparable to the faster growing 1997 Washington DC-MD-VA nonattainment area.

Together the 1997 Washington DC-MD-VA and Baltimore nonattainment areas contain 91.0% of the Washington-Baltimore-NV CSA's total population and 83.3% of the overall change within the Washington-Baltimore-NV CSA. Most of the areas within these two 1997 nonattainment areas are moderately to very densely populated. In general, the counties and cities in the 1997 Baltimore and Washington nonattainment areas likely sufficiently contribute to nonattainment at one or more monitors in at least one of these two areas because the County has a violating monitor, because the county or city is adjacent to a county with a violating monitor or the small city has a population density comparable to or higher than surrounding or adjacent areas.

Of the other areas or the counties listed under "other counties" in the preceding table most are relatively sparsely populated or remote from areas containing a monitor violating the 2008 NAAQS:

(1) The Frederick County, VA Area still contains only 1.2% of the Washington-Baltimore-NV CSA's population in spite of its growth rate of twice the overall rate in the Washington-Baltimore-NV CSA. This area is remote from any counties with violating monitors and is separated from the 1997 Washington DC-MD-VA nonattainment area by the sparsely populated Clarke and Warren Counties in Virginia. This area's *total population* is less than the *absolute population change* in Fairfax County, Loudoun County or Prince William County in Virginia.

(2) Hampshire County is remote from any violating monitor in the Washington-Baltimore-NV CSA and is likewise sparsely populated. It growth rate is not appreciably greater than that of the Washington-Baltimore-NV CSA as a whole and its absolute population change is one-tenth that of Frederick County, MD which has a similar land area and growth rate.

(3) Clarke and Warren Counties in Virginia are sparsely populated and their absolute change in population is small in comparison to areas within the 1997 Washington DC-MD-VA nonattainment area. Clarke County has a population that is less than all other areas in the Washington-Baltimore-NV CSA except the very small Falls Church City.

(4) Queen Anne's County MD has a growth rate nearly three times that of the 1997 Baltimore nonattainment area but both the absolute change and the absolute population are small. It is still sparsely populated.

(5) Jefferson County, WV had a growth rate twice the overall rate in the Washington-Baltimore-NV CSA. It is still sparsely populated and is not adjacent to a county containing a monitor violating the 2008 NAAQS. In addition, Jefferson County's *total population* is half the *absolute population change* in the adjacent Loudoun County, VA.

(6) Fauquier County, VA had a growth rate comparable to that of the 1997 Washington DC-MD-VA nonattainment area (17% versus 15%) but its absolute change was small – around 9,600 which is one one-hundredth of the Washington-Baltimore-NV CSA's overall change or 1.5% of that for the 1997 Washington DC-MD-VA nonattainment area. Fauquier County is still sparely populated and is not adjacent to a county containing a monitor violating the 2008 NAAQS.

(7) The situation for Culpeper County, VA is similar to that for Fauquier County, VA. Culpeper had a growth rate of 35 percent. In addition, it is still sparely populated and has a smaller population than Fauquier County. However, Culpeper County is even more remote from any county containing a monitor violating the 2008 NAAQS.

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(8) St. Mary's County, MD is the most populous and most densely populated of the "other counties." Even so, its *total population* is less than the *absolute population change* in Fairfax County, Loudoun County or Prince William County in Virginia. St. Mary's County is less densely populated than any county or city in either the Washington DC-MD-VA or Baltimore nonattainment areas. Its absolute population is greater than Calvert County, MD which is smaller in size. St. Mary's County is adjacent to Calvert County which does contain a monitor violating the 2008 NAAQS.

(9) The Fredericksburg, VA Area had not insubstantial growth. Its individual jurisdictions grew at a rate from about two to three times faster than the Washington-Baltimore-NV CSA's overall rate and overall at a rate twice that of the 1997 Washington DC-MD-VA nonattainment area. In terms of land area and population density it is somewhat comparable to Frederick County, MD, but it had an absolute change in population almost twice Frederick County. Unlike Fredrick County, MD, the Fredericksburg, VA Area is not adjacent to any county with a monitor violating the 2008 NAAQS.

Traffic and commuting patterns

EPA evaluated the commuting patterns of residents in the area, as well as the total Vehicle Miles Traveled (VMT) for each county. In combination with the population/population density data and the location of main transportation arteries (see Figure 1a or 1b above); this information helps identify the probable location of non-point source emissions. A county with high VMT and/or a high number of commuters is generally an integral part of an urban area and indicates the presence of motor vehicle emissions that may contribute to ozone formation. Table 20 shows the total vehicle miles traveled (VMT) and total number of commuters for each county within the Washington-Baltimore-NV CSA.

Table 21. Traffic and Commuting Patterns.

County	State Recommended Nonattainment?	2008 VMT (million miles)	Total Commuters
Baltimore MD Nonattainment Area:			
Anne Arundel Co., MD	Yes	5,759	255,425
Baltimore City, MD	Yes	3,619	249,125
Carroll Co., MD	Yes	1,272	77,394
Harford Co., MD	Yes	2,324	111,398
Howard Co., MD	Yes	3,793	134,596
Baltimore Co., MD	Yes	8,227	373,013
	Baltimore Subtotals:	24,994	1,200,951
Washington DC-MD-VA Nonattainment Area:			
District of Columbia, DC	Yes	3,685	260,296
Calvert Co., MD	Yes	764	37,355
Charles Co., MD	Yes	1,260	61,504
Frederick Co., MD	Yes	2,932	102,033
Montgomery Co., MD	Yes	7,443	454,680
Prince George's Co., MD	Yes	8,718	396,948
Arlington Co., VA	Yes	1,634	115,614
Fairfax Co., VA	Yes	10,484	526,655
Loudoun Co., VA	Yes	1,567	92,040
Prince William Co., VA	Yes	3,094	150,274
Alexandria City, VA	Yes	793	76,811
Fairfax City, VA	Yes	177	11,753
Falls Church City, VA	Yes	62	5,803
Manassas City, VA	Yes	290	18,077
Manassas Park City, VA	Yes	27	5,415
Washington DC-MD-VA Subtotals:		42,929	2,315,258
Fredericksburg, VA Area:			
Spotsylvania Co., VA	No	1,256	45,132
Stafford Co., VA	No	1,698	48,202
Fredericksburg City, VA	No	363	9,564
Fredericksburg, VA Subtotals:		3,317	102,898
Frederick County, VA Area:			

Frederick Co., VA	No	542	30,167
Winchester City, VA	No	135	11,865
Frederick Co., VA Area Subtotals:		677	42,032
Other counties:			
Queen Anne's Co., MD	No	923	20,736
St. Mary's Co., MD	No	822	43,101
Clarke Co., VA	No	300	6,438
Culpeper Co., VA	No	520	15,951
Fauquier Co., VA	No	1,055	28,103
Warren Co., VA	No	435	15,286
Hampshire Co., WV	No	216	8,255
Jefferson Co., WV	No	388	20,937
	All other counties subtotals:	4,659	158,807
	CSA Totals:	76,576	3,819,946

* MOBILE model VMTs are those inputs into the NEI version 1.5.

** U.S. Census Bureau estimates for 2000 County-to-County Worker Flow http://www.census.gov/hhes/commuting/data/commuting.html.

Together the 1997 Washington DC-MD-VA and Baltimore nonattainment areas contain 88.7 percent of total VMT and 92 percent of the total commuters within the Washington-Baltimore-NV CSA.

As stated previously in this document, EPA recommended examining CSA/CBSAs because certain factors used to establish CSAs and CBSAs are similar to the factors EPA is using in this technical analysis to determine if a nearby area is contributing to a violation of the 2008 ozone NAAQS. These similar factors include degree of urbanization which is used to define a "central county (or counties)" in a CBSA and certain employment related commuting indices which are used to join "outlying counties" to "central county (or counties)" to form a CBSA. One or more CBSAs are always joined if the "employment interchange rate" [75] is 25 percent and may be joined to form a CSA if the "employment interchange rate" is at least 15 percent between these two CBSAs. [76] Therefore, there is some degree of urbanization and commuting within the CBSAs comprising the Washington-Baltimore-NV CSA and some degree of commuting between CBSAs within this CSA. However, when a county's number of commuters or VMT are a significant fraction of another county's, such a county cannot indicate the presence of as much motor vehicle emissions that may contribute to ozone formation as the county with the higher VMT or number of commuters.

The 1997 Washington DC-MD-VA nonattainment area contains 56.1% of the total VMT and 60.6% of total commuters within the Washington-Baltimore-NV CSA. There is a vast disparity in the absolute VMT values within the 1997 Washington DC-MD-VA nonattainment area: excluding such physically small areas as the Cities of Fairfax, Falls Church, Manassas and Manassas Park, the VMT of Fairfax County, VA is over 13 times that of Calvert County, MD. The top three in terms of absolute VMT are

[75] The "employment interchange rate" between two areas is defined as the sum of the percentage of employed residents of the area with the smaller total population who work in the area with the larger total population and the percentage of employment in the area with the smaller total population that is accounted for by workers residing in the area with the larger total population. See, 64 FR 56628 at 56643, October 20, 1999.

[76] See "*Section 8. Combining Adjacent Core Based Statistical Areas*," 65 FR 82228 at 82237, December 27, 2000. These current standards came into use starting 2003 (65 FR 82228 at 82235-82236) and will be replaced in 2013 when the 2010 standards come into force (75 FR 37246 at 37249, June 28, 2010).

Fairfax County, VA and Montgomery and Prince George's Counties in Maryland. Together they comprise 26,644 million (62%) of 42,929 million VMT for the 1997 Washington DC-MD-VA nonattainment area. Together they contain or enclose all the violating monitors within the 1997 Washington DC-MD-VA nonattainment area except that in Calvert County, MD. The next three areas in terms of VMT are the District of Columbia, Prince William County, VA and Frederick County, MD which comprise 9,711 million (22.6%) of 42,929 million VMT for this 1997 nonattainment area. Filling out 95 percent of the VMT in the 1997 Washington DC-MD-VA nonattainment area are the combined VMT of Loudoun and Arlington Counties in Virginia and Charles County, MD with 4,461 million (10.4%) of 42,929 million. With respect to the Cities of Alexandria, Fairfax and Falls Church, these are all adjacent to an area that contains a violating monitor. With respect to the Cities of Manassas and Manassas Park, these two cities under this factor might or might not sufficiently contribute to nonattainment within the Washington-Baltimore-NV CSA but should be included in a nonattainment area if the surrounding county of Prince William County is. As far as VMT is concerned, Calvert County is on the edge of the Washington-Baltimore-NV CSA and has the lowest VMT of any area within the 1997 Washington DC-MD-VA nonattainment area exclusive of the smaller independent cities in Virginia. Calvert County is adjacent to two counties (Prince George's and Anne Arundel) in Maryland containing a violating monitor.

The 1997 Baltimore nonattainment area contains 32.6% of the Washington-Baltimore-NV CSA's total VMT and 31.4% of the Washington-Baltimore-NV CSA's total commuters. Of the areas in the 1997 Baltimore nonattainment area, all except Baltimore City and Howard contain a violating monitor. Baltimore and Anne Arundel Counties rank one and two for total VMT and for total number of commuters within the 1997 Baltimore nonattainment area. Carroll County has the lowest VMT and number of commuters within the 1997 Baltimore nonattainment area. As far as absolute VMT, the ratio of the highest to the smallest value is about 6.5 to 1. Carroll and Harford Counties are at the bottom. Carroll County's VMT comprises about 5% of 1997 Baltimore nonattainment area's VMT. Harford County likely contributes to the ozone violation at the two monitors located within Harford County. Because these monitors were located to be downwind of the main urbanized core surrounding Baltimore City, Harford County might not be a contributor to violations at other monitors in the Washington-Baltimore-NV CSA but rather more a receptor of ozone and precursor emissions from within the Washington-Baltimore-NV CSA.

In general, the counties and cities in the 1997 Baltimore and Washington nonattainment areas likely sufficiently contribute to nonattainment at one or more monitors in at least one of these two areas because in most cases commuting patterns and VMT favor inclusion and most are adjacent to a county containing a violating monitor.

Of the other areas or counties listed under "Other counties" in the preceding table, all but one has less than 1,000 million VMT. Together these eight "other" counties comprise 6.1 percent of the Washington-Baltimore-NV CSA's total VMT and comprise 4.2 percent of the Washington-Baltimore-NV CSA's total commuters. Of these "Other counties," St. Mary's and Queen Anne's in Maryland, and Fauquier in Virginia, comprise most of the VMT and total commuters of these eight "other" counties. Table 13 shows the share (as a percentage of the Washington-Baltimore-NV CSA's total) of Fauquier, Queen Anne's, and St. Mary's Counties of the VMT and total commuters and compares these three with the remaining five "Other" counties:

Table 22. Traffic and Commuting Patterns – Fauquier, Queen Anne's and St. Mary's Counties as a Percentage of CSA Totals.

County, State	2008 VMT (% of CSA total)	Number commuting to any violating counties (% of CSA total)	Total Commuters (% of CSA total)
Fauquier Co., VA	1.4%	0.3%	1.1%
St. Mary's Co., MD	1.1%	0.3%	1.1%
Queen Anne's Co., MD	1.2%	0.3%	0.5%
Subtotal:	3.7%	0.9%	2.8%
Subtotal for Clarke, Culpeper, & Warren Counties, VA and Hampshire & Jefferson Counties, WV	2.4%	0.4%	1.4%
Total eight "other" counties	6.1%	1.3%	4.2%
Share of Fauquier, Queen Anne's, and St. Mary's Counties	60.1%	72.1%	67.3%

(1) The Frederick County, VA Area contains less than 1 percent of the Washington-Baltimore-NV CSA's VMT or those "commuting to or within any violating counties." The area's VMT (677 million) is less than any other area within the 1997 Washington nonattainment area (independent cities excepted). The total number of commuters is 1.1 percent of the total number of commuters in the Washington-Baltimore-NV CSA. This area is remote from any counties with violating monitors and is separated from the 1997 Washington DC-MD-VA nonattainment area by Clarke and Warren Counties in Virginia.

(2) Hampshire County is remote from any violating monitor in the Washington-Baltimore-NV CSA and likewise has low VMT (216 million). The VMT is less than all but the three smallest independent cities in the 1997 Washington nonattainment area.

(3) Clarke and Warren Counties in Virginia have low VMT which is only greater than some of the small independent cities of comparable population (Manassas Park City and Manassas City, respectively) in the Washington-Baltimore-NV CSA.

(4) Queen Anne's County MD has 20,576 total commuters which is less than one-third the number of the next lowest county (Carroll County with 77,394) in the Baltimore-Towson, MD CBSA but only one-half percent (0.5%) of the Washington-Baltimore-NV CSA's total or 1.7 percent of the total for the 1997 Baltimore nonattainment area. Queen Anne's County is only connected to the rest of the CBSA by the Chesapeake Bay Bridge (U.S. Routes 50 and 301) across the Chesapeake Bay to Anne Arundel County (see Figure 1a or 1b which shows a road crossing the Chesapeake Bay from Queen Anne's to Anne Arundel). Queen Anne's has 923 million VMT (1.2% of the Washington-Baltimore-NV CSA's total or 3.7% of the 1997 Baltimore nonattainment area) which is comparable to that of Carroll County ((1,272 million) even though Queen Anne's population is roughly one third of Carroll's (47,798 versus 167,134).

(5) Jefferson County, WV has low VMT (388 million) which is only greater than some of the small independent cities of comparable population (Manassas Park City and Manassas City combined). Jefferson County is not adjacent to a county containing a monitor violating the 2008 NAAQS.

(6) Fauquier County, VA has the most VMT of these "other counties" at 1,055 million (1.4% of the Washington-Baltimore-NV CSA's total or 2.5% of the total for the 1997 Washington-DC-MD-VA nonattainment area). Fauquier is comparable to Charles County, MD (1,260 million) which has twice the population (146,551 versus 65,203) but is greater than that of Calvert County, MD (764 million VMT), which has a slightly greater population. Fauquier County has fewer commuters than either Charles or Calvert Counties. Fauquier County is separated from the nearest counties with violating monitors by Loudoun and Prince William Counties in Virginia.

(7) The situation for Culpeper County, VA is similar to that for Warren County, VA. Its VMT is slightly greater at 520 million (versus 435) than Warren's. The numbers of commuters are similar, at 15,951 versus 15,286, respectively. However, Culpeper County is even more remote from any county containing a monitor violating the 2008 NAAQS. Culpeper County is separated from the nearest counties with violating monitors by Fauquier, Loudoun and Prince William Counties in Virginia.

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(8) St. Mary's County, MD has a VMT of 822 million (1.1% of the Washington-Baltimore-NV CSA's total or 1.9% of the total for the 1997 Washington-DC-MD-VA nonattainment area). This is more than Calvert County, MD. The total number of commuters at 43,101 (1.1% of the Washington-Baltimore-NV CSA's total or 1.9% of the total for the 1997 Washington-DC-MD-VA nonattainment area) is between that of Calvert and Charles Counties, which is not surprising because St. Mary's population falls between that of these other two. St. Mary's comprises the CBSA of the Lexington Park MD *micropolitan* statistical area, whereas Charles County is part of the 1997 Washington DC-MD-VA nonattainment area; the 1997 Washington DC-MD-VA nonattainment area is within a different CBSA – the Washington-Arlington-Alexandria, DC-VA-MD-WV *Metropolitan* Statistical Area – than St. Mary's. Because St. Mary's County is in a separate CBSA from the 1997 Washington DC-MD-VA nonattainment area, that is, is not part of the Washington-Arlington-Alexandria, DC-VA-MD-WV *Metropolitan* Statistical Area, one can infer that the degree of integration between St. Mary's County and the 1997 Washington DC-MD-VA nonattainment area is likely less than that of either Charles or Calvert County. St. Mary's County is adjacent to Calvert County which does contain a monitor violating the 2008 NAAQS.

(9) The Fredericksburg, VA Area as a whole has 3,317 million VMT which is 4.3% of the Washington-Baltimore-NV CSA's total or 7.7% of the total for the 1997 Washington-DC-MD-VA nonattainment area. The total number of commuters is 22,124; this is 2.7 percent of the Washington-Baltimore-NV CSA's total or 4.4 percent of the total for the 1997 Washington-DC-MD-VA nonattainment area. The total VMT and total number of commuters for the Fredericksburg, VA Area are comparable to that of Prince William County, VA. Unlike Prince William County, VA, the Fredericksburg, VA Area is not adjacent to any county with a monitor violating the 2008 NAAQS. The Fredericksburg, VA Area is within the Washington-Arlington-Alexandria, DC-VA-MD-WV *Metropolitan* Statistical Area which contains the 1997 Washington DC-MD-VA nonattainment area. Of the three jurisdictions within the Fredericksburg, VA Area, Stafford County has the largest VMT and total number of commuters.

With Regards to Counties in the CSA and Mobile Source Emissions:

Counties included as part of any CSA indicates ties to the core urban area. As discussed under "Core Cities/Counties in this CSA" elsewhere in this document, inclusion in a CBSA or combination of two or more CBSAs indicates commuting linkages above various thresholds.

Just because a county is located in a CSA, this fact does not fully reflect the amount of VMT and hence emissions commuting puts within any *particular* counties of a CSA. The obvious factors are: whether or not the county or city is a core city or county within its parent CBSA or is an outlying county or city of a CBSA; its proximity to the core county/counties of its parent CBSA; its proximity to core counties and cities of an adjacent CBSA, and so on.

The Washington-Baltimore-NV CSA consists of: the Baltimore-Towson CBSA; the Culpeper, VA Micropolitan Statistical Area (Culpeper CBSA); the Lexington Park MD (St. Mary's County), Micropolitan Statistical Area (Lexington Park CBSA); the Washington-Arlington-Alexandria, DC-VA-MD-WV Metropolitan Statistical Area (Washington CBSA); and the Winchester, VA-WV Metropolitan Statistical Area (Winchester CBSA).

Anne Arundel and Prince George's Counties are core counties (see "Core Cities/Counties in this CSA" elsewhere in this document) of their respective "parent" CBSAs – the Baltimore-Towson CBSA and the Washington CBSA. They are adjacent to each other. EPA does not doubt that there is cross-commuting between the two. Likewise, as Maryland noted, Washington Beltway facilitates travel in the Washington CBSA; this roadway as well as other such as Interstate-95 and its offshoots facilitate commuting among the core counties/cities of the Washington CBSA such as the District of Columbia, Fairfax Co., VA, and Montgomery and Prince George's Counties in Maryland.

Conversely, Hampshire County, WV is an outlying county in the Winchester CBSA. The Winchester CBSA is part of the Washington-Baltimore-NV CSA. For the Winchester CBSA to be part of the CSA, the percentage of workers in the Winchester CBSA commute to the Washington CBSA plus of the percentage of the employment in the Winchester CBSA is of residents from the Washington CBSA that is at least 15 percent but might be at least 25 percent.[77] By virtue of its status as an outlying county, one knows at least 25 percent of the employment in Hampshire is from residents of Winchester City and Frederick County, VA or 15 percent of the commuters in Hampshire County reside in Virginia. That the Winchester CBSA is part of the Washington-Baltimore-NV CSA only means there is employment related commuting interchange between it and the larger Washington CBSA. Warren and Clarke Counties in Virginia are outlying counties in the Washington CBSA and adjacent to the Winchester CBSA (namely Frederick County, VA). It would seem that the commuting ties among these counties alone could tie the Winchester area to the Washington CBSA and hence to the greater Washington-Baltimore-NV CSA.

Likewise, Warren and Clarke Counties in Virginia are each an outlying county in the Washington CBSA. This means at least 25 percent of those workers of either work in the central counties and cities of the Washington CBSA or 25 percent of the employment in either is from persons from the central counties and cities: the nearest central county to Clarke County is the adjacent Loudoun County; in the case of Warren County the nearest adjacent central county is Prince William with part of the outlying county of Fauquier in between; however, Interstate 66 runs through Warren County into Prince William County and to Fairfax County and no doubt facilitates commuting.

The CSA delineation does not necessarily connote on-road vehicular travel, only the interchange of employment. Thus, a portion of the commuting within some of the CBSAs or between CBSAs constituting the Washington-Baltimore-NV CSA could be by rail using the various subway and light rail systems within the CSA.

[77] Refer to OMB's December 27, 2000 (65 FR 82228), Notice of decision "Standards for Defining Metropolitan and Micropolitan Statistical Areas" for how OMB determines CBSAs and CSAs and refer to the discussion under the heading "The Composition of the Washington-Baltimore-Northern Virginia, DC-MD-VA-WV CSA" elsewhere in this document.

EPA recommended starting the boundary determination process at the boundaries of a CSA/CBSA because the factors used to establish the CBSAs and CSAs are similar to some of the factors EPA considers in determining whether a nearby area is contributing to the violation(s) of the standard. But EPA determines whether an area is contributing to the violation(s) of the standard at a nearby monitor only after consideration of all five factors. Conversely, EPA believes the fact that a county or city is not in a CBSA/CSA is noteworthy because the level of employment interchange and hence commuting is usually less than the criteria levels used by OMB.

Factor 3: Meteorology (weather/transport patterns)

Background:

EPA received comments that surface wind roses are not the best technical tool to assess prevailing winds because surface wind roses do not represent the three-dimensional flow of air in the atmosphere; transport patterns based solely on surface wind speed and direction ignores aloft winds and regular vertical mixing such as occurs daily; three-dimensional wind fields provide a more realistic presentation of the origins of air during ozone exceedance days.[78] As a result of such comments, EPA re-evaluated the five-factors for this CSA in light of meteorology data resulting from use of the National Oceanic and Atmospheric Administration's (NOAA) Hybrid Single Particle Lagrangian Integrated Trajectory (HYSPLIT) Model for this Factor 3 Meteorology portion of this document.[79] This analysis supplements and to a great extent supplants the Factor 3 analysis in "Technical Analysis for the Washington, DC-MD-VA and Baltimore Areas[80]" by improving EPA's understanding of prevailing winds.

To allow consideration of air movement above the surface layer, we ran the HYSPLIT model to obtain trajectories for three heights – 100 meters, 500 meters and 1,000 meters. We ran the HYSPLIT to obtain 1,000 meter runs in order to better understand aloft movement of air that can be expected to mix down as the night-time inversion breaks-up. Due to the number of monitors and exceedance days EPA did not (and could not due to time constraints) run trajectories for each exceedance day at each monitor in the CSA.

To narrow down the level of effort, EPA examined the air quality data (Factor 1) in more detail.

We examined the 2006 to 2010 8-hour ozone concentrations for the monitors in the "violating center"[81] of the CSA and grouped the data by days when the 2008 ozone NAAQS was exceeded. When selecting monitors for which to run the HYSPLIT model EPA had to consider the density of the monitoring network, the need to decide whether to designate all or a substantial portion of this CSA as one nonattainment area or split the CSA into more than one nonattainment area, and the need to develop a conceptual model of the relationship between meteorology (wind directions on exceedance days) and ozone concentrations within the CSA in light of Maryland's (and other parties') comments on meteorology, and comments noting that the "tracking" of the design value for the 1997 Washington DC-MD-VA nonattainment area by the Davidsonville monitor in Anne Arundel County indicates there should be only one nonattainment area within the CSA.

[78] For example, refer to documents EPA-HQ-OAR-2008-0476-0405 and EPA-HQ-OAR-2008-0476-0456.

[79] "Preliminary Technical Support Document, December 2011, entitled, Maryland Area Designations for the 2008 Ozone National Ambient Air Quality Standards, prepared by the Region 3 USEPA" document number EPA-HQ-OAR-2008-0476-0235 in the docket for this action.

[80] Refer to in docket item numbers EPA-HQ-OAR-2008-0476-0235, EPA-HQ-OAR-2008-0476-0405 and EPA-HQ-OAR-2008-0476-0456 in the docket for this action.

[81] Basically all monitors in the CSA were considered except the monitor in Frederick County, VA.

Normally when we are developing a conceptual model understanding of what yields ozone exceedances in an area we will evaluate 5 to 10 years worth of meteorological data. In some areas where the meteorology is well known, where the design value monitor statistically dominates the data in terms of design value and number of exceedances, or where there is only one violating monitor in the area, we might need to examine the wind patterns on days the 0.075 ppm standard was exceeded at that violating monitor. However, in the case of the Washington-Baltimore-NV CSA, there were several determinations to be made or factors to consider: First EPA had to determine whether the CSA should contain one nonattainment area enclosing all the violating monitors within the CSA as recommended by two States or be split into two nonattainment areas (and some attainment areas) as recommended by two States. Second, the patterns of exceeding monitors on exceedance days shows that parts of the area might be exceeding on certain days while other parts not recording exceedances on the same days. Third, especially high values can occur at different monitors. Fourth, on multi-episode days portions of the area record exceedances or especially high values on some days while other parts record exceedances or especially high values on other days of the same episode. There is also the need to examine ozone concentration gradients and the need to correlate concentration levels across the CSA with model predicted wind directions. These determinations and factors would support performance of a more extensive meteorology analysis than most areas in the country.

In past designations, EPA has rarely considered this level of detail for every designation decision, but to reiterate, the decisions for this CSA are not typical due to: the State submitted information regarding meteorology and its effects on the Edgewood monitor and the differing recommendations of two States seeking a single nonattainment area for the CSA and another two States seeking retention of the 1997 Washington DC-MD-VA nonattainment boundaries.

About HYSPLIT generally:

We used the National Oceanic and Atmospheric Administration Hybrid Single Particle Lagrangian Integrated Trajectory Model (NOAA HYSPLIT or just "HYSPLIT") to develop a conceptual model of the meteorological transport conditions within the regional area within and around the CSA. We evaluated 24-hour back trajectories for the 2006-2010 time period using the NOAA HYSPLIT model. We evaluated trajectories for 100, 500 and 1000 meter heights to gain an understanding of where air may "mix down" as the nighttime inversion breaks-up.

Several factors need to be kept in mind:

HYSPLIT back-trajectories are depicted as a relatively thin line, which can be taken to represent the center of an air parcel of some width. An area traversed by the line is considered traversed by the air parcel.

HYSPLIT back-trajectories used in ozone designations are based upon meteorological fields at a 40 km (about 24.8 miles) resolution.

HYSPLIT back-trajectories are produced at various end heights to capture the behavior of air parcels at various heights within the mixed layer of the atmosphere. Lower-level trajectories may be affected by terrain.

HYSPLIT back-trajectories end at the monitoring site in question; therefore, if one starts at the monitor the further a point is on the curve is away from the monitor (the end point), the location of the air mass is further back in time.

Selection of Monitors:

We aimed to develop an understanding of what wind patterns were conducive to ozone formation throughout the area. However, to develop three (100, 500 & 1000 m) back trajectories for every exceedance day for every monitor would produce hundreds of results that might not materially provide more information than a fewer number. Clearly, data for the Edgewood monitor in Harford County, MD

is critical because this monitor has the highest design value of any monitor in the CSA and by far experiences more exceedance days.

The Franconia monitor in Fairfax County, VA is also important because it is the current design value monitor in the Washington DC-MD-VA nonattainment area and is the violating monitor furthest from the Edgewood monitor. (Franconia is in the far southwest of the CSA, and, Edgewood is in the far northeast.) However, the Franconia monitor did not have as many exceedance days as several other monitors in the southwest, being surpassed by the McMillan Reservoir monitor in the District of Columbia and the Arlington monitor in Arlington County, VA. See Tables 6, 7 and 8 elsewhere in this document. For this reason, the Arlington and McMillan Reservoir monitors were also considered.

The Davidsonville monitor in Anne Arundel County was selected based upon its design value history (at times equal to that in the current Washington DC-MD-VA Nonattainment area), number of "especially high" exceedances over the 2006 to 2010 period and its location close to the border of the two nonattainment areas designated under the 1997 ozone NAAQS.

Initially, the Howard U—Beltsville monitor was likewise selected over the monitor at Prince George's Equestrian Center because Howard U—Beltsville monitor is closer to the border of the two nonattainment areas designated under the 1997 ozone NAAQS, currently has a higher design value and has recorded more exceedance days over the 2006-2010 period. By using the data for the Davidsonville and Howard U—Beltsville monitors EPA could correlate the ground level ozone concentrations with the back-trajectory results to gain an understanding of air movement patterns and measured ozone values in that portion of the two current nonattainment area's common border.

Finally, HYSPLIT back-trajectories for certain other monitors were considered when necessary to gain an understanding of wind directions on those days for which the main monitors did not exceed the 2008 ozone NAAQS. For other monitors, we examined the back-trajectories for some monitors as surrogates for other close monitors. For example, the McMillan, Arlington and Fairfax monitors are close to the Takoma and River Terrace monitors in the District. Therefore, on days for which we had back-trajectories for one or more of the three former monitors we inferred that these represented the prevailing winds at the other two monitors in the District. Likewise, comparing the trajectories available for an episode day, we could gain an overall sense of the prevailing winds for that day. For 2006 and 2007, certain other monitors were examined as well. These were certain days for outlying monitors such as those in Carroll (South Carroll), Calvert (Calvert Co.) and Charles (Southern Maryland) Counties in Maryland and Stafford County (Widewater) in Virginia.

Grouping:

EPA categorized the back-trajectory results into roughly five quintiles by the concentration measured at the monitor. The concentration ranges for these "quintiles" were based upon the results of the analysis for the Edgewood monitor. Refer to Table 10 elsewhere in this document for the ranges of each "Group."

Some General Observations:

Review of the HYSPLIT predicted trajectories actually occurred in two batches. Our first review looked at the 2008-2010 predictions. Our second review considered the 2007 and 2008 predictions. Our evaluation considered all the 2006 to 2010 predicted back-trajectories. The back-trajectories for different monitors suggest that 2006 and 2007 featured more episodes featuring southerly or southwesterly winds than 2008 and 2010 (2009 had so few episodes no general conclusion would seem warranted). Even so, 2006 to 2010 contained a considerable number of exceedance days featuring

winds from the northeast, north and northwest which corresponded to higher concentrations (say in Group 4 or higher – that is, over 0.087 ppm) or "especially high" concentrations (that is, 0.095 ppm --- see under Factor 1 under "Severity of Episodes" and Table 12 elsewhere in this document) recorded at the Edgewood monitor.

Sample Results:

Figures on the following pages provide examples of the HYSPLIT results. An electronic copy of all the HYSPLIT results has been placed in the docket for this action due to the voluminous nature of all the outputs (1807 single pages in Adobe® Acrobat®[82] portable data file (PDF) format which when zipped are over 50 megabytes in size).

Figures 4a through 4d show sample 100, 500 and 1000 meter Results for the Edgewood Monitor for July 6, 2010. Figures 5a through 5d show sample 100, 500 and 1000 meter Results for the Edgewood Monitor for August 10, 2010.

[82] Trademarks of Adobe Systems Incorporated.

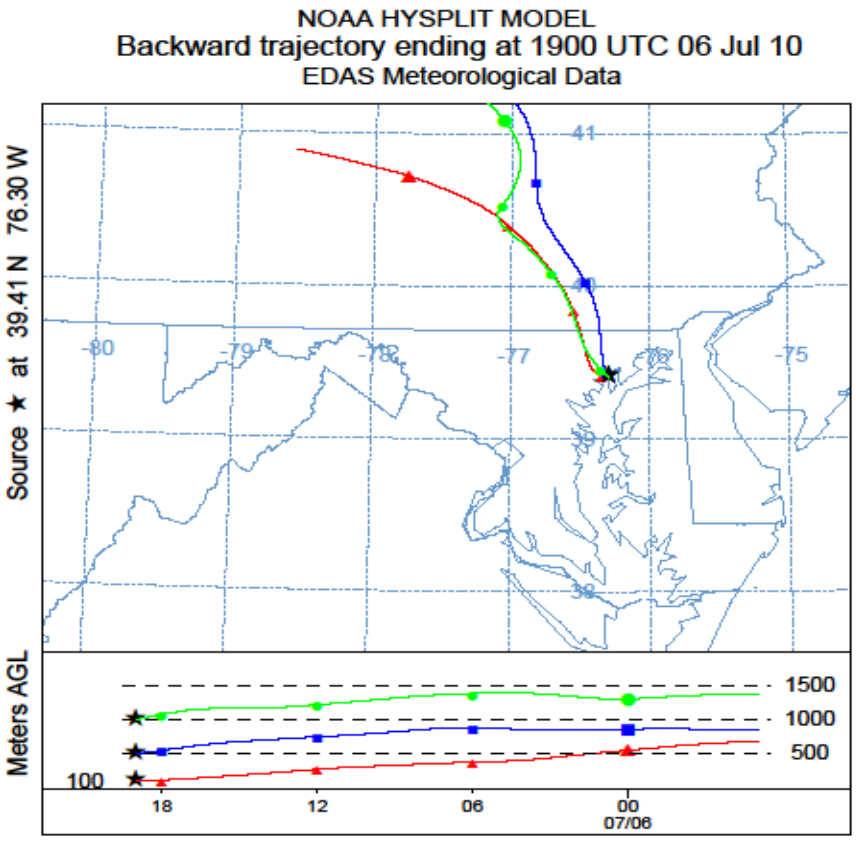

Figure 4a All Levels – 100, 500, 1000 meters

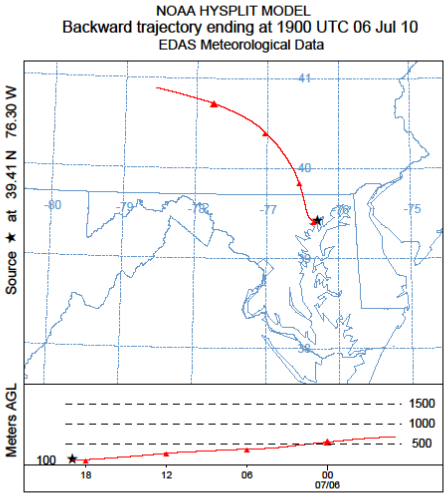

Figure 4b -- 100 Meters (Above)

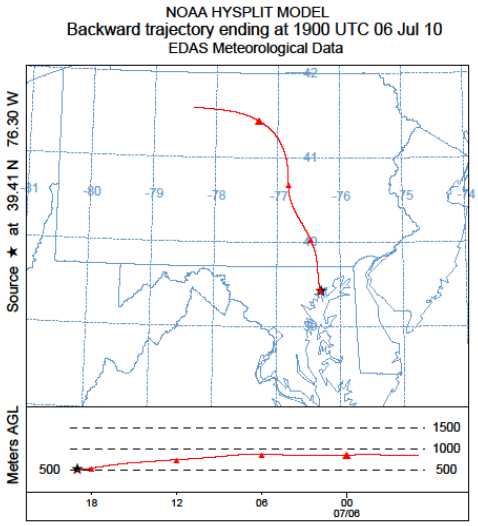

Figure 4c – 500 meters (above)

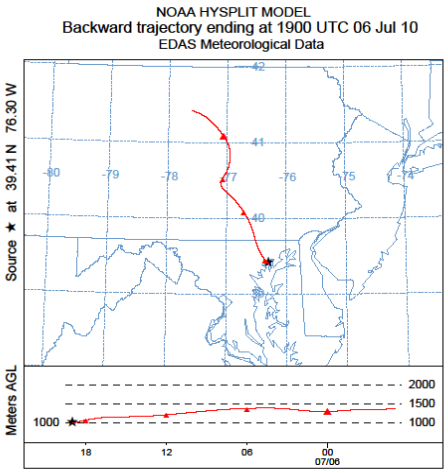

Figure 4d. 1000 meter Results (above)

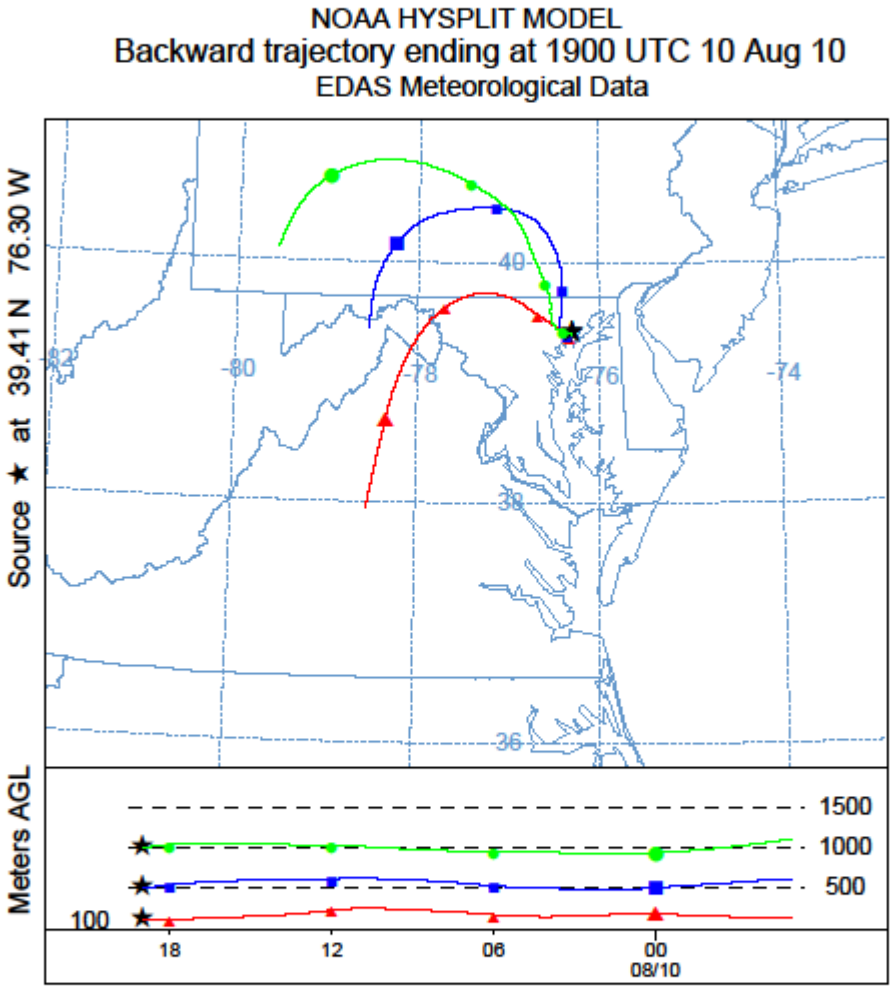

Figure 5a. All Levels – 100, 500 and 1000 meters

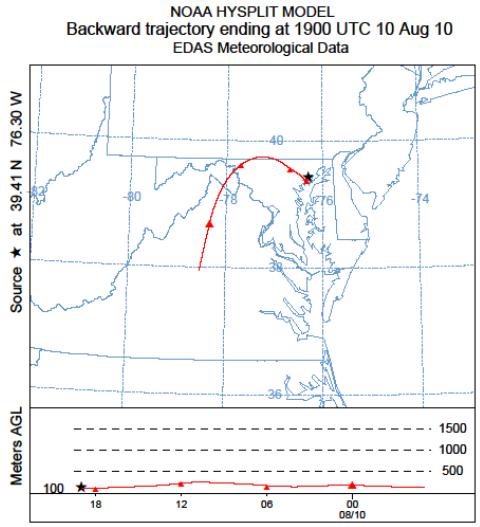

Figure 5b 100 meters (above)

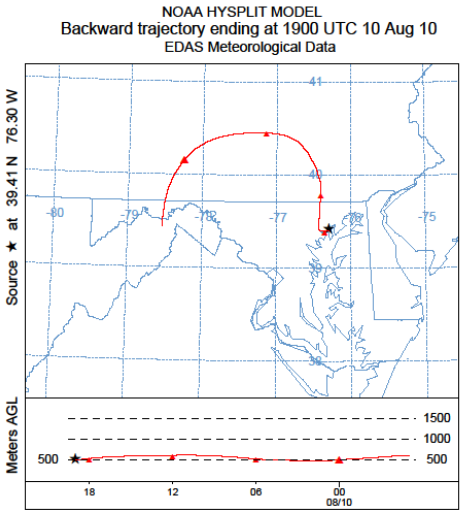

Figure 4c 500 meters (above)

F

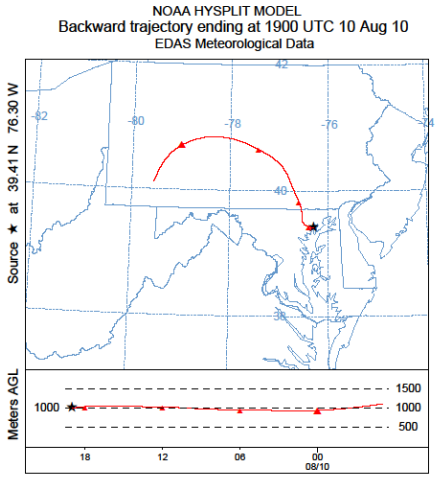

Figure 5d 1000 meter Results (Above)

Analyses:

1. Does the current Washington DC-MD-VA Nonattainment area contribute to nonattainment in the current Baltimore MD Nonattainment area?

For the 2008 to 2010 time period, the HYSPLIT trajectories support the conclusion that the Edgewood monitor is downwind of the 1997 Washington DC-MD-VA Nonattainment area. The trajectories for just the 100 and 500 meter heights suggest the Edgewood monitor is downwind of the 1997 Washington DC-MD-VA Nonattainment area on the following days when the Edgewood monitor exceeded 0.075 ppm:

Table 23. Days by Year the Edgewood Monitor is Downwind of the 1997 Washington DC-MD-VA Nonattainment area:

	YEAR		
Trajectory Height	2008	2009	2010
100 meters	6/7, 6/13-14, 7/3, 7/12, 7/29, & 9/4	6/26, 7/15-7/16, 8/16 & 8/18	5/21, 6/22, 6/26-6/27, 7/3-7/4, 7/16, 7/23, 8/9, 8/29, 9/1-9/2, 9/24
500 meters	4/19, 6/13; 7/3, 7/18, 7/29, & 9/4	7/15	6/22, 6/26-6/27, 7/16, 7/23, 7/31, 8/9, 9/1, 9/2 & 9/24.

The air at 100 and 500 meters height are likely the first to mix when the night-time inversion breaks up. These days represent 25 of the 51 2008-2010 exceedance days for the 100 meter height and 17 of 51 days for the 500 meter height.

The HYSPLIT back-trajectories indicate that many other areas are also upwind of this monitor on many days. On some days the winds come from the east or northeast. On other days the winds come from the south but the trajectory does not cross the core of the Washington CBSA[83] but does cross outlying counties (such as Calvert or Charles) of the 1997 Washington DC-MD-VA nonattainment area. Likewise, on some days when the predicted directions are from the northwest, the trajectories might only cross an outlying Frederick County, MD and not the core of the Washington CBSA. When the predicted winds are from the west, northwest, southwest and south-southwest, the trajectories almost always cross the core of the Baltimore nonattainment area.[84]

Figures 5A-1 to 5A-10[85] of Appendix 5 "Appendix 5: HYSPLIT Trajectories for Edgewood by Group and Exceedance Days Over 0.100 ppm" show the HYSPLIT results overlaid on a map. They are

[83] Refer to "The Composition of the Washington-Baltimore-Northern Virginia, DC-MD-VA-WV CSA" elsewhere in this document.

[84] The Baltimore-Towson CBSA and Baltimore nonattainment area share the same "core" as discussed in "The Composition of the Washington-Baltimore-Northern Virginia, DC-MD-VA-WV CSA" elsewhere in this document.

[85] The following nomenclature is used for the figures in the appendices to this document: The first number is the appendix number, the "A" indicates that the figure is in an appendix, and the number after the hyphen is the figure number within that appendix. Thus Figure 5A-1 refers to the first figure in Appendix 5 of this document.

grouped by the "Groups" defined in Table 10 elsewhere in this document. For each "Group" there is a map for 2008 to 2010 exceedance days and one for 2006 to 2007 exceedance days.

Analysis of the full set of data for the Edgewood monitor counted the back-trajectory for each altitude for each day. Thus each exceedance day would contribute three to the aggregate sum. The trajectories were placed in one of three exclusive categories: "Not any part of the Washington CBSA," "Only the Charles, Frederick or Calvert Counties portion of the Washington CBSA" or the "Washington CBSA except Calvert/Charles/Frederick Counties in MD." A trajectory was counted under the "Not any part of the Washington CBSA" only when the trajectory never crossed any area in the. A trajectory was counted under the "Only the Charles, Frederick (MD) or Calvert Counties portion of the Washington CBSA" if the only portion of the CBSA it crossed was in Charles, Frederick and/or Calvert counties. Likewise if the trajectory crossed anywhere in the Washington CBSA it was counted under the "Washington CBSA except Calvert/Charles/Frederick Counties in MD" unless it only crossed Charles, Frederick (MD) or Calvert Counties. The gross results of this analysis are found in Table 24:

Table 24. Trajectory Counts for Edgewood Monitor:

Geographic area	Number of Trajectories Counted[86]	Percent of Total
Not Washington CBSA	126	46.32%
Only Frederick (MD), Calvert, and/or Charles Co. of 1997 Washington DC-MD-VA nonattainment area	56	20.59%
Washington CBSA except Calvert/Charles/Frederick Counties in MD	90	33.09%
	272	

EPA does agree that air masses arriving at the Edgewood monitor on exceedance days can arrive from the West-Northwest, from the Northwest, from the Southwest and even from the North and Northeast as well as days where the air mass stayed locally – essentially circulated within the CSA boundaries – for a 24-hour period.

EPA acknowledges that there are exceedance days when the Edgewood monitor records concentrations of 0.087 ppm and higher (as well as days when the concentration is less than 0.087 ppm) and the air masses came to Edgewood via the core CBSA counties and cities of the Washington CBSA and the southern outer counties/CBSAs (such Calvert, Charles and St. Mary's), or the westerly outer counties/CBSAs (such as the Winchester, VA area or Clarke (VA), Warren (VA) or Jefferson (WV)). For instance, on July 3, 2008 (a single day episode), the trajectories at all three levels were from the Southwest and arrived via the core CBSA counties and cities of the Washington CBSA and passed through Baltimore City before arriving at Edgewood. Yet, he only two monitors in the CSA that recorded exceedances were at Edgewood at 0.089 ppm and at Aldino at 0.079 ppm. Likewise, on July 18, 2008 (the second day of a 2-day episode) the back-trajectories suggest Edgewood was directly downwind of much of the core CBSA counties and cities of the Washington CBSA and recorded an

[86] These counts were made off Figures 4A-1 to 4A-10. Some trajectories may have been missed. Even so, a general sense of exceedance day prevailing winds can be inferred overall.

exceedance of 0.102 ppm.[87] Similarly, on July 23, 2010 (a single day episode), the back-trajectories from Edgewood were similar to those on July 3, 2008. The Edgewood monitor recorded an exceedance of 0.101 ppm as did the Aldino (at 0.086 ppm) and Essex (at 0.082 ppm) monitors.[88]

Examining the back-trajectory results for the Edgewood monitor, EPA does not dispute that the "core CBSA counties and cities" of the 1997 Washington DC-MD-VA Nonattainment area is upwind of the Baltimore CBSA on many days the 2008 ozone NAAQS is exceeded.[89] Likewise, based upon the back-trajectories, EPA cannot exclude the outlying counties of the Baltimore and Washington CBSAs and the adjacent CBSAs of Culpeper and Winchester in Virginia and Lexington Park, MD, from further consideration regarding contribution. However, based upon the back-trajectories for some days when the concentration recorded at the Edgewood monitor was 0.087 ppm or higher, the back-trajectories predicted that the bulk of the air did not travel over most portions of the Washington CBSA (excepting at times Frederick County, MD) but came from the Northwest, the North-northwest, the North and even from the Northeast. Table 25 provides a listing of such days for just 2008 to 2010 alone.

Table 25. Days by Year the Edgewood Monitor is Not Downwind of the 1997 Washington DC-MD-VA Nonattainment area:

	YEAR		
Trajectory Height	2008	2009	2010
Edgewood Monitor:			
100 meters – 22 of 51 days	4/18, 6/12, 7/16-17 & 7/28/	4/26, 6/25, 7/13 & 8/27/	5/5, 5/27, 6/2, 6/23, 6/25, 7/17, 7/31, 7/5-7/7, 8/19 & 8/30-31
500 meters – 27 of 51 days	4/18, 6/12, 7/11-12, 7/16-17 & 7/28	4/26, 6/5, 6/25-6/26, 7/13, 8/16 & 8/27/2009	5/5, 5/21, 5/27, 6/2, 6/23, 6/25, 7/31, 7/5-7/7, 8/10, 8/19 & 8/30-31

At the Edgewood monitor on some of the days with higher ozone readings ("Groups 4 & 5" – measured concentration $\geq$ 0.087 ppm) the HYSPLIT trajectories suggest the winds came from the 1997 Washington DC-MD-VA Nonattainment area on some days but came from elsewhere on other days. Refer to Figures 4A-1 to 4A-5 in Appendix 4. On the "Group 2 and 3" days (between 0.079 through 0.086 ppm inclusive), the predominant directions seem to be from the South to Southwest, that is, often through the Washington CBSA. For other days ("Group 1" $\leq$ 0.078 ppm) the winds come from a variety of directions.

When trajectories end at the Edgewood monitor, these trajectories pass through the "core" (say Fairfax County, VA, the District, Prince George's and Montgomery Counties in Maryland) of the 1997 Washington DC-MD-VA Nonattainment area, and they also cross Anne Arundel County, Maryland and

[87] The back-trajectories suggest that the Howard University-Beltsville monitor in Prince George's County, MD was directly downwind of the Arlington (VA), Fairfax (VA) and Montgomery (MD) and Prince George's (MD) Counties as well as the District of Columbia; this monitor had an exceedance of 0.097 ppm.

[88] The difference between the values at Aldino and Essex might be due to Aldino likely being immediately downwind of the high emissions areas of Baltimore City and Baltimore County as well as the ore of the Washington CBSA and Howard and/or Anne Arundel Counties in Maryland.

[89] As defined by OMB these would be: Montgomery and Prince George's Counties in Maryland; the District of Columbia; and, Arlington, Fairfax County, Loudoun, Prince William and (to a lesser extent) Stafford Counties plus the Cities of Alexandria, Fairfax, Falls Church, Manassas, and Manassas Park in Virginia. Refer to OMB Bulletin No. 10-02, "Update of Statistical Area Definitions and Guidance on Their Uses," December 1, 2009.

skirt the Southeastern fringes of Baltimore City and County or pass through Baltimore City and parts of Baltimore County and through Howard County.

So while the 1997 Washington DC-MD-VA Nonattainment area is often upwind of the Edgewood monitor, there are a considerable number of days were this monitor recorded an ozone concentration considerably over the NAAQS (say 0.087 ppm or more, i.e., "Groups 4 and 5" days) when the trajectories (of any height) did not pass through the 1997 Washington DC-MD-VA Nonattainment area. This happened on the following dates: June 7, June 14, July 11 and July 17, 2008; May 5, June 2, June 25 and 26, July 5 through 7, August 10, August 19 and the period August 29 and 30, 2010.

For instance, on July 11, 2008 (the first day of a two day episode), the trajectories of the air masses arriving at Edgewood did not cross the core CBSA counties/cities of the Washington CBSA but came from the Northwest via Washington, Frederick (MD), Carroll, Howard and Baltimore Counties. The concentration at Edgewood was 0.100 ppm as well as 0.084 ppm at Essex to the Southwest and 0.079 ppm at Aldino to the Northeast of Edgewood.[90] On June 25, 2009 (the first day of 2-day episode), the back-trajectories from Edgewood came from the North, and this monitor recorded an exceedance of 0.109 ppm. The only other exceedances observed that day were 0.079 ppm at Aldino, 0.086 ppm at Essex and 0.076 ppm in Calvert County, MD.[91] Likewise, on May 27, 2010 (single day episode), the back-trajectories from Edgewood came from the Northeast; Edgewood recorded an exceedance of .089 ppm. For the period July 3 through 7, 2010 (the first 5 days of a 6-day episode), the 100 meter level back-trajectories passed through the core CBSA counties and cities of the Washington CBSA before arriving at Edgewood on the first two days. On these first two days, the 500 and 1000 meter back-trajectories did not pass through the core CBSA counties and cities of the Washington CBSA because they arrived via Harford and/or Baltimore County or via Baltimore City only. For the next three days all back-trajectories passed through Harford, Cecil and/or Baltimore Counties before arriving at Edgewood. Edgewood recorded the following exceedances (by date from the 3rd to the 7th): 0.082 ppm, 0.090 ppm, 0.097 ppm, 0.092 ppm and 0.088 pm. EPA believes that it is quite possible or likely that the readings on the 5th to the 7th were affected by the return of the ozone precursors emitted at ground level (from under 100 meters) in the Washington CBSA on the 3rd and the 4th, but higher level winds apparently never passed through much of the Washington CBSA on these days.

These results suggest that the 1997 Washington DC-MD-VA nonattainment area and even the Washington CBSA as a whole are upwind of the Edgewood monitor on some days the 2008 ozone NAAQS is exceeded at the Edgewood monitor. However, there are a considerable number of days when the HYSPLIT back-trajectories crossed no part of the Washington CBSA or just a portion of Fredrick County, MD only. This latter result says the Washington CBSA is not the only cause of high levels of ozone at the Edgewood monitor.

2. Placement of Anne Arundel and Prince George's Counties

EPA also examined in some detail back-trajectories for the Davidsonville (AQS ID No. 24-003-0014) and Howard University-Beltsville (Howard U-B – AQS ID No 24-033-0030) monitors in Anne Arundel and Prince George's Counties, respectively, in Maryland.

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[90] The only other monitor in the CSA recording an exccedance was Davidsonville at 0.076 ppm. The back-trajectories to Davidsonville passed through the core of the Washington CBSA.

[91] On June 26, 2009, the back-trajectories ending at Edgewood" were from the west crossing the West Virginia "panhandle", northern Loudoun County, VA, Washington, Frederick, and/or Carroll Counties (MD) and finally as they must Baltimore City and/or County. The Edgewood monitor recorded an exceedance of 0.091 ppm while the Aldino monitor recorded an exceedance of 0.081 ppm. The only other exceedances recorded in the CSA were at Arlington, VA and the District of Columbia each with a maximum of 0.080 ppm.

Anne Arundel County:

Figures 6A-1 to 6A-10 of Appendix 6 "HYSPLIT Trajectories for the Davidsonville, Prince George's Equestrian Center and Howard University—Beltsville by Group" show the HYSPLIT results overlaid on a map. They are grouped by the "Groups" defined in Table 10 elsewhere in this document. For each "Group" there is a map for 2008 to 2010 exceedance days and one for 2006 to 2007 exceedance days.

The Davidsonville monitor likewise can receive air from many directions on episode days. Given the close proximity of Prince George's, Calvert and Charles Counties to the Davidsonville site, many trajectories from the Northwest cannot help but graze the northern portion of Prince George's; likewise, when the trajectories are from the South or Southwest, the trajectory may not cross the core of the 1997 Washington DC-MD-VA nonattainment area but only cross the outlying Calvert and/or Charles Counties. Maryland has full ability to regulate these 3 counties regardless of what nonattainment area they are placed.

On some days the trajectories could not only skim Prince George's, Calvert and Charles Counties, but they also crossed a portion of the 1997 Baltimore nonattainment area and later the Washington area and vice versa.

Analysis of the full set of data for the Davidsonville monitor counted the back-trajectory for each altitude for each day. Unlike the analysis for the Edgewood monitor for which a trajectory was placed in an exclusive category, a trajectory that passes through both the Washington CBSA and the 1997 Baltimore nonattainment area was counted twice since both areas were implicated. Thus each exceedance day would contribute three or in some case six to the aggregate sum. The categories used were "1997 Baltimore nonattainment area" which means no part of the Washington CBSA was crossed and some other portion of the 1997 Baltimore nonattainment area except Anne Arundel County was crossed;[92] the "Washington CBSA excluding Charles and/or Calvert Counties only" which means that no part of the Washington CBSA was crossed except Charles and/or Calvert Counties, "Charles or Calvert County only" which means no other part of the Washington CBSA was crossed except one or both of these counties, "Prince George's County only" which means the only portion of the Washington CBSA crossed was Prince George's County and then into the rest of the 1997 Baltimore nonattainment area, and "Other" which means no part of a trajectory passes through any portion of the 1997 Baltimore nonattainment area (except Anne Arundel County) or the Washington CBSA. The gross results of this analysis are found in Table 26.

Table 26. Trajectory Counts for Davidsonville Monitor:[93]

	2008 to 2010		2006 to 2010	
Geographic area	Number of Trajectories Counted	Percent of Total	Number of Trajectories Counted	Percent of Total
Washington CBSA excluding Charles and/or Calvert Counties only	14	19.7%	58	38.6%

[92] Given the location of the Davidsonville monitor all trajectories must pass through some portion no matter how short.

[93] These counts were made off Figures 5A-1 to 5A-10. Some trajectories may have been missed. Even so, a general sense of exceedance day prevailing winds can be inferred overall.

Calvert and/or Charles County only	2	2.8%	16	10.5%
Prince George's County only	13	18.3%	7	4.6%
1997 Baltimore nonattainment area	40	56.3%	64	42.1%
Other	2	2.8%	11	7.2%
Total	71		166	

Over the five years, the data slightly favors the Washington CBSA as being predominantly upwind of the Davidsonville monitor though trajectories through Calvert and/or Charles only are passing through lower emissions area. Over the last three years, the data more heavily favors the 1997 Baltimore nonattainment area as being predominantly upwind of the Davidsonville monitor.

Of the days with exceedances above 0.078 ppm, the counts are:

Table 27. Trajectory Counts for Davidsonville Monitor – Exceedance Days over 0.078 ppm:[94]

	2008 to 2010		2006 to 2010	
Geographic area	Number of Trajectories Counted	Percent of Total	Number of Trajectories Counted	Percent of Total
Washington CBSA excluding Charles and/or Calvert Counties only	8	18.2%	32	36.4%
Calvert and/or Charles County only	0	0.0%	11	9.3%
Prince George's County only	9	20.5%	7	5.9%
1997 Baltimore nonattainment area	27	61.4%	44	43.2%
Other	0	0.0%	6	5.1%
Total			118	

Review of Figures 6A-4 through 6A-5, and 6A-9 through 6A-10, corresponding to exceedance days of 0.087 ppm or higher – substantially over 0.075 ppm by over 15 percent – suggest that the Davidsonville monitor records its highest exceedances when it is downwind of the 1997 Washington and Baltimore nonattainment areas.

Over the five years, the data slightly favors placement of the Davidsonville monitor with the core of the Washington CBSA though trajectories through Calvert and/or Charles only are passing through lower emissions area.

Prince George's County – Howard-University-Beltsville (Howard U-Beltsville):
For the Howard U-Beltsville monitor the reverse is true. For a preponderance of the days where an exceedance of 0.079 ppm or more was recorded, the back-trajectories passed through the core CBSA

[94] These counts were made off Figures 5A-1 to 5A-10. Some trajectories may have been missed. Even so, a general sense of exceedance day prevailing winds can be inferred overall.

counties and cities of the Washington CBSA as well as at times Calvert, Charles, Frederick and St. Mary's County in Maryland and through Fauquier and other outlying Counties in Virginia. For days with an exceedance of 0.078 ppm of less, there was no clear pattern; the trajectories were from various directions though none passed through the Baltimore CBSA other than Carroll County. For these reasons, based upon reception of ozone and ozone precursors, EPA believes that the Howard University – Beltsville monitor should be placed in a nonattainment area that includes the core CBSA counties and city of the Baltimore CBSA.

Naturally all trajectories must pass through Prince George's County and thus would count as passing through the Washington CBSA. However, some trajectories at some point looped into Prince George's County before traversing the 1997 Baltimore nonattainment area. Some also skimmed the border of Montgomery and Howard Counties. The categories used were: (1) "Washington CBSA (except Prince George's County and skims)" which means the trajectory crossed some portion of the Washington CBSA (except Prince George's), did not skim the Montgomery-Howard border, and crossed no portion of the 1997 Baltimore nonattainment area; (2) "Direct to 1997 Baltimore nonattainment area" which means the trajectory crossed from Prince George's County into the 1997 Baltimore nonattainment area without a loop within Prince George's; (3) "Loop Prince George's and Howard;" (4) "Washington plus Baltimore" which means the trajectory at some point crossed both the Washington CBSA (except only a crossing of Prince George's County) and the 1997 Baltimore nonattainment area: and (5) "Skimmed Montgomery and Howard" which counted those skimming the border of Montgomery and Howard Counties and did not cross any other portion of the Washington CBSA (excepting Prince George's).

The gross results of this analysis are found in Tables 28 and 29.

Table 28. Trajectory Counts for Howard U-Beltsville Monitor:[95]

	2008 to 2010		2006 to 2010	
Geographic area	Number of Trajectories Counted	Percent of Total	Number of Trajectories Counted	Percent of Total
Washington CBSA (except Prince George's County and skims)	35	59.3%	66	65.4%
Loop Prince George's and Howard	3	5.1%	3	2.9%
Skimmed Montgomery and Howard	6	10.2%	6	5.9%
Direct to 1997 Baltimore nonattainment area	15	25.4%	23	22.8%
Washington plus Baltimore	0	0.0%	3	2.9%
Total	59		101	

Table 29. Trajectory Counts for Howard U-Beltsville Monitor – Exceedance Days over 0.078 ppm:[96]

	2008 to 2010		2006 to 2010	
Geographic area	Number of	Percent of	Number of	Percent of

[95] These counts were made off Figures 5A-1 to 5A-10. Some trajectories may have been missed. Even so, a general sense of exceedance day prevailing winds can be inferred overall.

[96] These counts were made off Figures 5A-1 to 5A-10. Some trajectories may have been missed. Even so, a general sense of exceedance day prevailing winds can be inferred overall.

	Trajectories Counted	Total	Trajectories Counted	Total
Washington CBSA (except Prince George's County and skims)	34	63.2%	49	69.0%
Loop Prince George's and Howard	3	5.9%	3	4.2%
Skimmed Montgomery and Howard	2	5.3%	2	2.8%
Direct to 1997 Baltimore nonattainment area	9	23.7%	23	22.8%
Washington plus Baltimore	0	0.0%	3	4.2%
Total	38		71	

This monitor is located such that air masses have to pass through the "core" counties and cities of both the 1997 Baltimore and Washington nonattainment areas. Most of Prince George's County lies to the south and Southeast, Anne Arundel and/or Howard Counties are immediately east, north and north-northwest, Montgomery County is northwest, the District is directly to the southwest.

For the Howard U-B monitor, for a preponderance of the days where an exceedance of 0.079 ppm or more or, of less than 0.078 ppm was recorded, the back-trajectories passed through the Washington CBSA. For these reasons, based upon reception of ozone and ozone precursors, EPA believes that the Howard University – Beltsville monitor should be placed in a nonattainment area that includes the core CBSA counties and city of the Washington CBSA.

Prince George's County – Prince George's Equestrian Center:

For the Prince George's Equestrian Center (Pr. G. Eq. Ctr.) monitor, the pattern ought to be a mix between the situations found at Davidsonville and Howard-U—Beltsville monitors for 2008-2010. Because 2006 to 2007 exhibited a different bias towards winds from the south than 2008 to 2010, we examined some trajectories for 2006 and 2007, particularly to capture days where Anne Arundel and Howard U-Beltsville did not exceed 0.075 ppm. These are displayed on Figures 6A-11 through 6A-14. These suggest that the monitor exceeds on days when the winds pass through Prince George's County form the Northwest, West, Southwest and then pass through other portions of the 1997 Washington DC-MD-VA nonattainment area and other core counties and cities of the Washington CBSA. However, on days where it recorded an exceedance of 0.087 ppm or more ("Groups" 4 and 5 days – refer to Figure 6A-14 in Appendix 6) many trajectories pass through the Baltimore CBSA before turning back and passing through either the core of the 1997 Washington Nonattainment area (including the northwest portion of Prince George's itself) or through Charles County.

Prince George's County- Conclusion:
The meteorology assessment strongly favors placement of the Howard U-Beltsville monitor in the nonattainment area containing the core the Washington CBSA which is the core of the 1997 Washington nonattainment area.

To a lesser extent, the meteorology assessment favors placement of the Prince George's Equestrian Center monitor in the nonattainment area containing the core the Washington CBSA which is the core of the 1997 Washington nonattainment area.

Because the Howard U-Beltsville monitor is so strongly linked to the Washington CBSA and because the Prince George's Equestrian Center monitor is also linked to this CBSA more than the 1997 Baltimore Nonattainment area, the meteorology assessment strongly favors placement of Prince George's County in the nonattainment area containing the core of the Washington CBSA which is also the core of the 1997 Washington nonattainment area.

2. Does the current Baltimore MD Nonattainment area contribute to nonattainment in the current Washington DC-MD-VA Nonattainment area?

EPA also investigated if the Baltimore CBSA or 1997 nonattainment area also may contribute to the monitors in the Washington CBSA namely the McMillan Reservoir (DC), Arlington and Franconia (VA) monitors – "the 3-central monitors" in this CBSA. In the previous part of this document, we looked at the two monitors in Prince George's County, MD and concluded that meteorology favors placement with the nonattainment area containing the core of the Washington CBSA which is also the core of the 1997 Washington nonattainment area.

Figures 7A-1 to 7A-10 of Appendix 7 "Appendix 7: HYSPLIT Trajectories for Arlington, Franconia & McMillan Res. Monitors by Group" show the HYSPLIT results overlaid on a map. They are grouped by the "Groups" defined in Table 10 elsewhere in this document. For each "Group" there is a map for 2008 to 2010 exceedance days and one for 2006 to 2007 exceedance days.

Once again geographic location dictates the sort of trajectories that are possible. The trajectories can be placed into 5 categories: (1) on some exceedance days are pretty much straight from the north or northeast into Montgomery of Prince George's Counties before ending at one of the three monitors; (2) some sweep through only Anne Arundel County of the 1997 Baltimore Nonattainment area; (3) some cross only Howard and/or Carroll Counties in the 1997 Baltimore Nonattainment area; (4) some cross over both portions of both the 1997 Baltimore Nonattainment area as well as the 1997 Washington area; and, finally, (5) some pass over no part of the Baltimore nonattainment area. Due to the geographic location of these monitors, most trajectories that cross some portion of the 1997 Baltimore Nonattainment area must also cross the core CBSA counties of Montgomery and Prince George's in Maryland and Fairfax in Virginia as well as the District of Columbia on days where the trajectories run straight from Baltimore City to the Arlington and Franconia monitors.

Note that each of these three monitors did not necessarily record a value in the range for the same group on the same days as the others; for example, on "Group 5" days (values $\geq$0.091 ppm) all three recorded a value over 0.092 ppm on 7/17/2008 (0.095, 0.100 and 0.104 ppm) and 7/7/2010 (0.092, 0.095 and 0.100 ppm) but only two recorded values over 0.092 ppm on 6/12/2008 (0.093 & 0.096 ppm with the 3rd at 0.085 ppm) and only Franconia recorded a value of 0.091 ppm or more on 8/30/2010 (but the other exceeded 0.075 ppm). And note that one monitor might have an exceedance on a day that falls within one "Group" while another has an exceedance on the same day that falls into another group. For example, on 8/10/2010, Arlington recorded a concentration of 0.088 ppm (in "Group 4") while Franconia recorded a concentration of 0.082 ppm (within "Group 3"). Refer to Table 2A-1. These trajectories are presented in Figures 7A-3 and 7A-4 in Appendix7.

The gross results of this analysis are found in Table 30. Because these monitors may exceed on the same days, the gross counts overstate the results. Therefore because there are three monitors the gross

results are divided by three to allow some sort of absolute numbers to numbers comparison with the Edgewood monitor and the others discussed in the preceding part of this document.

Table 30. Trajectory Counts for the Franconia, McMillan Res. And Arlington Monitors:[97]

Category	Gross Count	Adjusted (Gross/3)	Percentage
2006-2010 Data			
(1) Straight – Baltimore	80	26.7	18.2%
(2) Anne Arundel County only	28	9.3	6.4%
(3) Howard and Carroll	47	15.7	10.7%
(4) Baltimore and Washington	11	3.7	2.5%
(5) No part of 1997 Baltimore area	266	86.7	60.6%
	439	146.3	
2008-2010 Data only			
(1) Straight – Baltimore	54	18.0	23.8%
(2) Anne Arundel County only	2	0.7	0.9%
(3) Howard and Carroll	38	12.7	16.7%
(4) Baltimore and Washington	8	2.7	3.5%
(5) No part of 1997 Baltimore area	108	36.0	47.6%
	227	75.7	

Examination of the back-trajectory results for these three monitors in the Washington CBSA, EPA also concludes that the "core CBSA counties and city" of the Baltimore CBSA are upwind of these three violating monitors in the Washington CBSA. Many of the days for which an exceedance of 0.087 ppm or more was recorded at any one (or more) of the monitors in Arlington and Fairfax Counties (VA) and the District of Columba, the back-trajectories implicate some portion of the core CBSA counties and city of the Baltimore CBSA. Of course, air from the core CBSA counties and city of the Baltimore CBSA to one of these monitors has to pass through Prince George's and/or Montgomery Counties in Maryland as well.[98]

4. Monitors and Counties

Generally:
Examination of available data has shown that every county, the District, and Baltimore City are likely upwind of one or more violating monitors at times. Examination of the figures in Appendices 5, 6 and 7, also show that on average the closer a county/city is to a monitor the more likely it has more trajectories to that monitor crossing it.

As for the county or city containing a violating monitor, it has to be designated nonattainment but all back-trajectories from that monitor must pass over the county in which a violating monitor is located. Of course, size is a factor. Classic examples are those in Prince George's County, MD: The Howard U-Beltsville monitor sees many trajectories from the south cross its north-south axis. Likewise, the Prince

[97] These counts were made off Figures 5A-1 to 5A-10. Some trajectories may have been missed. Even so, a general sense of exceedance day prevailing winds can be inferred overall.
[98] And through the District of Columbia most time as well in the case of monitors in Arlington and Fairfax Counties in Virginia.

George's Equestrian Center monitor sees many trajectories cross its southern half and many cross its north-south axis.

Some relatively small areas with violating monitors such as that in Arlington County or perhaps even the District of Columbia are hard to analyze in this respect. At most the air mass spends a brief period of time in the small entity during the period immediately before the air mass reaches the monitor. These two monitors are located in a region of high emissions and emissions density. Contribution to ozone at these monitors may result from emissions from the larger adjacent areas as well as from mixing from the layers of air above the nocturnal inversion and from other long-range transported ozone and precursors.

Carroll Co., MD and Calvert County Maryland:
Examination of the trajectories for surrogate monitors on specific days when either of the Calvert County or the South Carroll monitors recorded an exceedance for the period 2008 to 2010 suggest these two monitors record exceedances when downwind of the urbanized cores of the 1997 nonattainment areas. We ran the HYPLIT for these monitors for 2006 and 2007 once we discerned that the 2006 and 2007 wind patterns for other monitors showed that the wind patterns for 2008 and 2010 might not represent a good sampling of exceedance patterns. The back-trajectories for 2006 and 2007 also suggest these two monitors record exceedances when downwind of the urbanized cores of the 1997 nonattainment areas. For the South Carroll monitor, the principal local upwind areas are the District, Montgomery, Howard, Prince George's, Fairfax, Prince William, Anne Arundel and Charles Counties, with Frederick and Baltimore Counties plus Baltimore City being occasionally upwind. There can be days when the back-trajectories suggest Carroll County is upwind of the CSA; examples included September 4, 2008.

For Calvert County, the principal local upwind areas are the Anne Arundel, Howard, Prince George's, Baltimore Counties plus Baltimore City, and to a lesser extent, Carroll County, with the District, Harford and Montgomery Counties being occasionally upwind. There can be days when the back-trajectories suggest Calvert County is upwind of the CSA; examples include September 4, 2008. .

The 2006 and 2007 trajectories are found in Figures 9A-1 and 9A-2 of Appendix 9 to this document.

Outlying Counties:
Figures 9A-3 to 9A-11 show the trajectories crossing counties in various areas. The areas are: (1) the western CSA counties and areas of Clarke, Culpeper, Fauquier, Warren in Virginia, of Jefferson and Hampshire in West Virginia, and the Frederick County Area in Virginia; (2) Queen Anne's County, MD, (3) St. Mary's County, MD, and (4) the Fredericksburg area in Virginia. For the first three, there are two figures – one with trajectories to violating monitors in the 1997 Washington area and one to violating monitors in the 1997 Baltimore area. For the last, the 1997 Washington area has been broken into two slides – one for violating monitors in Virginia and one for violating monitors in the District and Maryland.

Western CSA counties and areas of Clarke, Culpeper, Fauquier, Warren in Virginia, of Jefferson and Hampshire in West Virginia, and the Frederick County Area
Figures 9A-3 to 9A-4 show the trajectories crossing these areas. One cannot directly compare the figures directly in that the back-trajectories from the 1997 Washington area represent 5 monitors versus two in the 1997 Baltimore area. Figures 9A-3 to 9A-4 suggest that these areas are upwind of both the 1997 Baltimore and Washington nonattainment areas. However, Figure 9A-3 suggests that Culpeper, Fauquier, Warren and Jefferson Counties are more often upwind of monitors in the 1997 Washington

nonattainment area than Clarke and Hampshire Counties and the Frederick County Area in Virginia. Figures 9A-1 and 9A-2 suggest these areas are rarely upwind of the monitors in Carroll and Calvert Counties.

Queen Anne's County, MD
Figures 9A-5 to 9A-6 show the trajectories crossing Queen Anne's. One cannot directly compare the figures in that the back-trajectories from the 1997 Washington area represent 5 monitors versus two in the 1997 Baltimore area. Figures 9A-5 and 9A-6 suggests that Queen Anne's County is upwind of violating monitors in both the 1997 Baltimore and Washington nonattainment areas. Figures 9A-1 and 9A-2 suggest Queen Anne's is rarely upwind of the monitors in Carroll and Calvert Counties.

St. Mary's County, MD
Figures 9A-5 to 9A-6 show the trajectories crossing St. Mary's. Comparing Figures 9A-5 and 9A-6 suggests that St. Mary's County is more often upwind of violating monitors in the 1997 Baltimore Nonattainment area because many more trajectories from the two monitors cross the county than those from the five monitors in the 1997 Washington Nonattainment area. Figures 9A-1 and 9A-2 suggest St. Mary's is rarely upwind of the monitor in Carroll County; on days when Calvert County receives winds from the south, St. Mary's is likely upwind of Calvert County.

The Fredericksburg area in Virginia
Figures 9A-7 to 9A-9 show the trajectories crossing the Fredericksburg area in Virginia.
One cannot directly compare Figure 9A-8 to the other two because it represents 3 monitors in the District's and Maryland's portions of the 1997 Washington area, whereas the other two figures results from only two other monitors. Figure 9A-9 is for the Davidsonville and Edgewood monitors the latter of which had far more exceedances than any other monitor in the CSA. The other four are comparable in number of exceedance days – in the range of 52 to 62. That Figure 9A-9 shows fewer trajectories than the other two suggests the Fredericksburg Area is more often upwind of the 1997 Washington Nonattainment area. Figures 9A-7 and 9A-8 suggest that when the Fredericksburg Area is upwind of these monitors the air mass moves through this area and then to the northwest over the Arlington, Franconia, McMillan and Howard U-Beltsville monitors in turn. Figures 6A-11 to 6A-14 suggest this area is at times upwind of the Prince George's Equestrian Center monitor as well. Figures 9A-1 and 9A-2 suggest this area is rarely upwind of the monitor in Calvert County but is upwind of Carroll County's monitor about one-third of the time.

Linkage Table for Violating Counties:
Examining the available information, EPA has updated the linkage tables over those used previously.

Table 31. Meteorological Linkages

Location of Violating Downwind Receptor Monitor	Adjacent Upwind Possible Contributing Area(s	Close Upwind Possible Contributing Area(s) – Counties, Cities or CBSAs
Harford County	Baltimore County, adjacent CBSAs in Maryland and Pennsylvania.	Baltimore City, Anne Arundel, Howard, Montgomery, Prince George's, Fairfax[99], Arlington[100], Frederick (MD), The

[99] Wherever Fairfax County is indicated also includes at times Fairfax City and Alexandra City.
[100] Wherever Arlington County is indicated also includes at times Falls Church City

		District[101], and CBSAs in Delaware, Maryland and Pennsylvania adjacent to the Washington-Baltimore-NV CSA and to a lesser extent, Calvert, Charles, Prince William,[102] Loudoun.
Baltimore County	Anne Arundel, Carroll, Harford, & Howard Counties; Baltimore City; and adjacent CBSAs in Pennsylvania.	Frederick (MD), Prince George's and Montgomery, Fairfax, Arlington, the District, CBSAs in Delaware, Maryland and Pennsylvania adjacent to the Washington-Baltimore-NV CSA a and to a lesser extent, the Calvert, Charles, Prince William, Loudoun.
Carroll County	Howard and Montgomery Counties; to a lesser extent, Baltimore and Frederick, (MD) Cos. And Baltimore City.	Arlington, Anne Arundel and Prince George's, Fairfax, the District, County, VA. Prince George's, Fairfax, and Charles, and to a lesser extent Loudoun, Calvert, Frederick (MD), Prince William, and Baltimore Counties plus Baltimore City.
Anne Arundel County	Baltimore Co., Calvert, Prince George's, and Howard.	Fairfax, Charles, the District, Baltimore City, Montgomery, and to a lesser extent, Loudoun, Prince William, Arlington, and Frederick (MD).
Fairfax County, VA	Arlington, Charles, Loudoun, Montgomery, Prince George's, the District, Alexandria and Fairfax Cities and to a lesser extent Prince William.	Anne Arundel, Howard, Calvert, Carroll, plus Baltimore Co. and City and to a lesser extent Frederick (MD), Prince William and the Fredericksburg area.
Arlington County, VA	Fairfax, the District, and Falls Church City.	Anne Arundel, Charles, Howard, Loudoun, Montgomery, Calvert, Prince George's, Prince William, Alexandria and Fairfax Cities plus Baltimore Co. and City and to a lesser extent: Prince William, Frederick (MD), and the Fredericksburg area.
District of Columbia	Montgomery, Prince George's Arlington, Fairfax, and, Alexandria and Falls Church Cities.	Charles, Howard, plus Baltimore Co. and City, the Fredericksburg area and to a lesser extent: Calvert, Carroll, Prince William Loudoun, Frederick (MD)
Prince George's County, MD	District of Columbia, Anne Arundel, Charles Fairfax, Montgomery, Howard; and to a lesser extent: Calvert.	Arlington, Prince William, Baltimore Co. and City, and to a lesser extent: the Fredericksburg area, Loudoun, and Frederick (MD).

[101] Wherever the District is indicated also includes at times Alexandra City.
[102] Wherever Prince William County is indicated also includes at times also Manassas and Manassas Park Cities.

Calvert County, MD	Prince George's and Anne Arundel, and possibly to a lesser extent: Saint Mary's, and Charles.	Baltimore Co. and City, Howard, and to a lesser extent: Fairfax, Montgomery, Frederick (MD), Carroll, and Harford.

5. Other Meteorological Analyses

Regarding Transport on Larger Scales, the Nocturnal Low Level Jet (NLLJ) the "Bay Breeze" and "Lee-side" trough[103]:

EPA does not disagree with Maryland that transport of ozone and its precursors from other States such as those of the Ohio River Valley and Pennsylvania, Virginia, North Carolina and others affects ozone levels at monitors in Maryland. As discussed elsewhere in this document, EPA believes that large scale transport is to be addressed under other provisions of the CAA and not section 107(d)(1)(A) designations. For the reasons discussed in section 3.1.2 of "Responses to Significant Comments on the State and Tribal Designation Recommendations for the 2008 Ozone National Ambient Air Quality Standards (NAAQS)," Docket Number EPA-HQ-OAR-2008-0476, U.S. Environmental Protection Agency, April 2012, EPA believes that the CAA requires the nonattainment designation process under section 107(d)(1)(A) requires contribution to be of a level sufficient to warrant a nonattainment designation and such contribution must be to violating areas that are "nearby;" the longer range transport that is not addressed under section 107(a)(1)(A), the CAA prohibits "significant" contribution, not any contribution.

EPA does not dispute Maryland's data regarding aloft levels of ozone entering Maryland. However, EPA notes that these aloft levels do not seem to be causing violations at ground level ozone monitors between Maryland's borders and most of the States that Maryland has identified: Kentucky, North Carolina, Ohio, Michigan, Indiana, West Virginia and others. All monitors in West Virginia are currently attaining the 2008 ozone NAAQs. This is based upon the fact that many of these are attaining the 2008 ozone NAAQS at this time. Of note are those closest to Maryland such as that in Monongalia, Greenbrier and Berkeley Counties as well as those along the Pennsylvania-West Virginia border. The monitors in Virginia south of the Washington-Baltimore-NV CSA, in particular those in Frederick, Caroline, Loudoun, Fauquier, Stafford, Albemarle, Page, Madison and all in the Richmond, VA CBSA are currently attaining the 2008 ozone NAAQS.[104] The monitor in Madison County, VA is located on a ridge of the mountains within the border of Shenandoah National Park. So are the monitors in Garrett and Washington Counties in Maryland. The same is true for all monitors save a couple in Pennsylvania located west of the Lancaster, Reading, Allentown-Bethlehem-Easton and Philadelphia-Camden-Wilmington CBSAs in Pennsylvania. Most are attaining with the only exceptions are in the Pittsburgh area; so are many in Eastern Ohio along the Pennsylvania-Ohio border.[105]

Also, on many days that EPA examined by comparing the HYSPLIT back-trajectories and monitored ozone concentrations for particular episode days. In addition to the monitors in the CSA, EPA examined measured ozone concentrations at three higher elevation monitors near the CSA for 2008-2010 episode

[103] Maryland's March 7, 2012, letter in response to EPA's December 9, 2011, letter discussed portions of these topics under various factors; EPA is consolidating the responses here.

[104] Richmond had a design value of 0.076 ppm based upon 2008 to 2010 data but because Virginia certified its 2011 data early, EPA considered the 2009 to 2011 design value of 0.075 ppm as the most current design value upon which to base a attainment/unclassifiable-nonattainment decision.

[105] Data Source: ozone_dv75_20082010.xls (downloaded on 9/22/2011 from http://www.epa.gov/airtrends/values.html).

days. These monitors were the Shenandoah National Park (SNP) monitor ("SNP") (AQS ID No. 51-113-0003) located in Madison County, VA, the monitor in Garrett County, Maryland ("Piney Run," AQS ID No. 24-023-0002) and the monitor in Franklin County, PA ("Methodist Hill," AQS ID No. 42-055-0001).[106] Refer to the data in Table A2-3: Air Quality Data – "Three 'Higher Elevation Monitors' Episode Days for 2008 through 2010" in Appendix 2. In some cases where our HYSPLIT results suggested one or more of these monitors could be upwind of the CSA, EPA did indeed find one of these monitors recording an ozone concentration above the 0.075 ppm NAAQS.[107] These days were often on the second or later day of a multi-day episode. However, EPA found that on other days the measured ozone concentrations at one or more of these monitors was 0.010 ppm (10 ppb) below the NAAQS and more days where the measured ozone concentrations at one or more of these monitors was well below 0.065 ppm.

For instance, on April 18, 2008, the Methodist Hill monitor recorded a 0.074 ppm while both the Davidsonville and Edgewood monitors recorded 0.087 and 0.086 ppm, respectively. The SNP monitor recorded a concentration of 0.071 ppm on September 2, 2010 and the Methodist Hill monitor a 0.077 ppm while the Padonia (North of Baltimore) and Edgewood monitors recorded 0.092 and 0.82 ppm, respectively.[108] On the previous day, the Edgewood monitor recorded a 0.090 ppm while the SNP monitor recorded only a 0.062 ppm.[109]

High levels of ozone at these three higher elevation monitors did not always correspond to the worst levels of ozone measured within the CSA. For example, on June 26, 2009, the Edgewood monitor recorded a 0.091 ppm; on the same day, the Piney Run and Methodist Hill monitors recorded 0.059 and 0.047 ppm, respectively. Likewise, on July 23, 2010, the Piney Run monitor recorded a 0.047 ppm while the Edgewood monitor recorded 0.101 ppm. Finally, on June 14, 2008, the Piney Run, Methodist Hill and SNP monitors recorded 0.041, 0.052 and 0.069 ppm, respectively, while the Edgewood monitor recorded 0.093 ppm.

This data set to correlate the possible "aloft reservoir" with the back-trajectories is limited by the number of higher- elevation monitors in close proximity to the CSA. EPA did not attempt to identify one of these three higher elevation monitors as a good surrogate for each ozone exceedance day within the CSA and on a number of days could not do so because the back-trajectories predicted the prevailing winds blew from the Northeast for which none of these three higher-elevation monitors could be considered an adequate surrogate. Instead, EPA could only examine back-trajectories for a number of episodes focusing on those with higher concentrations measured within the CSA or those with higher concentrations measured at one of these three higher elevation monitors to gain a sample of what this data might reveal.

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[106] Maryland identified these three as examples of higher elevation monitors which might provide an indication of the levels in an elevated reservoir. Refer to http://www.otcair.org/upload/Documents/Meeting%20Materials/ConceptualModel_20090602%20TAD%20FOR%20OTC%20Final.pdf which Maryland sent to EPA subsequent to their March 7, 2012, response and copy of which has been placed in the docket.

[107] EPA did not necessarily require the back-trajectory to cross the county; if one of these three higher elevation monitors was between back-trajectories at different elevations or close enough to be a reasonable indicator, EPA considered the data.

[108] The HYSPLIT back-trajectories for the 500 and 1000 meter levels were geographically offset; the 1000 meter trajectory was more northerly than the 500 meter one. That the Padonia monitor recorded a higher concentration than Edgewood could be due to its location downwind of the heavy emissions areas of Baltimore CBSA core. The Back-trajectories for the 100 meter level for bth the Howard-University-Beltsville and Edgewood sites indicated a southerly wind in the CSA.

[109] These two days in September 2010 were near the end of a seven-day (8/28 to 9/3/2010) episode.

Gradients within the Washington-Baltimore-NV CSA:

EPA examined a number of episodes to determine what sorts of ozone gradients are observed within the CSA. EPA examined the back-trajectories to gain some understanding of the prevailing winds on the particular episode day and considered the ozone concentrations at all monitors within the violating center of the CSA. EPA considered a variety of episodes with emphasis on the longer episodes, those with highest ozone readings, and those with the most widespread extent of measured exceedances.[110] Some single day episodes were considered as well, such as July 23, 2010 on which the Edgewood monitor recorded 0.101 ppm with only two other monitors in the CSA exceeding at 0.082 ppm.

EPA considered the peak ozone concentrations at monitors for which the HYSPLIT back-trajectories predicted were on the upwind edge of the CSA for that day of the episode and examined the ozone concentrations across the CSA. In most instances the monitors on the predicted upwind edge were below the 0.075 ppm NAAQS. Sometimes the values were below 0.060 ppm (60 ppb) but at other times often between 0.070 and 0.074 ppm (70 to 74 ppb). Lower upwind values often correlated with lower peak values and vice versa. For some episodes the HYSPLIT predicted trajectories showed that the prevailing winds drastically shifted direct by around 180 degrees. Examples included September 3 and 4, 2008 and April 18 and 19, 2008 where the winds on the first day were northerly and on the second day were predicted to be southerly. On the first day the northern, upwind monitors for the Washington CBSA were generally below 0.075 ppm – sometimes well below at 0.053 to 0.068 ppm – and the peak values occurred downwind of the core CBSA counties and cities of the Washington CBSA. On the second day, the southern monitors were now predicted to be on the upwind edge; these recorded exceedances in the 0.076 to 0.081 ppm range. In the Baltimore CBSA, on April 18, 2008, both the Aldino and Edgewood monitors recorded values of 0.085-0.086 ppm when on the predicted upwind edge; on the second day they recorded lower values – 0.082 ppm at Edgewood and less than 0.075 ppm at Aldino. The high values on April 18th when both the Aldino and Edgewood monitors were on the predicted upwind edge could be due to these monitors being downwind of the Lancaster and York CBSAs. In the September 2008 episode, both were less than 0.065 ppm when on the predicted upwind edge, and only Edgewood recorded an exceedance of 0.080 ppm on September 4th. Based upon examination of the predicted upwind, ground level concentrations, EPA can conclude that incoming aloft ozone levels do not seem to cause appreciable numbers of exceedances at monitors located at the predicted, upwind edges of the CSA.

EPA found that often the monitor at the Equestrian Center in Prince George's County,[111] the monitors in Anne Arundel (Davidsonville), Charles and Calvert Counties record their highest concentrations when these monitors are downwind of the core CBSA counties and cities of the Washington and/or Baltimore CBSAs. However, on other days, these monitors recorded exceedances when they seemed to be on the upwind edge of the CSA, but on these days the exceedances were generally low in the 0.076 to 0.079 ppm range. The Howard University-Beltsville monitor in Prince George's County, MD is located between the core CBSA counties and cities of the Washington CBSA and the Baltimore CBSA. As noted elsewhere, EPA found that for a preponderance of the days where an exceedance of 0.079 ppm or more was recorded at the Howard University-Beltsville monitor that trajectories passed through the core

[110] Needless to say, quite often the longest episodes produce the highest concentrations and the widest extent of measured exceedances.

[111] this is located essentially east of the District of Columbia as opposed to the Howard U-Beltsville Monitor in the same county which is essentially on a line between Baltimore City and the District; the latter monitor is located near Beltsville, MD between Interstate 95 and the Baltimore-Washington Parkway.

CBSA counties and cities of the Washington CBSA as well as at time Calvert, Charles, Frederick and St. Mary's County in Maryland and through Fauquier and other outlying Counties in Virginia.

EPA did not expend much effort to determine when the monitors in Fauquier, Prince William and Stafford Counties in Virginia recorded high values because the design value at these monitors is comfortably below (0.070 ppm or less) the 2008 NAAQS. Likewise, EPA could not discern definitive trends for the monitors Frederick and Carroll Counties in Maryland because these monitors did not have many exceedances – 10 and 12, respectively, -- in the time period examined. Also, the design values of these monitors are barely above the 2008 ozone NAAQS at 0.075 or 0.076 ppm.

EPA did note that the gradients around the Edgewood monitoring site in Harford County, MD might well be steeper on some days than elsewhere in the CSA on high exceedance days. In the Washington CBSA plus the Davidsonville monitor in Anne Arundel County that is close to the border of the Washington CBSA, steep gradients can also occur. EPA considered these two groups separately for several reasons: (1) These two sets of monitors sets are separated by considerable distance between being literally at opposite ends of the region of violating monitors in the CSA; (2) Maryland's persuasive evidence that the Edgewood monitor is affected by meteorological-topographical factors in a manner different from other monitors in the CSA. These observations were made by comparing the concentration of one monitor with those close to the first and computing the difference. The minimum difference for each exceedance day examined was noted. The monitors in Harford (Aldino) and Baltimore (Essex and Padonia) Counties were considered to be close to the Edgewood monitor. For the Washington CBSA plus Davidsonville site, close monitors might include those in the District, Fairfax and Arlington Counties in Virginia, those in Prince George's County, MD plus the Davidsonville monitor in Anne Arundel County, MD. For both sets, the difference could be as low as zero or often as high as 0.010 to 0.011 ppm. For the Washington CBSA/Davidsonville case, the highest values were 0.014 ppm. One such day was August 20, 2010; monitors in the District and Arlington County, VA recorded concentrations in the range of 0.077 to 0.081 ppm and the Howard university-Beltsville monitor, for which the HYSPLIT back-trajectories predicted was immediately upwind, recorded a concentration of 0.066 ppm. This value differs from the other two close monitors' concentrations by 0.011 to 0.015 ppm. Another case was August 30, 2010; The Franconia monitor recorded 0.091 ppm while one in the District recorded 0.077 ppm for a difference of 0.014 ppm; on the same day the monitors in Calvert and Charles Counties in Maryland recorded 0.098 and 0.087 ppm, respectively. In contrast, the Edgewood monitor and on occasion the Essex monitor in Baltimore County, MD record similar concentrations that are appreciably higher than other nearby monitors. The highest differences are shown in Table 32.

Table 32. Edgewood and Essex Exceptional Gradients

Date	High Monitor	Concentration (ppm)	Next highest Concentration (ppm)	At location	Difference (ppm)
7/11/2008	Edgewood	0.100	0.084	Essex	0.016
6/25/2009	Edgewood	0.109	0.086	Aldino	0.023
7/6/2010	Edgewood	0.092	0.072	Padonia	0.020
7/6/2010	Essex	0.090	0.072	Padonia	0.018
8/10/2010	Edgewood	0.110	0.086	Padonia	0.024
8/10/2010	Essex	0.115	0.086	Padonia	0.029
8/29/2010	Edgewood	0.096	0.066	Aldino	0.030

On July 6th and August 10, 2010, the HYSPLIT back-trajectories predicted the prevailing winds were from the Northwest. Refer to Figures 4a to 4d and 5a to 5d. In which case, any "bay breeze" effect

might well affect the concentrations recorded at the Essex monitor in a manner similar to the Edgewood monitor. The Essex monitor is similarly sited to the Edgewood monitor in that it is on a peninsula and close to the Chesapeake Bay; however, for winds from the Northwest, the Essex monitor is likely downwind of more local emissions because it is closer to Baltimore City within the core of the Baltimore CBSA. EPA concludes that the greater extremes in concentration gradients around the Edgewood monitor than that found in other parts of the CSA could well be an indication that the "Bay Breeze" and/or convergence of southwest and the lee-side winds do in fact result in more extreme exceedances at the Edgewood monitor (and perhaps the Essex monitor at times) than would be otherwise seen.

Maryland's Modeling Results:

Subsequent to the State's March 7, 2012 letter Maryland also provided various summaries of the results of the OTC modeling, or of Maryland modeling including the results summarized in the State's March 7, 2012 letter. These were:

"Using CMAQ to Evaluate the Impact of the Washington DC Area on the Baltimore Area, A Series of Sensitivity Runs to look at Contribution and Culpability, Additional Information for EPA" MDE and the UMCP, April 7, 2012

And its attachment "Attachment Baltimore NAA and Maryland Zero Emissions Modeling, and Washington DC NAA Only Emissions Modeling Results, Modeling Completed by University of Maryland College Park (UMD) for the Maryland Department of the Environment (MDE)"

This document included the same summary information as that in Appendix C of the State's March 7, 2012 letter but also included sensitivity analysis for the emissions in the 1997 Washington DC-MD-VA Nonattainment area. A copy of these documents have been placed in the docket for this final action.

EPA does not dispute that the 1997 Washington DC-MD-VA Nonattainment area may contribute to ozone concentrations in the 1997 Baltimore Nonattainment area. EPA's own meteorological assessment resulted in the same conclusion that the prevailing winds on some ozone exceedance days in Baltimore are such that emissions in the 1997 Washington DC-MD-VA Nonattainment area contribute to ozone levels in the 1997 Baltimore Nonattainment area. However, the issue is, when considered in light of all five factors, whether the 1997 Washington DC-MD-VA and Baltimore nonattainment areas should be one area under the 2008 ozone NAAQS.

Generally, the "Washington DC Area" case, predicts maximum concentrations that are compatible with EPA's HYPLT back-trajectories. EPA and Maryland's data sets do not match up perfectly; EPA did not run the HYSPLIT model for August 5th and 8th due to the low number of exceedances on these two days (two at 0.079 ppm on the 5th at an attaining monitor and an outside monitor and none on the 8th). Likewise, Maryland did not submit a summary of the results for August 13th, 16th and 17th which were likewise days with few exceeding monitors (one at 0.076 ppm on the 13th, one at 0.076 ppm on the 15th, and three exceedances (0.080, 0.086 and 0.086 ppm) on the 17th. On August 1st and 4th, the HYSPLIT model predicted the prevailing winds were from the Northeast to the Northwest (depending on day and altitude). The Maryland "Washington DC NAA" runs predicted the maximum effects south of the District in roughly the Southeastern portion of Fairfax County, VA, the Southwest portion of Prince

George's County, MD and Northern Charles County. Likewise on August 2nd, 3rd, 6th, 12th and 15th, which were days when the HYSPLIT model predicted the prevailing winds were from the southwest to west-southwest at lower levels (100 and 500 meters), the Maryland model predicted the maximum effects for the Washington DC Area (identified as the "only DC" case in Maryland's submittal) were northeast of the District of Columbia along a line between the District and Baltimore City.

EPA reviewed the information and only has a few comments. On some days the base case modeling results suggest widespread non-attainment through the 1997 Washington DC-MD-VA and Baltimore Nonattainment areas when in fact the monitors recorded few exceedances. For example, on August 14, 2007, the results suggested the area of highest concentration was centered on Charles County, MD which in fact was where the only exceedance was recorded (a 0.077 ppm). However, for areas just north and west of the Charles County's two Peninsulas, mainly in Fairfax County, VA and Prince George's County, MD the base case results suggest values well above 0.076 ppm (colored red on the map in Maryland's submittal), but the Franconia monitor recorded an 8-hour concentration of 0.071 ppm, and, the Prince George's Equestrian Center monitor recorded a 0.069 ppm. Similarly, on August 3, 2007, the base case results predicted high values on a line between roughly the District through northern Prince George's County (near the Howard University-Beltsville site)/Montgomery County, MD (home of the Rockville monitor) to Baltimore City and central and North Baltimore County with values much closer to 0.095 ppm than 0.076 ppm (colored red to dark red on the map in Maryland's submittal). In fact, a monitor in the District and the one at Rockville, MD both recorded a 0.084 ppm (highest in the CSA); the Edgewood and Aldino monitors in Harford County recorded 0.078 and 0.081 ppm, respectively; the Howard-University-Beltsville monitor recorded a 0.077 ppm; and, the Padonia and Essex monitors in Baltimore County recorded a 0.062 ppm and 0.072 ppm respectively. However, for August 4, 2007, a day on which 19 of the current monitors in the CSA recorded exceedances, the base case results predicted a wide area of high values. On that day, the Davidsonville and Prince George Equestrian Center recorded the highest concentrations at 0.118 and 0.110 ppm, respectively. About 12 monitors recorded concentrations at or more than 0.085 ppm. Likewise on 7/7/2007, the base case predicted exceedances over a wide portion of the CSA when in fact 12 of the current monitors recorded exceedances. EPA acknowledges Maryland noted that for such sensitivity runs the exact ppb projections are much less important than the relative (small, medium, large) size and directions of the ozone benefit or disbenefit.

Regarding Maryland's Modeling Results for July 9, 2007:

Maryland cited research and modeling performed by the University of Maryland (UMD). This includes high resolution (0.5 kilometer (km) domain) WRF (meteorological) and CMAQ (photochemical) modeling in an effort to learn how the bay breeze dynamics work and if pollution from the Washington area is transported towards the Edgewood monitor. This high resolution meteorological modeling shows westerly winds transport ozone and ozone precursors from the Washington region to over the bay starting in the early morning hours (7 AM). Refer to Figure 3-3 (of the Maryland submittal) for these meteorological modeling results of the Maryland submittal. Later in the morning, at around 9 AM (EST) meteorological modeling shows winds over the bay become northerly and stagnation in the northern end of the Chesapeake Bay causes pollutants to accumulate. Refer to Figure 3-4 (of the Maryland submittal) for these meteorological modeling results. High resolution CMAQ modeling illustrates how early morning stagnation over the Chesapeake Bay allows high pollution concentrations at the bay breeze convergence zone to buildup and then be lofted and transported downwind towards the Edgewood monitor. Maryland provided summary results in form of map overlays for the 0.5 km grid and coarser grids for July 9, 2007. One such result compared the model-predicted ozone concentrations

to the actual measured values for July 9th for 0.5, 1.5, 4.5 and 13.5 km grid resolutions. The higher the resolution (that is, the smaller the grid size) the better the model-predicted values matched the measured value near the Edgewood monitor.

EPA acknowledges that Maryland has investigated use of a finer grid around the Edgewood monitoring site for modeling ozone concentrations. EPA does not dispute that such modeling shows that emissions from the Washington CBSA or portions thereof contribute to concentrations in excess of the 2008 ozone NAAQS at the Edgewood monitor. However, using the HYSPLIT model generated back-trajectories, EPA has identified around 15 days in the last three years where the HYSPLIT predicted prevailing winds did not arrive via the 1997 Washington DC-MD-VA Nonattainment area or even from the Washington CBSA at large yet the Edgewood monitor recorded exceedances of 0.082 ppm or higher. On around 11 of those days the recorded concentration was 0.087 ppm or higher. The HYSPLIT results predict that Chester, Lancaster and York Counties in Pennsylvania, Cecil and Washington Counties in Maryland, and New Castle County, DE are upwind on some of such days. All of these counties are part of other CBSAs and most are designated nonattainment under the 2008 ozone NAAQS.

EPA compared the back-trajectories predicted by the HYSPLIT model to the results Maryland submitted for July 9, 2007. Refer to Figure 5A-11 in Appendix 5 of this TSD; the July 9, 2007 trajectories are specially indicated. The HYSPLIT back-trajectories showed the winds turning from a northwesterly flow to a flow running to the northeast parallel to the shore of the bay between Anne Arundel County and the Edgewood monitoring site. The 100 meter back trajectory was closest to the bay and the 1000 meter trajectory was furthest away with the 500 meter trajectory in between. The recorded concentration at the Edgewood monitor on July 9th was 0.0113 ppm which was the highest concentration recorded at this monitor in the 5 years 2006 through 2010, inclusive. In the 5 year period 2006 through 2010, inclusive, the Edgewood monitor has recorded five additional concentrations in excess of 0.100 ppm. These occurred on August 10, 2010 (0.110 ppm), June 25, 2009 (0.109 ppm), May 30, 2006 (0.103 ppm), July 18, 2008 (0.102 ppm) and July 23, 2010 (0.101 ppm). The HYSPLIT predicted 15 back-trajectories for these days of which eight do not pass anywhere near the 1997 Washington-DC-MD-VA nonattainment area or the Washington DC-MD-VA-WV CBSA at all. Refer to Figures 5A-11 and 5A-12 in Appendix 5 of this document. Of the remaining seven back-trajectories, three pass through the core CBSA counties and cities of the Washington DC-MD-VA_WV CBSA; two graze either the extreme corner of Montgomery or Prince George's Counties in Maryland and pass through the outer counties of either Calvert or Frederick (MD); one starts in Pennsylvania then heads southeast through Frederick, Carroll, Howard and Anne Arundel Counties before looping abruptly through Prince George's and finishes in a northeasterly direction via Anne Arundel towards Edgewood, and, the last passes in a northeasterly direction through the Winchester Virginia CBSA and the Hagerstown-Martinsburg MD-WV CBSA and grazes the northwest corner of Frederick County, MD, then arches through Adams County, PA, and finishes in a southeasterly direction through Carroll and Baltimore Counties. EPA does not dispute that such modeling shows that emissions from the Washington CBSA or portions thereof could contribute to concentrations in excess of the 2008 ozone NAAQS at the Edgewood monitor. However, EPA's analyses implicate areas other than portions of the Washington DC-MD-VA-WV CBSA or 1997 Washington DC-MD-VA ozone nonattainment area on days when particularly high ozone concentrations have been recorded at the Edgewood monitor. EPA cannot concur with Maryland's conclusion that mobile source emissions in the 1997 Washington DC-MD-VA ozone nonattainment area or even the Washington DC-MD-VA-WV CBSA are the sole cause of the higher ozone concentrations measured at Edgewood based upon the results of a single episode day.

4. Notes on Fredericksburg, VA Area, Frederick County, VA Area, and the "other counties:"

The closest monitors to the "outer rim" Virginia and West Virginia counties in the Washington-Baltimore-NV CSA are attaining the 2008 ozone NAAQS. These "outer rim" counties are the Counties of Frederick, Warren, Clarke, and Culpeper and Winchester City in Virginia, and Jefferson County, WV. The most relevant attaining monitors are those in Frederick County, MD and in Loudoun, Prince William, Fauquier, and Stafford Counties in Virginia. Of these "outer rim" counties, Clarke County, VA and Jefferson County, WV are adjacent to Frederick County, MD or Loudoun County, VA, both of which contain a monitor with a design value of 0.075 ppm. The monitors attaining the 2008 ozone NAAAQS in Frederick County, MD or Loudoun County, VA are located between Clarke County, VA and/or Jefferson County, WV, and the violating monitors in Carroll County, MD and/or Fairfax County, VA. In contrast, Culpeper County, VA is adjacent to Fauquier County which contains a monitor with a design value of 0.070 ppm or lower. Prince William County, VA is interposed between Fauquier, and Stafford Counties, and thus between Culpeper County and the violating monitor in Fairfax County. To the extent Clarke County, VA and Jefferson County, WV are upwind of the monitors in Frederick County, MD or Loudoun County, VA their contribution to air quality in Frederick County, MD or Loudoun County, VA does not result in a violation of the 2008 NAAQS. In the case of Culpeper County, VA, to the extent it is upwind of the monitors in to Fauquier, Prince William , and Stafford Counties Culpeper County's contribution to air quality in the latter three counties does not result in a violation of the 2008 NAAQS. The case of Frederick or Warren Counties and Winchester City in Virginia is the same as the case for Clarke County, VA and Jefferson County, WV.

5. Original Wind Roses:

The original wind roses in Factor 3 analysis in "Technical Analysis for the Washington, DC-MD-VA and Baltimore Areas" in Docket item numbers EPA-HQ-OAR-2008-0476-0235 are reproduced in Appendix 8.

Factor 4: Geography/topography (mountain ranges or other air basin boundaries)

The geography/topography analysis evaluates the physical features of the land that might affect the airshed and, therefore, the distribution of ozone over the area.

Warren and Clarke Counties are separated from the rest of the Washington-Baltimore-NV CSA by the easternmost portion of the Appalachian Mountains.[112] The Frederick County, VA area is west of these two counties and thus is also separated from the major, urbanized portions of this CSA by the easternmost portion of the Appalachian Mountains. Jefferson County, WV is adjacent to Clarke County, VA and also is so separated.

Other than Warren and Clarke Counties discussed in the preceding paragraph, the Washington-Baltimore-NV CSA area generally does not have any geographical or topographical barriers appreciably

[112] Page 3-593 of "Chapter 3 Justifications in Support of EPA's 8-hour Ozone Designations & Classifications" docket item EPA-HQ-OAR-2003-0083-1813 in docket EPA-HQ-OAR-2003-0083 (downloaded May 27, 2011) and available on-line at Regulations.gov (http://www.regulations.gov/#!home;oldLink=false).

limiting air pollution transport within its air shed. Therefore, there are no barriers to transport elsewhere in this CSA.

Maryland agreed with the EPA conclusion that the Washington-Baltimore-NV CSA generally does not have any barriers appreciably limiting air pollution within its air shed. The Appalachian Mountains are a barrier to surface transport but not to aloft transport of ozone and ozone precursors.

Maryland states that the following geographical features create meteorological phenomenon that function in a role similar to geographical barriers:

(1) The Chesapeake Bay "breeze" plays a role similar to a geographical barrier by preventing pollution from blowing out to sea and channeling it back toward the Baltimore area, and especially at the Edgewood monitor.

(2) Maryland also said that the position of the Appalachian Mountains enables formation of a meteorological phenomenon called a "leeside trough." According to the *American Meteorological Association Glossary* (2010), a leeside trough is "a pressure trough formed on the lee side [opposite the wind] of a mountain range in situations where the wind is blowing with a substantial component across the mountain ridge; often seen on United States weather maps east of the Rocky Mountains, and sometimes east of the Appalachians." Maryland said that the leeside trough usually develops over Maryland, this phenomenon results in pollutants from the Ohio River Valley and Western PA veering (or turning northward) into Maryland and at the same time allows ozone and ozone precursors to be transported from Virginia and North Carolina into Maryland too.

(3) Another meteorological phenomenon that results from the location of the Appalachian Mountains to the west and the Atlantic Ocean to the east is the nocturnal low level jet (NLLJ). The NNLJ is a fast moving stream of air that is typically observed between the Appalachian Mountains and the Atlantic Ocean during the late night and early morning hours. This fast moving stream of air can reach speeds of 40 mph and stretches from North Carolina to Maryland and further.

EPA has considered certain geographical-topological related phenomenon which affects air movements under the Factor 3 Meteorology response. EPA acknowledges that the "leeside" trough and the "bay breeze" could well act as barriers to air movement and tend to concentrate ozone levels at the Edgewood monitor site more than elsewhere. To the extent the "leeside" trough and NLLJ relate to transport from other States beyond the scale of intra-CSA or transport from adjacent CBSAs, EPA considers such transport to be within the scope of the prohibitions of sections 110(a)(2)(D) and/or 176A. EPA has addressed Maryland's comments in sections 3.1.2 and 3.2.3.1 of "Responses to Significant Comments on the State and Tribal Designation Recommendations for the 2008 Ozone National Ambient Air Quality Standards (NAAQS)," Docket Number EPA-HQ-OAR-2008-0476, U.S. Environmental Protection Agency, April 2012.

EPA has reviewed Maryland's information on the NLLJ and concludes that by Maryland's own data – winds travelling 200 miles overnight – the NLLJ is indicative of long-range transport not to be addressed when designating nonattainment areas under section 107(d).

Factor 5: Jurisdictional boundaries

EPA considers existing jurisdictional boundaries for the purposes of providing a clearly defined legal boundary and carrying out the air quality planning and enforcement functions for nonattainment areas.

Examples of jurisdictional boundaries include existing/prior nonattainment areas for ozone or other urban-scale pollutants, counties, air districts, townships, metropolitan planning organizations (MPOs), state lines, Reservations, urban growth boundary, etc. Where existing jurisdictional boundaries are not adequate to describe the nonattainment area, other clearly defined and permanent landmarks or geographic coordinates are used.

For the 1997 ozone NAAQS, the Washington-Baltimore-NV CSA is was broken down as shown in Table 33:

Table 33. Breakdown of the Washington-Baltimore-NV CSA by Area under the 1997 Ozone NAAQS.

Area Name	Constituent Counties and Cities:	Status (as of November 22, 2011) (40 CFR 81.309, 81.321, 81.347 and 81.349)
1997 Baltimore Nonattainment Area:	Anne Arundel, Baltimore, Carroll, Harford, and Howard Counties and Baltimore City in Maryland.	Nonattainment - Serious[113]
1997 Washington DC-MD-VA Nonattainment Area:	Maryland Portion: Frederick, Montgomery, Calvert, Charles and Prince George's Counties. The entire District of Columbia. Virginia Portion: Arlington, Fairfax, Loudoun, Prince William Counties, and, the Cities of Alexandria, Fairfax, Falls Church, Manassas, and Manassas Park.	Nonattainment - Moderate[114]
Frederick County, VA Area:	Frederick County and Winchester City in Virginia.	Attainment
Fredericksburg, VA Area:	City of Fredericksburg and Spotsylvania and Stafford Counties in Virginia.	Attainment (Maintenance)
Queen Anne's County portion of the Kent County and Queen Anne's County Area:	Queen Anne's County in Maryland	Attainment (Maintenance)
Other Attainment Counties:	In Maryland: St. Mary's County In Virginia: Clarke, Culpeper, Fauquier, and Warren Counties. In West Virginia: Hampshire and Jefferson Counties.	Attainment Attainment Attainment
"Attainment (Maintenance)"signifies an area initially designated nonattainment effective June 15, 2004 (69 FR 23858, April 30, 2004) and later redesignated to attainment subject to a maintenance plan under section 175A of the CAA. "Attainment" signifies an area initially designated attainment effective June 15, 2004 (69 FR 23858, April 30, 2004) or April 15, 2008 (73 FR 17897).		

[113] EPA reclassified the area on February 1, 2012. Refer to 77 FR 4901.

[114] EPA determined that the area attained by its statutory, applicable attainment date and remains in attainment. Refer to 77 FR 11739, Feb. 28, 2012.

The boundaries of the Baltimore severe nonattainment area under the 1-hour ozone NAAQS were the same as those for the 1997 ozone NAAQS shown in the preceding table. (56 FR 56694, November 6, 1991)

The boundaries of the Washington DC-MD-VA severe nonattainment area under the 1-hour ozone NAAQS included those shown for the 1997 ozone NAAQS shown in the preceding table plus Stafford County, VA (56 FR 56694, November 6, 1991).

Queen Anne's County in Maryland was part of the Kent County and Queen Anne's County 1-hour attainment (maintenance) area under the 1-hour ozone NAAQS.

All other portions of the Washington-Baltimore-NV CSA were designated attainment for the 1-hour ozone NAAQS (56 FR 56694, November 6, 1991).

As far as transportation planning is concerned, the Baltimore and Washington DC-MD-VA nonattainment areas are served by different MPOs. The National Capital Region Transportation Planning Board (TPB) is the MPO for much of the Washington-Arlington- current Washington DC-MD-VA nonattainment area. TPB's planning area covers the District of Columbia and surrounding jurisdictions. In Maryland these jurisdictions include Frederick County, Montgomery County, and Prince George's County and the St. Charles urbanized area of Charles County, plus the cities of Bowie, College Park, Frederick, Gaithersburg, Greenbelt, Rockville, and Takoma Park. In Virginia, the planning area includes Alexandria, Arlington County, the City of Fairfax, Fairfax County, Falls Church, Loudoun County, and the Cities of Manassas and Manassas Park, and Prince William County. [115]

The Baltimore Regional Transportation Board consists of 11 members of the Baltimore Regional Transportation Board are made up of elected officials from the cities of Annapolis and Baltimore, the counties of Anne Arundel, Baltimore, Carroll, Harford and Howard .[116]

Likewise, the Fredericksburg VA Area is covered by its own MPO – the Fredericksburg Area Metropolitan Planning Organization (FAMPO). FAMPO's region includes the City of Fredericksburg and counties of Spotsylvania and Stafford.[117]

The air quality planning for the Washington DC-MD-VA area has been a multi-jurisdictional area since before 1990. Section 107(d)(4)(A) of the CAA set the presumptive boundaries for serious and higher classified ozone nonattainment areas at the larger of the CBSA or Consolidated Metropolitan Statistical Area (CMSA) area subject to certain alterations allowed by section 107(d)(4)(A). In addition, the Metropolitan Washington Air Quality Committee (MWAQC), a multi-state air quality planning organization comprised of: (1) elected officials of the Council of Governments (COG) member jurisdictions plus members from Charles, Calvert, and Stafford counties; (2) the air management and transportation directors of the District of Columbia, Maryland, and Virginia; (3) members of the Maryland and Virginia General Assemblies; and (4) the chair of the TPB.[118] The principal mandates of MWAQC are to prepare plans demonstrating attainment of the federal ozone standards and "rate of progress" reductions in criteria pollutants and prepare inventories and budgets of emissions for the current Washington DC-MD-VA nonattainment area. No other area (nonattainment or otherwise) has such a group. Past practice dictates against splitting the relevant portions of the current Washington DC-MD-VA nonattainment area along state lines.

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[115] http://www.mwcog.org/transportation/tpb/, last checked November 28, 2011.
[116] "BRTB Members," http://www.baltometro.org/transportation-planning/brtb-members last checked November 28, 2011.
[117] "About FAMPO," http://www.fampo.gwregion.org/ last checked November 28, 2011.
[118] "BYLAWS of the Metropolitan Washington Air Quality Committee" as amended through October 27, 2004. http://www.mwcog.org/environment/air/downloads/MWAQC_bylaws.PDF downloaded November 28, 2011.

Summary of the 5-Factor Analysis:

Individual County/City Summaries:

Harford County: Harford County must be designated nonattainment due to the presence of two monitors violating the 2008 ozone NAAQS. It contains the monitor with the highest design value within the Washington-Baltimore-NV CSA as well as the 1997 Baltimore nonattainment area. Harford County has total emissions which are neither at the low or high end – it ranks in the middle (that is between 12th through 23rd inclusive when ranked from largest to smallest) within the Washington-Baltimore-NV CSA; likewise, its mobile source emissions are also ranked 11th for both VOC and NOx; its population is one tenth of that in the 1997 Baltimore nonattainment area and not exceptionally large or small; its population density is half the overall average for the 1997 Baltimore nonattainment area; commuting patterns indicate it is linked to the Baltimore CBSA as an outlying county; traffic patterns merit no special attention one way or another; meteorology indicates its total emissions may contribute to nonattainment in Baltimore County (as well as to its own nonattainment). Meteorology indicates it is downwind of Baltimore County, adjacent CBSAs in Maryland and Pennsylvania, Baltimore City, the Counties/Cities/States of Anne Arundel, Howard, Montgomery, Prince George's, Fairfax[119], Arlington[120], Frederick (MD), The District[121], and to a lesser extent, the Counties of Calvert, Charles, Prince William, Loudoun.

Factors that favor placement of this county in a nonattainment area containing Baltimore County and hence as part of a Baltimore Area with the same or similar boundaries as for the 1997 Baltimore nonattainment area are jurisdictional boundaries and meteorology which indicates it is often downwind of all the other counties in the Baltimore CBSA. It is upwind of other many violating monitors in the CSA though rarely that in Carroll county. It is also often downwind of CBSAs in Delaware, Maryland and/or Pennsylvania adjacent to the Washington-Baltimore-NV CSA.

Baltimore County: Baltimore County must be designated nonattainment due to the presence of two monitors violating the 2008 ozone NAAQS. Baltimore County is among "top six" counties for total emissions in the Washington-Baltimore-NV CSA. Its mobile source emissions are ranked 3rd for VOC and 2nd for NOx. It is adjacent to Harford County which has the highest design value in the Washington-Baltimore-NV CSA and the 1997 Baltimore nonattainment area. It has the highest population in the 1997 Baltimore nonattainment area. Its growth rate is well below the Washington-Baltimore-NV CSA's average, but equal to the 1997 Baltimore nonattainment area average rate. It has the highest VMT within the 1997 Baltimore nonattainment area and third highest within the Washington-Baltimore-NV CSA. Its VMT is about one-third the total for the 1997 Baltimore nonattainment area and about one-ninth of the total for the Washington-Baltimore-NV CSA. Commuting patterns link it to the Baltimore CBSA as a core county. Meteorology indicates it is upwind of Harford County's Edgewood and Anne Arundel's Davidsonville monitors much of the time and is upwind of other monitors in the CSA though rarely that in Carroll County. Meteorology indicates it is downwind of Harford County, Baltimore City, and the Counties/Cities/States of Anne Arundel, Howard, Montgomery, Prince George's, Fairfax[122], Arlington[123], Frederick (MD), The District[124], and to a lesser

[119] Wherever Fairfax County is indicated also includes at times Fairfax City and Alexandra City.
[120] Wherever Arlington County is indicated also includes at times Falls Church City
[121] Wherever the District is indicated also includes at times Alexandra City.
[122] Wherever Fairfax County is indicated also includes at times Fairfax City and Alexandra City.
[123] Wherever Arlington County is indicated also includes at times Falls Church City
[124] Wherever the District is indicated also includes at times Alexandra City.

extent, the Counties/Cities/States of Calvert, Charles, Prince William, Loudoun. It is also likely downwind of CBSAs in Delaware, Maryland and/or Pennsylvania adjacent to the Washington-Baltimore-NV CSA.

Factors that favor placement of Baltimore County in a nonattainment area containing Harford and Anne Arundel Counties, that is, as part of the Baltimore Area with the same or similar boundaries as the 1997 Baltimore nonattainment area, are its total emissions, jurisdictional boundaries, commuting patterns, and meteorology which indicates it is upwind of a violating monitors in Harford and Anne Arundel Counties. We weigh the factors as supporting placement in a Baltimore Area with the same or similar boundaries as the 1997 Baltimore nonattainment area.

Baltimore City: This city does not have violating monitor. It ranks in the "top six" counties for total emissions within the Washington-Baltimore-NV CSA and third (of six) in the 1997 Baltimore nonattainment area. Its mobile source emissions are ranked 7th for VOC and 8th for NOx. It is densely populated, but experienced a population decline over the past 10 years. Its VMT is about one-eighth that of the 1997 Baltimore nonattainment area. Meteorology indicates it is upwind of Harford County's Edgewood monitor and likely those in Baltimore County at times and of Anne Arundel's Davidsonville monitor much of the time and is upwind of other monitors in the CSA though rarely that in Carroll County. Commuting patterns link it to the Baltimore CBSA as a core county.

Factors that favor designation of Baltimore City as nonattainment based upon contribution are total emissions, commuting patterns, jurisdictional boundaries, and possible contribution to Anne Arundel, Harford and Baltimore Counties. These factors support placement in a Baltimore Area with the same or similar boundaries as the 1997 Baltimore nonattainment area.

Howard County: Howard County does not have a violating monitor. It ranks in the "top 11" counties for total emissions within the Washington-Baltimore-NV CSA and fourth (of six) in the 1997 Baltimore nonattainment area. Its mobile source emissions are ranked 8th for VOC and 7th for NOx. It is densely populated. Its growth rate is about equal to the Washington-Baltimore-NV CSA's average but over twice that for the 1997 Baltimore nonattainment area average. Its VMT is not exceptional. Commuting patterns link it to the Baltimore CBSA as a core county.

Meteorology indicates it is upwind of violating monitors throughout the CSA especially those around the District-Arlington-Fairfax-Prince George's Counties/States, those in Anne Arundel, Baltimore and Harford Counties and that in Carroll County.

Meteorology suggests it has about equal influence on nonattainment in the 1997 Baltimore nonattainment area and in the 1997 Washington DC-MD-VA nonattainment area. Factors that favor designation of Howard County as nonattainment based upon contribution are its total emissions, jurisdictional boundaries, and meteorology indicating contribution to violating monitors in Harford, Baltimore and Carroll Counties. Factors that favor placement with Prince George's County and other 1997 Washington area monitors are its possible contribution. That it is part of the Baltimore-Towson CBSA and not the Washington CBSA suggests that it is more linked to the former by commuting and hence mobile source emissions. Factors that favor designation of Howard County as nonattainment based upon contribution are total emissions, commuting patterns, jurisdictional boundaries, and possible contribution to Anne Arundel, Harford and Baltimore Counties. These factors support placement in a Baltimore Area with the same or similar boundaries as the 1997 Baltimore nonattainment area.

Carroll County: Carroll County must be designated nonattainment due to the presence of a monitor violating the 2008 ozone NAAQS. It is adjacent to one other county with a violating monitor – Baltimore County. It has total emissions which are neither at the low or high end – it ranks in the middle (12th through 23rd inclusive) within the Washington-Baltimore-NV CSA. Its mobile source emissions are ranked 17th for VOC and 18th for NOx. It has the lowest population and population density within the 1997 Baltimore nonattainment area with a growth rate less than the Washington-Baltimore-NV CSA's average but twice that for the 1997 Baltimore nonattainment area. Likewise, its VMT and number of commuters are at the lower end for the Washington-Baltimore-NV CSA and the 1997 Baltimore nonattainment area. Commuting patterns link it to the Baltimore CBSA as an outlying county. That it is part of the Baltimore-Towson CBSA and not the Washington CBSA suggests that it is more linked to the former by commuting and hence mobile source emissions.

Meteorology indicates that it is upwind of the violating monitors in Harford and Baltimore Counties as well as violating monitors throughout the CSA, especially those around the Arlington-Fairfax-Prince George's Counties/States, those in Anne Arundel, Baltimore and Harford Counties and to a lesser extent the District. It is downwind of the Counties/Cities/States of Howard, Montgomery, Arlington, Anne Arundel, Prince George's, Fairfax, the District of Columbia, and Charles, and, to a lesser extent Loudoun, Calvert, Frederick (MD), Prince William, and Baltimore Counties plus Baltimore City.

Its monitor has a design value within 0.001 parts per million (ppm) of attaining the 2008 ozone NAAQS. This air quality consideration suggests that the monitor in Carroll County will likely be attaining the 2008 NAAQS within a few years without further controls and will not be the key monitor needed for attainment within the Washington-Baltimore-NV CSA or in an area containing Harford County. Factors favoring including it as part of a Baltimore Area with the same or similar boundaries as for the 1997 NAAQS: (1) jurisdictional boundaries; (2) possible contribution to monitors in the Baltimore CBSA, (3) contribution from the Baltimore area; and (4) commuting patterns. Factors favoring inclusion with the 1997 Washington DC-MD-VA nonattainment area counties are meteorology supporting contribution from this area to Carroll County and vice versa.

The possible contribution to the violating monitor in Carroll County from Anne Arundel, Frederick (MD), Prince George's and Montgomery Counties in Maryland is likely more than the possible contribution from the closest areas in other States – the District plus Arlington, Fairfax, and Loudoun Counties because the total (NOx plus VOC) emissions from these Maryland counties (53,000 – 69,000) are somewhat greater that of the out-of-State areas (44,000 – 48,000) and because the Maryland counties are more proximate. EPA has determined that these out-of-State areas should be designated nonattainment, and, to the extent that emissions from these out-of-State areas may contribute ozone concentrations in Carroll County, that contribution will be lessened by emission controls already in place in those out-of-State areas. Overall the factors support placement in a Baltimore Area with the same or similar boundaries as the 1997 Baltimore nonattainment area since placement of Carroll County will not affect the probable needed controls for attainment at the South Carroll monitor.

Anne Arundel County: Anne Arundel County must be designated nonattainment due to the presence of a monitor violating the 2008 ozone NAAQS. It is among the "top six" in total emissions in the Washington-Baltimore-NV CSA and the top two in the 1997 Baltimore nonattainment area. Its mobile source emissions are ranked 5th for VOC and 5th for NOx. It is more densely populated than the either the average for the Washington-Baltimore-NV CSA or the 1997 Baltimore nonattainment area. Its growth rate is less than the Washington-Baltimore-NV CSA's average but higher than that for the 1997 Baltimore nonattainment area. Its VMT is about one-fifth the total for the 1997 Baltimore

nonattainment area and about one-thirteenth of the total for the Washington-Baltimore-NV CSA. Commuting patterns link it to the Baltimore CBSA as a core county. That it is part of the Baltimore-Towson CBSA and not the Washington CBSA suggests that it is more linked to the former CBSA by commuting and hence mobile source emissions.

Meteorology indicates it is upwind of many monitors in the CSA but in particular Edgewood in Harford County. Meteorology indicates it is downwind of the Counties/Cities/States of Baltimore Co., Calvert, Prince George's, Howard, Fairfax, Charles, the District, Baltimore City, Montgomery, and to a lesser extent, Loudoun, Arlington, Prince William, and Frederick (MD).

Factors that favor inclusion of Anne Arundel County in a nonattainment area based upon contribution are its total emissions, jurisdictional boundaries, commuting patterns and meteorology in that it is proximate to and a possible contributor to Edgewood in Harford County. Factors that favor inclusion with a nonattainment area including the District, Fairfax, Calvert, Arlington and Prince George's Counties are meteorology and total emissions.

Factors that favor inclusion with Baltimore City and County and Harford County are jurisdictional boundaries. Air quality considerations suggest that the monitor in Anne Arundel County might likely be attaining the 2008 NAAQS within a few years without further controls and will not be the key monitor needed for attainment within the Washington-Baltimore-NV CSA or in an area containing Harford County.

For these reasons, the factors weigh in favor of grouping Anne Arundel County with the rest the Baltimore nonattainment area.

Fairfax County, VA: Fairfax County must be designated nonattainment due to the presence of a monitor violating the 2008 ozone NAAQS. It contains the monitor with the second highest design value within the Washington-Baltimore-NV CSA as well as the 1997 Washington DC-MD-VA nonattainment area. However, its design value is only 0.002 ppm more than other monitors in the District of Columbia and Arlington County. The monitors in Arlington and Fairfax Counties and in the District of Columbia are clustered in a relatively small area at the core of the Washington-Arlington-Alexandria, DC-VA-MD-WV MSA. Fairfax County is among the "top six" counties for total emissions in the Washington-Baltimore-NV CSA. Its mobile source emissions are ranked 1st for VOC and 1st for NOx. It has the highest population in the Washington-Baltimore-NV CSA. Its growth rate is slightly below the Washington-Baltimore-NV CSA's average rate and the 1997 Washington DC-MD-VA nonattainment area's average rate. It has the highest VMT and number of commuters within the 1997 Washington DC-MD-VA nonattainment area and highest within the Washington-Baltimore-NV CSA. Its VMT is about one-fourth the total for the 1997 Washington DC-MD-VA nonattainment area and one-seventh of the total for the Washington-Baltimore-NV CSA. Commuting patterns link it to the Washington CBSA as a core county.

Meteorology indicates it is upwind of violating monitors in Arlington County, VA and the District of Columbia and in Prince George's County as well as those in Anne Arundel, Prince George's, Baltimore and Harford Counties. Meteorology indicates it is downwind of the Counties/Cities/States of Arlington, Fairfax City, Loudoun, Alexandria City, Prince George's, Charles, the District, Montgomery, Baltimore Co., Calvert, Howard, Baltimore City, and to a lesser extent Frederick (MD), Prince William and the Fredericksburg area.

Factors that favor inclusion in a nonattainment that includes Arlington County and the District of Columbia, that is, as part of a Washington-DC-MD-VA nonattainment area with the same or similar boundaries as for the 1997 ozone NAAQS are its total emissions, meteorology, commuting patterns, the close proximity of Arlington and Fairfax Counties' and the District of Columbia's monitors with design values of 0.079 to 0.081 ppm at the Arlington-Fairfax-District core, jurisdictional boundaries and Virginia's recommendation.

Factors that favor inclusion in a nonattainment that includes Anne Arundel, Harford, and Baltimore Counties, that is, as part of a Baltimore nonattainment area with the same or similar boundaries as for the 1997 ozone NAAQS, are its total emissions, meteorology,

For these reasons, the factors weigh in favor of inclusion of Fairfax County in a nonattainment area that includes Arlington County and the District of Columbia, that is, as part of a Washington-DC-MD-VA nonattainment area with the same or similar boundaries as for the 1997 ozone NAAQS

Prince George's County, MD: Prince George's County must be designated nonattainment due to the presence of two monitors violating the 2008 NAAQS. It is among the "top six" counties for total emissions in the Washington-Baltimore-NV CSA and essentially tied for second with Montgomery County, MD within the 1997 Washington DC-MD-VA nonattainment area. Its mobile source emissions are ranked 2nd for VOC and 3rd for NOx. It is more densely populated the either the average for the Washington-Baltimore-NV CSA or the 1997 Washington DC-MD-VA nonattainment area. Its growth rate is slightly less than that in the Washington-Baltimore-NV CSA and 1997 Washington DC-MD-VA nonattainment area averages. It is the third most populous area in the Washington-Baltimore-NV CSA and 1997 Washington DC-MD-VA nonattainment area. It has the second highest VMT and third highest number of commuters within the Washington-Baltimore-NV CSA. Commuting patterns link it to the Washington CBSA as a core county. That it is part of the Washington CBSA and not the Baltimore-Towson CBSA suggests that it is more linked to the former CBSA by commuting and hence mobile source emissions. Its VMT is about one-fifth the total for the 1997 Washington DC-MD-VA nonattainment area and about one-ninth of the total for the Washington-Baltimore-NV CSA.

Meteorology indicates it is upwind of violating monitors in Calvert, Arlington and Fairfax Counties and the District of Columbia as well as those in Anne Arundel, Baltimore and Harford Counties and to a lesser extent, Carroll County.

Meteorology indicates it is downwind of the Counties/Cities/States of Arlington, District of Columbia, Anne Arundel, Charles, Fairfax, Montgomery, Howard, Prince William, Baltimore Co. and City, and to a lesser extent: Loudoun, Calvert, and Frederick (MD) and the Fredericksburg area.

Meteorology favors including Prince George's County as part of a nonattainment area with either Anne Arundel County or with Fairfax and Arlington Counties plus the District

Factors that favor inclusion in a nonattainment that includes Arlington County and the District of Columbia, that is, as part of a Washington-DC-MD-VA nonattainment area with the same or similar boundaries as for the 1997 ozone NAAQS, are its jurisdictional boundaries, commuting patterns, total emissions, meteorology, and commuting patterns.

Factors that favor inclusion in a nonattainment area that includes Anne Arundel, Harford, and Baltimore Counties, that is, as part of a Baltimore nonattainment area with the same or similar boundaries as for the 1997 ozone NAAQS are its total emissions, and meteorology.

Therefore, the factors favor grouping Prince George's County with the Fairfax County, VA and the District of Columbia monitors as part of a Washington-DC-MD-VA Area with the same or similar boundaries as for the 1997 ozone NAAQS.

Montgomery County, MD: Montgomery County does not have a violating monitor, but has a monitor with a design value of 0.074 ppm. It is among the "top six" counties for total emissions in the Washington-Baltimore-NV CSA and essentially tied for second with Prince George's County, MD within the 1997 Washington DC-MD-VA nonattainment area. Its mobile source emissions are ranked 4th for VOC and 4th for NOx. It is more densely populated the either the average for the Washington-Baltimore-NV CSA or the 1997 Washington DC-MD-VA nonattainment area. Its growth rate is slightly less than the Washington-Baltimore-NV CSA and 1997 Washington DC-MD-VA nonattainment area averages. It is the second most populous area in the Washington-Baltimore-NV CSA and 1997 Washington DC-MD-VA nonattainment area. It has the fourth highest VMT within the Washington-Baltimore-NV CSA and third highest number of commuters within the Washington-Baltimore-NV CSA. Its VMT is about one-sixth the total for the 1997 Washington DC-MD-VA nonattainment area and about one-tenth of the total for the Washington-Baltimore-NV CSA. Commuting patterns link it to the Washington CBSA as a core county. That it is part of the Washington CBSA and not the Baltimore-Towson CBSA suggests that it is more linked to the former CBSA by commuting and hence mobile source emissions.

Meteorology indicates it is upwind of violating monitors in the Counties/Cities/States of Baltimore, Harford, Arlington Fairfax, Calvert, Prince George's, and Anne Arundel Counties and the District of Columbia and to a lesser extent Carroll. The monitor in Carroll County has a design value is within 0.001 ppm of attaining the 2008 ozone NAAQS. This air quality consideration suggests that the monitor in Carroll County will likely be attaining the 2008 NAAQS within a few years without further controls and will not be the key monitor needed for attainment within the Washington-Baltimore-NV CSA or in an area containing Harford County.

Factors that favor inclusion in a nonattainment area that includes Arlington County and the District of Columbia, that is, as part of a Washington-DC-MD-VA nonattainment area with the same or similar boundaries as for the 1997 ozone NAAQS are its jurisdictional boundaries, commuting patterns, total emissions, meteorology to some extent, and commuting patterns.

Factors that favor inclusion in a nonattainment area that includes Anne Arundel, Harford, and Baltimore Counties, that is, as part of a Baltimore nonattainment area with the same or similar boundaries as for the 1997 ozone NAAQS are its total emissions, and meteorology to a fair extent.

Therefore, the factors favor grouping Prince George's County with the Fairfax County, VA and the District of Columbia monitors as part of a Washington-DC-MD-VA Area with the same or similar boundaries as for the 1997 ozone NAAQS.

Frederick County, MD: Frederick County does not have a violating monitor, but has a monitor with a design value of 0.074 ppm. It ranks in the "top 11" counties for total emissions within the Washington-Baltimore-NV CSA and fifth in the 1997 Washington DC-MD-VA nonattainment area. It is sparsely

populated. Its mobile source emissions are ranked 10th for VOC and 9th for NOx. Its growth rate is a little more than the 1997 Washington DC-MD-VA nonattainment area average but over 1.5 times that of the Washington-Baltimore-NV CSA's average. Its VMT is not exceptional. Commuting patterns link it to the Washington CBSA as an outlying county. That it is part of the Washington CBSA and not the Baltimore-Towson CBSA suggests that it is more linked to the former CBSA by commuting and hence mobile source emissions.

Meteorology indicates it is upwind of violating monitors in Baltimore and Harford Counties and to a lesser extent the Counties/Cities/States of Arlington, Fairfax, Calvert, Prince George's, Carroll and Anne Arundel Counties and the District of Columbia. Meteorology slightly favors for including Frederick County as part of a nonattainment area with Baltimore and Harford Counties.

Factors that favor inclusion in a nonattainment area containing Baltimore and Harford Counties are meteorology and emissions. Factors that favor inclusion with a Washington-DC-MD-VA Area with the same or similar boundaries as the 1997 Washington-DC-MD-VA nonattainment area are jurisdictional boundaries as part of the 1997 Washington DC-MD-VA nonattainment area, and commuting patterns.

Therefore, the factors favor grouping Frederick County, MD with the Fairfax County, VA and the District of Columbia monitors as part of a Washington-DC-MD-VA Area with the same or similar boundaries as for the 1997 ozone NAAQS.

Calvert County, MD: Calvert County must be designated nonattainment due to the presence of a monitor violating the 2008 ozone NAAQS. It ranks in the "middle group" (between 12th and 23rd inclusive) for NOx and VOC total emissions within the Washington-Baltimore-NV CSA. Its mobile source emissions are ranked 23rd for VOC and 24th for NOx. It has the smallest population of any county (and even less than Alexandria City, VA) in the 1997 Washington DC-MD-VA nonattainment area (some cities in Virginia are smaller). It has the lowest VMT of any county (but those of most cities in Virginia are smaller) within the 1997 Washington DC-MD-VA nonattainment area. Its growth rate is one and one half times the Washington-Baltimore-NV CSA's average but the overall change is low. Its population density is low at less than one third that of the 1997 Washington DC-MD-VA nonattainment area. Commuting patterns link it to the Washington CBSA as an outlying county. That it is part of the Washington CBSA and not the Baltimore-Towson CBSA suggests that it is more linked to the former CBSA by commuting and hence mobile source emissions.

Meteorology indicates it is upwind of violating monitors in the Counties/Cities/States of Arlington, Fairfax, and Anne Arundel Counties and to a lesser extent the Counties/Cities/States of Prince George's, Baltimore, Harford, Carroll and the District of Columbia. Meteorology indicates it is downwind of the Counties/Cities/States of Prince George's, Anne Arundel, Baltimore Co. and City, Howard, and to a lesser extent: Fairfax, Montgomery, Frederick (MD), Carroll, Harford plus possibly Saint Mary's, and Charles.

Air quality considerations suggest that Calvert and Prince George's and Anne Arundel Counties will attain the 2008 NAAQS within about the same time period without further controls and that none of the monitors in these counties will be the key monitor needed for attainment within the Washington-Baltimore-NV CSA or in an area containing Fairfax County.

Factors that favor inclusion in a nonattainment area containing Anne Arundel or Harford County as part of a Baltimore Area with the same or similar boundaries as the 1997 Baltimore nonattainment area are meteorology which indicates that at times Calvert County is upwind of Anne Arundel and Harford at times.

Factors that favor inclusion in a nonattainment area containing Prince George's and Fairfax Counties are: meteorology which indicates Calvert County could contribute to and could receive contribution from counties which are part of the 1997 Washington-DC-MD-VA nonattainment area, commuting patterns and jurisdictional boundaries.

Therefore, the factors favor grouping Calvert County with the Fairfax County, VA and the District of Columbia monitors as part of a Washington-DC-MD-VA Area with the same or similar boundaries as for the 1997 ozone NAAQS.

Charles County, MD: Charles County does not have violating monitor but has a monitor with a design value of 0.075 ppm. It ranks in the "middle group" (between 12th and 23rd inclusive) for NOx and VOC total emissions within the Washington-Baltimore-NV CSA. Its mobile source emissions are ranked 18th for VOC and 19th for NOx. Its population is smaller than any county in the 1997 Washington DC-MD-VA nonattainment area except Calvert County (but those of cities in Virginia are smaller). Its growth rate is around one and one half times both the Washington-Baltimore-NV CSA and 1997 Washington DC-MD-VA nonattainment area averages but the overall change is lower than any other county except Calvert County within the 1997 Washington DC-MD-VA nonattainment area. Its population density is low at less than one third that of the 1997 Washington DC-MD-VA nonattainment area. It has the lowest VMT of any county except Calvert County (but those of the cities in Virginia are smaller) within the 1997 Washington DC-MD-VA nonattainment area. The overall number of commuters is but a tiny fraction of that for the 1997 Washington DC-MD-VA nonattainment area. Commuting patterns link it to the Washington CBSA as an outlying county. That it is part of the Washington CBSA and not the Baltimore-Towson CBSA suggests that it is more linked to the former CBSA by commuting and hence mobile source emissions.

Meteorology indicates it is upwind of violating monitors in the Counties/Cities/States of Arlington, Fairfax, Prince George's, Carroll, and Anne Arundel Counties and the District of Columbia, and, to a lesser extent the Counties/Cities/States of Baltimore, and Harford plus possibly Calvert. Air quality considerations suggest that Calvert, Anne Arundel and Carroll Counties will attain the 2008 NAAQS within about the same time period without further controls and that none of the monitors in these counties will be the key monitor needed for attainment within the Washington-Baltimore-NV CSA or in an area containing Fairfax or Prince George's County, or, the District.

Factors that favor inclusion in a nonattainment area containing Anne Arundel, Baltimore and Harford Counties are meteorology. Factors that favor inclusion with a Washington-DC-MD-VA Area with the same or similar boundaries as the 1997 Washington-DC-MD-VA nonattainment area are jurisdictional boundaries, and commuting patterns.

Therefore, the factors favor grouping Charles County with a Washington-DC-MD-VA Area with the same or similar boundaries as the 1997 Washington-DC-MD-VA nonattainment area.

Loudoun County, VA: Loudoun County does not have a violating monitor but has a monitor with a design value of 0.075 ppm. It ranks in the "top 11" counties (10th for VOC and 11th for NOx) for total emissions within the Washington-Baltimore-NV CSA and ties for sixth (with Frederick County, MD) in the 1997 Washington DC-MD-VA nonattainment area. Its mobile source emissions are ranked 15th for VOC and 16th for NOx. Its population is near the median for counties in the 1997 Washington DC-MD-VA nonattainment area and its density is one-half that of the 1997 Washington DC-MD-VA nonattainment area. Its growth rate was 80 percent and the absolute change in population was greater than the entire population of all the cities in Virginia except Alexandria and even some of the counties in the 1997 Washington DC-MD-VA nonattainment area. Its growth rate is around one and one half times both the Washington-Baltimore-NV CSA and 1997 Washington DC-MD-VA nonattainment area averages but the overall change is lower than any other county except Calvert County within the 1997 Washington DC-MD-VA nonattainment area. Commuting patterns link it to the Washington CBSA as a core county. That it is part of the Washington CBSA and not the Baltimore-Towson CBSA suggests that it is more linked to the former CBSA by commuting and hence mobile source emissions.

Meteorology indicates it is upwind of violating monitors in the Counties/Cities/States of Arlington and Fairfax, and, to a lesser extent the Counties/Cities/States of Baltimore, Prince George's, Anne Arundel, Carroll, and Harford and the District of Columbia. Air quality considerations suggest that Anne Arundel and Carroll Counties will attain the 2008 NAAQS within about the same time period without further controls, and, that none of these monitors in these counties will be the key monitor needed for attainment within the Washington-Baltimore-NV CSA or in an area containing Fairfax or Prince George's County, or, the District.

Factors that favor placement of Loudoun County in a nonattainment area Fairfax and Arlington Counties as part of a Washington-DC-MD-VA Area with the same or similar boundaries as the 1997 Washington-DC-MD-VA nonattainment area are its closer proximity to Fairfax and Arlington Counties, emissions, growth rate, commuting patterns, and jurisdictional boundaries.

Factors that favor inclusion of Loudoun County in a nonattainment area containing Anne Arundel, Baltimore and Harford Counties are meteorology, emissions, and growth rates. Factors that favor inclusion with a Washington-DC-MD-VA Area with the same or similar boundaries as the 1997 Washington-DC-MD-VA nonattainment area are meteorology, are its closer proximity to Fairfax and Arlington Counties emissions, Virginia's recommendation, jurisdictional boundaries, and commuting patterns.

Therefore, the factors favor grouping Loudoun County with a Washington DC-MD-VA Area with the same or similar boundaries as the 1997 Washington-DC-MD-VA nonattainment area.

Arlington County, VA: Arlington County must be designated nonattainment due to the presence of a monitor violating the 2008 ozone NAAQS. Its design value is similar to those in part of the District of Columbia and only 0.002 ppm less than that in Fairfax County. These monitors are clustered in a relatively small area at the core of the Washington-Arlington-Alexandria, DC-VA-MD-WV MSA. It ranks high in the "middle group" for total emissions within the Washington-Baltimore-NV CSA. Its mobile source emissions are ranked 14th for VOC and 13th for NOx. While its absolute total emissions and population are not exceptional, its total emissions and population densities are both high which is indicative of an urban core area. Population growth was slightly less than the averages for the Washington-Baltimore-NV CSA and the 1997 Washington DC-MD-VA nonattainment area. Its VMT

is less than one-twenty-fifth of that even for the 1997 Washington DC-MD-VA nonattainment area. Commuting patterns link it to the Washington CBSA as a core county. That it is part of the Washington CBSA and not the Baltimore-Towson CBSA suggests that it is more linked to the former CBSA by commuting and hence mobile source emissions.

Meteorology indicates it is upwind of violating monitors in the Counties/Cities/States of Baltimore, Prince George's, Harford, Fairfax and Carroll and the District of Columbia, and, to a lesser extent the Counties/Cities/States of Anne Arundel. Meteorology indicates it is downwind of the Counties/Cities/States of Fairfax, the District, Falls Church City, Anne Arundel, Charles, Howard, Loudoun, Montgomery, Calvert, Prince George's, Prince William, Alexandria and Fairfax Cities plus Baltimore Co. and City and to a lesser extent: Prince William, Frederick (MD), and the Fredericksburg area.

The factors somewhat favor a designation of nonattainment based upon contribution: these are its total emissions and population densities, meteorological indications of possible interstate contribution to and from the District of Columbia, and jurisdictional boundaries.

Factors that favor inclusion of Arlington County in a nonattainment area containing Anne Arundel, Baltimore and Harford Counties are meteorology and emissions.

Factors that favor placement of Arlington County in a nonattainment area with Fairfax County and the District as part of a Washington-DC-MD-VA Area with the same or similar boundaries as the 1997 Washington-DC-MD-VA nonattainment area are its closer proximity to Fairfax and Arlington Counties, emissions, Virginia's recommendation, commuting patterns, and jurisdictional boundaries.

Therefore, the factors favor grouping Arlington County with the Washington-DC-MD-VA Area with the same or similar boundaries as the 1997 Washington-DC-MD-VA nonattainment area.

Prince William County, VA: Prince William County does not have violating monitor. It ranks in the "top 11" counties (8^{th} for VOC and 10^{th} for NOx) for total emissions within the Washington-Baltimore-NV CSA and ties for fourth (VOC) and fifth (NOx) in the 1997 Washington DC-MD-VA nonattainment area. Its mobile source emissions are ranked 9th for VOC and 10th for NOx. Its population is fifth within the 1997 Washington DC-MD-VA nonattainment area and its population density is a little less than that of the 1997 Washington DC-MD-VA nonattainment area. Its growth rate was 42 percent, and, the absolute change in population was second highest in the 1997 Washington DC-MD-VA nonattainment area. Its VMT is not exceptional. Commuting patterns link it to the Washington CBSA as a core county. That it is part of the Washington CBSA and not the Baltimore-Towson CBSA suggests that it is more linked to the former CBSA by commuting and hence mobile source emissions.

Meteorology indicates it is upwind of violating monitors in the Counties/Cities/States of Prince George's, and, to a lesser extent the Counties/Cities/States of Baltimore, Anne Arundel, Harford, Fairfax and Carroll and the District of Columbia.

Factors that favor inclusion of Prince William County in a nonattainment area containing Anne Arundel, Baltimore and Harford Counties are meteorology, and emissions.

Factors that favor placement of Prince William County in a nonattainment area with Arlington and Fairfax Counties and the District as part of a Washington-DC-MD-VA Area with the same or similar boundaries as the 1997 Washington-DC-MD-VA nonattainment area are its closer proximity to Fairfax and Arlington Counties, emissions, Virginia's recommendation, commuting patterns, growth and jurisdictional boundaries.

Therefore, the factors favor grouping Prince William County with the Washington-DC-MD-VA Area with the same or similar boundaries as the 1997 Washington-DC-MD-VA nonattainment area.

Alexandria City, VA: Alexandra City does not have violating monitor. It has total emissions which are neither at the low or high end – it ranks in low end (21st VOC and 20th NOx) of the middle (12th through 23rd inclusive) within the Washington-Baltimore-NV CSA. Its mobile source emissions are ranked 25th for VOC and 25th for NOx. Its population is not exceptional, but it is densely populated – about 7 times the 1997 Washington DC-MD-VA nonattainment area average. Its growth was less than the 1997 Washington DC-MD-VA nonattainment area average. Its VMT is not exceptional. Its emission densities are high. Commuting patterns link it to the Washington CBSA as a core city. That it is part of the Washington CBSA and not the Baltimore-Towson CBSA suggests that it is more linked to the former CBSA by commuting and hence mobile source emissions.

Meteorology indicates this city is likely upwind of violating monitors in the same counties and the District as the District of Columbia Arlington County and perhaps Fairfax County.

The factors favor a designation of nonattainment based upon contribution: these are possible contribution to the monitors in Arlington, Fairfax and Prince George's Counties and the District of Columbia, total emissions and population densities, commuting patterns, Virginia's recommendation and jurisdictional boundaries. While it may possibly contribute to monitors in Anne Arundel, Harford and other Counties, its close proximity and high emissions densities favor merging for boundaries purposes with the surrounding jurisdictions of Fairfax County and the District of Columbia.

The factors favor placing this county in the same nonattainment area as Fairfax and Arlington Counties and the District of Columbia. Factors favoring this placement are jurisdictional boundaries, commuting patterns, possible contribution to Fairfax and Arlington Counties, and Virginia's recommendation. No factors compel placement in a different nonattainment area.

Fairfax, Manassas, Manassas Park, and Falls Church Cities, VA: Fairfax, Manassas, Manassas Park, and Falls Church Cities do not have a monitor. Fairfax and Falls Church Cities are in close proximity to the violating monitors in Fairfax and Arlington Counties. All are small – ten square miles or less (for comparison: Alexandria City is 26, the District of Columbia is over 60 and Frederick County, MD the largest is over 650 square miles). Generally all have low absolute total emissions, VMT, and number of commuters. All are ranked 29th or lower for mobile source emissions. All are densely populated with a density just under 3 to 7 times the overall CSA density. The total emissions densities are high which is likely typical for urban core areas. Their total emissions and population densities are comparable to or higher than the adjacent/surrounding counties and thus these cities are indistinguishable from these adjacent/surrounding counties. Commuting patterns link it to the Washington CBSA as a core city. That it is part of the Washington CBSA and not the Baltimore-Towson CBSA suggests that it is more linked to the former CBSA by commuting and hence mobile source emissions.

Meteorology indicates these cities are likely upwind of violating monitors in the same counties and the District as the applicable adjacent/enclosing jurisdictions – the District of Columbia, Arlington, Fairfax and/or Prince George's Counties. While each of these may possibly contribute to many monitors in the CSA, their close proximities and high emissions densities favor merging for boundaries purposes with the enclosing/adjacent jurisdictions of the District of Columbia, Arlington, Fairfax and/or Prince George's Counties.

The factors that favor designation of nonattainment for contribution are mainly their total emissions densities, commuting patterns, jurisdictional boundaries, Virginia's recommendations and population densities which are comparable to or higher than the adjacent/surrounding counties. Fairfax City should be in a nonattainment area that includes Fairfax and Arlington Counties and the District of Columbia as part of a Washington-DC-MD-VA Area with the same or similar boundaries as the 1997 Washington-DC-MD-VA nonattainment area. Falls Church City should be in a nonattainment area that includes Fairfax and Arlington Counties and the District of Columbia, for the same reasons as for Arlington and Fairfax Counties between which Falls Church is located. Manassas and Manassas Park Cities should be in the same nonattainment area as Fairfax and Arlington Counties for the same reasons as for Prince William County, which encloses both.

The District of Columbia: The District of Columbia must be designated nonattainment due to the presence of monitors violating the 2008 ozone NAAQS. Its design value is similar to those in part of the Arlington County and only 0.002 ppm less than that in Fairfax County. These monitors are clustered in a relatively small area at the core of the Washington-Arlington-Alexandria, DC-VA-MD-WV MSA. It ranks in the "top 11" counties (at 7th for both NOx and VOC) for total emissions within the Washington-Baltimore-NV CSA and fourth in the 1997 Washington DC-MD-VA nonattainment area. Its mobile source emissions are ranked 6th for VOC and 6th for NOx. It is densely populated (8 times the average for the 1997 Washington DC-MD-VA nonattainment area) and has the sixth highest population within the Washington-Baltimore-NV CSA and the fourth within the 1997 Washington DC-MD-VA nonattainment area. Its growth rate is well less than – about one-third – of the 1997 Washington DC-MD-VA nonattainment area and CSA averages. Its VMT is not exceptional at one-twelfth that of the 1997 Washington DC-MD-VA nonattainment area. Commuting patterns link it to the Washington CBSA as a core city. That it is part of the Washington CBSA and not the Baltimore-Towson CBSA suggests that it is more linked to the former CBSA by commuting and hence mobile source emissions.

Meteorology indicates it is upwind of violating monitors in the Counties/Cities/States of Prince George's, Baltimore, Anne Arundel, Harford, Fairfax and Carroll. Meteorology indicates it is downwind of the Counties/Cities/States of Montgomery, Prince George's Arlington, Fairfax, Charles, Howard, plus Baltimore Co. and City, the Fredericksburg area and Alexandria and Falls Church Cities, and, to a lesser extent: Calvert, Carroll, Prince William Loudoun, and Frederick (MD).

The District of Columbia's initial recommendation was for nonattainment. The District of Columbia's analysis suggested that its total emissions were a small (7% NOx and 9% VOC) part of those in the 1997 Washington DC-MD-VA nonattainment area and suggested the need for additional controls on on-road and off-road mobile and disperse area sources and stricter controls on large industrial sources and power plants to curtail transported pollution. At this point in the designation process, EPA does not disagree with the District of Columbia that an appreciable part of the air quality problem within the District of Columbia is due to total emissions outside its borders. This decision is based in part upon the District of Columbia's evaluation and in part upon EPA's evaluation contained within this document. The District of Columbia is surrounded by three of the "top six" counties for total emissions in the Washington-

Baltimore-NV CSA. These are: Fairfax County, VA (4th NOx, 1st VOC); Montgomery County, MD (5th NOX, 2nd VOC); and Prince George's County, MD (3rd for NOx and VOC). These three counties comprise the top three within the 1997 Washington DC-MD-VA nonattainment area. The District is a densely populated area at the core of the Washington-Arlington-Alexandria, DC-VA-MD-WV CBSA. The District's mobile source emissions rank 6th (for both NOx and VOC) overall in the CSA. Around the District are three of the top five jurisdictions in the CSA for mobile source emissions – Fairfax, Montgomery and Prince George's Counties.

The factors that favor the placement of the District of Columbia in the same nonattainment area as Prince George's, Fairfax and Arlington Counties as part of a Washington-DC-MD-VA Area with the same or similar boundaries as the 1997 Washington-DC-MD-VA nonattainment area are: jurisdictional boundaries; commuting patterns; meteorological indications of possible contribution to and from the District of Columbia and counties in the 1997 Washington-DC-MD-VA nonattainment area; and the close proximity of violating monitors in Arlington, Prince George's and Fairfax Counties as well as the District of Columbia's monitors with design values of 0.079 to 0.081 ppm at the Arlington-Fairfax-District core. Likewise, the high emissions in surrounding areas favor the placement of the District of Columbia in the same nonattainment area as Prince George's, Fairfax and Arlington Counties as part of a Washington-DC-MD-VA Area with the same or similar boundaries as the 1997 Washington-DC-MD-VA nonattainment area. No factors compel placement in a different nonattainment area.

The Frederick County, VA Area (Frederick County and Winchester City in Virginia)
This area does not have a violating monitor, but has a monitor with a design value of 0.070 ppm. In total, this area has aggregate total emissions about equal to Arlington County, VA for NOx and less than Frederick County, MD for VOC. As such, the area would rank 13th VOC and 15th NOx within the Washington-Baltimore-NV CSA. Likewise, the total area's mobile source emissions would rank 13th for VOC and 18th for NOx. Individually each city/county in this area ranks lower. The total population is less than Alexandria City and would exceed only Calvert County, MD (and the other cities in Virginia). The growth rate was not quite twice the Washington-Baltimore-NV CSA average but the absolute change is less than most counties in the Washington-Baltimore-NV CSA. Total VMT is less than Alexandria City. The area is separated from the main parts of the Washington-Baltimore-NV CSA by the easternmost portion of the Appalachian Mountains. The area is not adjacent to any county with a violating monitor. Meteorology suggest this area is upwind of violating monitors within the CSA but the closest monitors are attaining the 2008 ozone NAAQS. Available meteorological information does not favor 1997 Baltimore or 1997 Washington nonattainment areas. Commuting patterns indicate that this area is a separate CBSA thus has less interchange with the Washington CBSA than adjacent counties within the Washington CBSA have with the core of the Washington CBSA. The geographic remoteness, middling emissions, jurisdictional boundaries and Virginia's recommendation are factors favoring a designation as "unclassifiable/attainment" due to the remoteness of this area from violating monitors and its low population density, and the presence of a monitor attaining the 2008 ozone NAAQS.

Fredericksburg, VA Area (City of Fredericksburg, Spotsylvania and Stafford Counties)
Stafford County does not have violating monitor but has a monitor with a design value of 0.070 ppm. For total emissions, Spotsylvania and Stafford Counties rank between 15th and 19th for total emissions – within the "middle group" (between 12th and 23rd inclusive) – within the Washington-Baltimore-NV CSA. As for mobile source emissions, Spotsylvania is ranked 12th for VOC and 12th for NOx, and, Stafford is ranked 13th for VOC and 14th for NOx. Their populations, VMT and number of commuters are not exceptional. They are relatively sparely populated, having a population density less than even

the Washington-Baltimore-NV CSA average. In total the Fredericksburg, VA Area would have total emissions about equal to Prince William County, VA, a population less than Loudoun County, VA, an absolute population growth between Montgomery and Prince George's Counties in Maryland, VMT about 110 percent of Prince William's. Commuting patterns link it to the Washington CBSA as: a core county n the case of Stafford County; and as outlying city/county in the case of Spotsylvania and Fredericksburg City.

Meteorology indicates it is upwind of violating monitors in the Counties/Cities/States of Fairfax, Arlington and the District of Columbia as well as the Counties/Cities/States of Prince George's Baltimore, Anne Arundel, and, Harford,.

Meteorology indicates that the Fredericksburg, VA Area is upwind of violating monitors in Arlington County, VA about 22 percent of the time and of the monitor in Prince George's County, MD about 18 percent of the time. Meteorology and total emissions indicate the possibility of contribution to Arlington and Prince George's Counties. However, as the tip of the Fredericksburg, VA Area closest to violating monitors in the Washington-Baltimore-NV CSA, Stafford County is more remote from these violating monitors than Charles County, MD or Prince William County, VA over which total emissions from Stafford County have to travel to reach a violating monitor. Charles County, MD or Prince William County, VA are adjacent to Stafford County and are attaining the 2008 ozone NAAQS.

The factors that favor designation of "unclassifiable/attainment" would seem to outweigh those for another designation are: the better than the NAAQS air quality in Stafford County, this area's lack of close proximity to areas with a violating monitor, jurisdictional boundaries and Virginia's recommendations.

Queen Anne's County, MD: Queen Anne's County does not have violating monitor. For total emissions it ranks at the bottom (23rd for both NOx and VOC) within the "middle group" (between 12th and 23rd inclusive) within the Washington-Baltimore-NV CSA. Its mobile source emissions are ranked 20th for VOC and 17th for NOx. Its population is low – about one fourth of the county within the 1997 Baltimore MD nonattainment area (Carroll Co.) with the lowest population. Its growth rate is about three times that of the 1997 Baltimore MD nonattainment area, but the absolute change is less than half that of Carroll County, MD. Its VMT is low and less than that of even Carroll County, MD. Commuting patterns link it to the Baltimore CBSA as an outlying county.

Meteorology indicates it is upwind of violating monitors in both the 1997 Baltimore and Washington nonattainment areas.

This county is in the OTR and is subject to Maryland's enhanced I/M program.

The meteorology favors designation as nonattainment based upon contribution, and, the total emissions related factors are not compelling for a nonattainment designation given that the county is in the OTR, the low emissions related factors and given the limited access for commuting to the rest of the Washington-Baltimore-NV CSA. The jurisdictional boundaries factor would seem to favor designation of "unclassifiable/attainment" and outweigh factors favoring a nonattainment designation. The factors favor a designation of "attainment/unclassifiable" would seem to outweigh those for another designation.

St. Mary's County: St. Mary's County does not have violating monitor. For total emissions it ranks 16th VOC and 17th NOx– within the "middle group" (between 12th and 23rd inclusive) of the Washington-Baltimore-NV CSA. Its mobile source emissions are ranked 19th for VOC and 21st for NOx. Its population is lower than all other jurisdictions within the 1997 Washington DC-MD-VA nonattainment area. Its growth rate is about one and one-half times that of the 1997 Washington DC-MD-VA nonattainment area, but the absolute change is less than half that of Carroll County, MD. Its VMT is low and less than that of Alexandria City and less than one and one-half times that of Calvert County. Commuting patterns indicate that this area is a separate CBSA thus has less interchange with the Washington CBSA than adjacent counties within the Washington CBSA have with the core of the Washington CBSA.

Meteorology indicates St. Mary's County is upwind of violating monitors in both the 1997 Baltimore and Washington nonattainment areas and suggests that it is more often upwind of violating monitors in the 1997 Baltimore nonattainment area.

St. Mary's County is in the OTR. Its total emissions related factors are not compelling for a nonattainment designation given that the county is in the OTR. Its possible contributions to nonattainment at the Edgewood monitor are solely intrastate. Because this possible contribution to violating monitors involves only *intrastate* contribution, Maryland will primarily be responsible for mitigating any such intrastate contribution.

The low emissions-related factors and that of jurisdictional boundaries favor an "unclassifiable /attainment" designation.

Fauquier County, VA: Fauquier County does not have violating monitor but has a monitor with a design value of 0.065 ppm. For total emissions it ranks 15th VOC and 20th NOx within the Washington-Baltimore-NV CSA – within the "middle group" (between 12th and 23rd inclusive). Its mobile source emissions are ranked 16th for VOC and 15th for NOx. Its population is low, and, it is sparely populated. Its growth rate was about one and one-half times that of the Washington-Baltimore-NV CSA as a whole, but the absolute change is low. Its VMT is low in comparison to most other areas within the 1997 Washington DC-MD-VA nonattainment area. Only 27 percent of its commuters travel into an area with a violating monitor.

Meteorology indicates it is upwind of violating monitors in both the 1997 Baltimore and Washington nonattainment areas.

Factors that favor designation as nonattainment for contribution are possible contribution to Fairfax and Arlington Counties. Factors that favor designation as "unclassifiable/attainment" are Virginia's recommendation (possible contribution to the closest violating monitors is *intrastate*), low population, jurisdictional boundaries, and the presence of a monitor attaining the 2008 NAAQS in Fauquier, Stafford and Prince William Counties. The factors that favor designation as "unclassifiable/attainment" seem to outweigh factors for a nonattainment designation.

Culpeper, Clarke, and Warren Counties in Virginia and Hampshire and Jefferson Counties in West Virginia: None of these counties have a violating monitor. Both states recommended that these counties within their State be designated attainment. For total emissions, each ranks 24th or lower in the Washington-Baltimore-NV CSA. Culpeper's mobile source emissions are ranked 21st for VOC and 23rd for NOx AND Warren's rank 24th and 22nd. The West Virginia Counties each rank far lower 27th

or less. The population of each is low, and, each is sparely populated. The VMT of each is low. For all but Jefferson County, the total number of commuters is less than that of Manassas City. The total number of commuters in Jefferson County is not appreciably greater than that of Manassas City (20,937 versus 18,077, respectively). The total emissions of each are 1 percent or less than the total for the Washington-Baltimore-NV CSA. Commuting patterns link Culpeper, Clarke, Jefferson and Warren Counties to the Washington CBSA as outlying counties. Commuting patterns link Hampshire County to the Winchester VA, CBSA as an outlying county. Because the Winchester , VA CBSA is a separate CBSA form the Washington and Baltimore-Towson CBSAs Hampshire has less interchange with the Washington CBSA than adjacent counties within the Washington CBSA have with the core of the Washington CBSA. Some of these counties separated from the main parts of the Washington-Baltimore-NV CSA by the easternmost portion of the Appalachian Mountains.

These "outer rim" counties in the Washington-Baltimore-NV CSA in Virginia and West Virginia are closest to attaining monitors to the extent they are upwind of any monitors in the Washington-Baltimore-NV CSA. These "outer rim" areas are the Counties of Frederick, Warren, Clarke, and Culpeper and Winchester City in Virginia, Jefferson County, WV. The relevant attaining monitors are those in Frederick County, MD and in Loudoun, Prince William, Fauquier, and Stafford Counties in Virginia. Of these "outer rim" counties, Clarke County, VA and Jefferson County, WV are the ones more likely to sufficient contribute to a violating monitor because the closest monitors within the Washington-Baltimore-NV CSA just attain the 2008 ozone NAAQS. No factors would seem to support designation as nonattainment; the factors that favor designation as "attainment/unclassifiable" are the States' recommendations, remoteness from violating monitors, low total emissions related factors, and jurisdictional boundaries.

Nonattainment Areas:

As discussed above, EPA has determined that certain counties/cities can be formed into a Baltimore, MD nonattainment area consisting of Anne Arundel, Baltimore, Carroll, Harford, and Howard Counties and Baltimore City in Maryland and, that certain counties/cities can be formed into a Washington, DC-MD-VA nonattainment area consisting of:

The Counties of Frederick, Montgomery, Calvert, Charles, and Prince George's in Maryland;

The entire District of Columbia; and,

The Counties of Arlington, Fairfax, Loudoun, and Prince William and the Cities of Alexandria, Fairfax, Falls Church, Manassas, and Manassas Park in Virginia.

One area or two:

As discussed under Factor 3, EPA believes that the Edgewood monitor could well be affected on a substantial number of days by emissions in CBSAs adjacent to the Washington-Baltimore-NV CSA in Pennsylvania, Delaware and even Maryland as well as by emissions in the Washington, DC-MA-VA nonattainment area under the 2008 ozone NAAQS. Likewise, EPA does not discount the effects of mobile source emissions throughout the Washington-Baltimore-NV CSA but can conclude that the majority of these are in Maryland and that the mobile source emissions in the Washington, DC-MD-VA nonattainment area are not the sole cause of high exceedances at the Edgewood monitor. Mobile source emissions will decline throughout the CSA and the other nonattainment and attainment areas surrounding this CSA. Numerous EPA regulations for new motor vehicles and other on-road and non-

road mobile source engines will continue to produce reductions in ozone and ozone precursors before the Baltimore area's attainment date. See, 77 FR 8197 at 8202, February 14, 2012. As Maryland noted, States have limited ability to regulate mobile source emissions.[125] EPA sees little reason to designate areas nonattainment due solely to emissions sources which will decline substantially due to already promulgated Federal rules and which the States involved will have little ability to regulate.

As for the CBSAs adjacent to the Washington-Baltimore-NV CSA in Pennsylvania, Delaware and even Maryland, these are in the ozone transport region (OTR) formed under section 184 of the CAA. The Washington, DC-MD-VA ozone nonattainment area and Stafford County, VA is also in the OTR and thus is subject to the same minimum section 184 requirements which include reasonably available control technology requirements, enhanced vehicle inspection and maintenance programs, and major source permitting requirements at least as stringent as an area classified as moderate nonattainment as these other CBSAs.

EPA therefore concludes that there would be limited benefit in combining Baltimore, MD nonattainment area and the Washington, DC-MD-VA nonattainment area to address mobile source emissions in the Washington CBSA that would not offset consideration of jurisdictional boundaries by involving additional MPOs in the Baltimore, ND area planning process.

EPA has determined that it is appropriate to keep two nonattainment areas in this CSA.

Conclusions:

Based on the assessment of factors described above, EPA has concluded that the following counties and independent cities listed below meet the CAA criteria for inclusion in the two nonattainment areas indicated below:

A Baltimore, MD nonattainment area consisting of Anne Arundel, Baltimore, Carroll, Harford, and Howard Counties and Baltimore City in Maryland.

A Washington, DC-MD-VA nonattainment area consisting of:

The Counties of Frederick, Montgomery, Calvert, Charles, and Prince George's in Maryland;

The entire District of Columbia; and,

The Counties of Arlington, Fairfax, Loudoun, and Prince William and the Cities of Alexandria, Fairfax, Falls Church, Manassas, and Manassas Park in Virginia.

[125] "Emissions from mobile sources, including onroad, nonroad, marine, air, and rail, also continue to contribute significantly to NOx and VOC emissions levels, but the setting of mobile emissions standards is outside the authority of most states to regulate. " Refr to "APPENDIX A 5 (9) – FACTOR ANALYSIS FOR THE 16 STATE NONATTAINMENT AREA," to a Letter dated March 7, 2012, from Robert M. Summers, Ph.D., Secretary, Maryland Department of the Environment to Shawn M. Garvin, Regional Administrator, EPA Region III.

Appendix 1: Pertinent Background on Monitoring Objectives and Scales

Objectives:

EPA has identified three major objectives for air quality monitoring:

(1) Provide air pollution data to the general public in a timely manner.

(2) Support compliance with ambient air quality standards and emissions strategy development. EPA and others will be used data from monitors for NAAQS pollutants to compare an area's air pollution levels against the NAAQS.

(3) Support for air pollution research studies.

EPA has specified that to support these three basic air quality monitoring objectives, a network must be designed with a variety of types of monitoring sites. Monitoring sites must be capable of determining among other things the peak air pollution levels, typical levels in populated areas, air pollution transported into and outside of a city or region, and air pollution levels near specific sources. The six general site types are:

(1) Sites located to determine the highest or maximum concentrations expected to occur in the area covered by the network.

(2) Sites located to measure "population exposure," that is, typical concentrations in areas of high population density.

(3) Sites located to determine the impact of substantial sources or source categories on air quality.

(4) Sites located to determine general background concentration levels.

(5) Sites located to determine the extent of regional pollutant transport among populated areas; and in support of secondary standards.

(6) Sites located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts.

See, section 1.1 of Appendix D to 40 CFR Part 58 "Ambient Air Quality Surveillance" (Appendix D hereafter).

Regarding Regulatory Compliance and Maximum Concentration Sites:

For regulatory compliance, the principle objective is to measure the ozone concentration in the high population density areas and the maximum downwind concentration from the urban region. It is important to be careful when selecting the high population sites because, particularly in dense urban areas, the greatest concentration of people may be in an area with heavy automobile traffic, which may result in low ozone concentration due to nitric oxide titration. See, section 4.2 of Guideline On Ozone Monitoring Site Selection, EPA-454/R-98-002, August 1998 (1998 Guideline hereafter).

Within an ozone monitoring network, at least one ozone site for each CBSA, or CSA if multiple CBSAs are involved, must be designed to record the maximum concentration for that particular metropolitan area (section 4.1(b) of Appendix D to 40 CFR Part 58). Based upon a review of meteorological and air quality data, the prospective maximum concentration monitor site should be selected in a direction from the city that is most likely to observe the highest ozone concentrations, more specifically, downwind during periods of photochemical activity. In many cases, these maximum concentration ozone sites will be located 10 to 30 miles or more downwind from the urban area where maximum ozone precursor emissions originate (see, section 4.1(f) of Appendix D).

Regarding Scales:

Section 4.1(c) of Appendix D defines "urban scale" as "an area of city-like dimensions, on the order of several kilometers to 50 or more kilometers or more." "Urban-scale sites can also be used to measure high concentrations downwind of the area having the highest precursor emissions." See, section 4.2 of Guideline On Ozone Monitoring Site Selection, EPA-454/R-98-002, August 1998 (1998 Guideline).

Section 4.1(c) of Appendix D to 40 CFR Part 58 ("Ambient Air Quality Surveillance") defines "Neighborhood scale" as some reasonably homogeneous urban sub-region, with dimensions of a few kilometers. Homogeneity refers to pollutant concentrations. Neighborhood scale data will provide valuable information for developing, testing, and revising concepts and models that describe urban/regional concentration patterns. These data will be useful to the understanding and definition of processes that take periods of hours to occur and hence involve considerable mixing and transport. Under stagnation conditions, a site located in the neighborhood scale may also experience peak concentration levels within a metropolitan area.

Section 4.1(c) of Appendix D to 40 CFR Part 58 ("Ambient Air Quality Surveillance") defines "Regional scale" as a scale of measurement will be used to typify concentrations over large portions of a metropolitan area and even larger areas with dimensions of as much as hundreds of kilometers. Such measurements will be useful for assessing the O_3 that is transported to and from a metropolitan area, as well as background concentrations. In some situations, particularly when considering very large metropolitan areas with complex source mixtures, regional scale sites can be the maximum concentration location.

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
2006			2006			2006				2006
5/28/2006	51-059-0030	0.076	ppm	101	24	100	44201	Ozone	Virginia	Fairfax
5/29/2006	11-001-0025	0.08	ppm	111	24	100	44201	Ozone	District Of Columbia	District of Columbia
5/29/2006	11-001-0041	0.086	ppm	127	24	100	44201	Ozone	District Of Columbia	District of Columbia
5/29/2006	11-001-0043	0.088	ppm	132	24	100	44201	Ozone	District Of Columbia	District of Columbia
5/29/2006	24-005-3001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Baltimore
5/29/2006	24-025-1001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Harford
5/29/2006	24-025-9001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Harford
5/29/2006	24-033-0030	0.085	ppm	124	24	100	44201	Ozone	Maryland	Prince George's
5/29/2006	51-013-0020	0.08	ppm	111	24	100	44201	Ozone	Virginia	Arlington
5/30/2006	11-001-0025	0.086	ppm	127	24	100	44201	Ozone	District Of Columbia	District of Columbia
5/30/2006	11-001-0041	0.093	ppm	145	24	100	44201	Ozone	District Of Columbia	District of Columbia
5/30/2006	11-001-0043	0.102	ppm	166	24	100	44201	Ozone	District Of Columbia	District of Columbia
5/30/2006	24-003-0014	0.092	ppm	142	24	100	44201	Ozone	Maryland	Anne Arundel
5/30/2006	24-005-1007	0.08	ppm	111	24	100	44201	Ozone	Maryland	Baltimore
5/30/2006	24-005-3001	0.105	ppm	174	24	100	44201	Ozone	Maryland	Baltimore
5/30/2006	24-009-0011	0.077	ppm	104	24	100	44201	Ozone	Maryland	Calvert
5/30/2006	24-013-0001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Carroll
5/30/2006	24-017-0010	0.079	ppm	109	24	100	44201	Ozone	Maryland	Charles
5/30/2006	24-021-0037	0.078	ppm	106	24	100	44201	Ozone	Maryland	Frederick
5/30/2006	24-025-1001	0.103	ppm	169	24	100	44201	Ozone	Maryland	Harford
5/30/2006	24-025-9001	0.094	ppm	147	24	100	44201	Ozone	Maryland	Harford
5/30/2006	24-031-3001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Montgomery
5/30/2006	24-033-0030	0.095	ppm	150	24	100	44201	Ozone	Maryland	Prince George's
5/30/2006	24-033-8003	0.085	ppm	124	24	100	44201	Ozone	Maryland	Prince George's
5/30/2006	51-013-0020	0.101	ppm	164	24	100	44201	Ozone	Virginia	Arlington
5/30/2006	51-059-0030	0.099	ppm	159	24	100	44201	Ozone	Virginia	Fairfax
5/30/2006	51-061-0002	0.093	ppm	145	24	100	44201	Ozone	Virginia	Fauquier

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5/30/2006	51-107-1005	0.084	ppm	122	24	100	44201	Ozone	Virginia	Loudoun
5/30/2006	51-153-0009	0.096	ppm	151	24	100	44201	Ozone	Virginia	Prince William
5/30/2006	51-179-0001	0.116	ppm	201	24	100	44201	Ozone	Virginia	Stafford
5/30/2006	51-510-0009	0.094	ppm	147	24	100	44201	Ozone	Virginia	Alexandria City
5/31/2006	11-001-0025	0.085	ppm	124	24	100	44201	Ozone	District Of Columbia	District of Columbia
5/31/2006	11-001-0041	0.076	ppm	101	24	100	44201	Ozone	District Of Columbia	District of Columbia
5/31/2006	11-001-0043	0.087	ppm	129	24	100	44201	Ozone	District Of Columbia	District of Columbia
5/31/2006	24-013-0001	0.104	ppm	172	24	100	44201	Ozone	Maryland	Carroll
5/31/2006	24-021-0037	0.088	ppm	132	24	100	44201	Ozone	Maryland	Frederick
5/31/2006	24-031-3001	0.101	ppm	164	24	100	44201	Ozone	Maryland	Montgomery
5/31/2006	24-033-0030	0.077	ppm	104	24	100	44201	Ozone	Maryland	Prince George's
5/31/2006	51-013-0020	0.085	ppm	124	24	100	44201	Ozone	Virginia	Arlington
5/31/2006	51-059-0030	0.078	ppm	106	24	100	44201	Ozone	Virginia	Fairfax
5/31/2006	51-061-0002	0.078	ppm	106	24	100	44201	Ozone	Virginia	Fauquier
5/31/2006	51-107-1005	0.102	ppm	166	24	100	44201	Ozone	Virginia	Loudoun
5/31/2006	51-153-0009	0.098	ppm	156	24	100	44201	Ozone	Virginia	Prince William
5/31/2006	51-510-0009	0.08	ppm	111	24	100	44201	Ozone	Virginia	Alexandria City
6/1/2006	11-001-0025	0.085	ppm	124	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/1/2006	11-001-0041	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/1/2006	11-001-0043	0.085	ppm	124	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/1/2006	24-005-1007	0.078	ppm	106	24	100	44201	Ozone	Maryland	Baltimore
6/1/2006	24-021-0037	0.079	ppm	109	24	100	44201	Ozone	Maryland	Frederick
6/1/2006	24-025-1001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Harford
6/1/2006	24-025-9001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Harford
6/1/2006	24-031-3001	0.09	ppm	137	24	100	44201	Ozone	Maryland	Montgomery
6/1/2006	24-033-0030	0.098	ppm	156	24	100	44201	Ozone	Maryland	Prince George's
6/1/2006	24-033-8003	0.077	ppm	104	24	100	44201	Ozone	Maryland	Prince George's
6/1/2006	51-013-0020	0.083	ppm	119	24	100	44201	Ozone	Virginia	Arlington

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6/1/2006	51-059-0030	0.079	ppm	109	24	100	44201	Ozone	Virginia	Fairfax
6/16/2006	51-059-0030	0.079	ppm	109	24	100	44201	Ozone	Virginia	Fairfax
6/17/2006	11-001-0025	0.076	ppm	101	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/17/2006	11-001-0043	0.081	ppm	114	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/17/2006	24-003-0014	0.076	ppm	101	24	100	44201	Ozone	Maryland	Anne Arundel
6/17/2006	24-005-1007	0.085	ppm	124	24	100	44201	Ozone	Maryland	Baltimore
6/17/2006	24-013-0001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Carroll
6/17/2006	24-021-0037	0.076	ppm	101	24	100	44201	Ozone	Maryland	Frederick
6/17/2006	24-025-9001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Harford
6/17/2006	24-031-3001	0.091	ppm	140	24	100	44201	Ozone	Maryland	Montgomery
6/17/2006	24-033-0030	0.084	ppm	122	24	100	44201	Ozone	Maryland	Prince George's
6/17/2006	24-033-8003	0.079	ppm	109	24	100	44201	Ozone	Maryland	Prince George's
6/17/2006	51-013-0020	0.077	ppm	104	24	100	44201	Ozone	Virginia	Arlington
6/17/2006	51-059-0030	0.076	ppm	101	24	100	44201	Ozone	Virginia	Fairfax
6/17/2006	51-107-1005	0.077	ppm	104	24	100	44201	Ozone	Virginia	Loudoun
6/17/2006	51-153-0009	0.077	ppm	104	24	100	44201	Ozone	Virginia	Prince William
6/18/2006	11-001-0025	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/18/2006	11-001-0043	0.08	ppm	111	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/18/2006	24-005-1007	0.095	ppm	150	24	100	44201	Ozone	Maryland	Baltimore
6/18/2006	24-005-3001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Baltimore
6/18/2006	24-013-0001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Carroll
6/18/2006	24-021-0037	0.085	ppm	124	24	100	44201	Ozone	Maryland	Frederick
6/18/2006	24-025-1001	0.089	ppm	135	24	100	44201	Ozone	Maryland	Harford
6/18/2006	24-025-9001	0.091	ppm	140	24	100	44201	Ozone	Maryland	Harford
6/18/2006	24-031-3001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Montgomery
6/18/2006	24-033-0030	0.09	ppm	137	24	100	44201	Ozone	Maryland	Prince George's
6/18/2006	51-013-0020	0.077	ppm	104	24	100	44201	Ozone	Virginia	Arlington

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6/18/2006	51-107-1005	0.076	ppm	101	24	100	44201	Ozone	Virginia	Loudoun
6/21/2006	11-001-0041	0.082	ppm	116	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/21/2006	11-001-0043	0.083	ppm	119	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/21/2006	24-003-0014	0.094	ppm	147	24	100	44201	Ozone	Maryland	Anne Arundel
6/21/2006	24-005-3001	0.086	ppm	127	24	100	44201	Ozone	Maryland	Baltimore
6/21/2006	24-009-0011	0.083	ppm	119	24	100	44201	Ozone	Maryland	Calvert
6/21/2006	24-017-0010	0.079	ppm	109	24	100	44201	Ozone	Maryland	Charles
6/21/2006	24-025-1001	0.095	ppm	150	24	100	44201	Ozone	Maryland	Harford
6/21/2006	24-033-8003	0.096	ppm	151	24	100	44201	Ozone	Maryland	Prince George's
6/21/2006	51-013-0020	0.083	ppm	119	24	100	44201	Ozone	Virginia	Arlington
6/21/2006	51-059-0030	0.081	ppm	114	24	100	44201	Ozone	Virginia	Fairfax
6/21/2006	51-179-0001	0.077	ppm	104	24	100	44201	Ozone	Virginia	Stafford
6/22/2006	11-001-0041	0.076	ppm	101	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/22/2006	11-001-0043	0.078	ppm	106	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/22/2006	24-003-0014	0.084	ppm	122	24	100	44201	Ozone	Maryland	Anne Arundel
6/22/2006	24-005-3001	0.085	ppm	124	24	100	44201	Ozone	Maryland	Baltimore
6/22/2006	24-009-0011	0.076	ppm	101	24	100	44201	Ozone	Maryland	Calvert
6/22/2006	24-025-1001	0.094	ppm	147	24	100	44201	Ozone	Maryland	Harford
6/22/2006	24-025-9001	0.09	ppm	137	24	100	44201	Ozone	Maryland	Harford
6/22/2006	24-033-8003	0.083	ppm	119	24	100	44201	Ozone	Maryland	Prince George's
6/22/2006	51-013-0020	0.079	ppm	109	24	100	44201	Ozone	Virginia	Arlington
6/22/2006	51-059-0030	0.08	ppm	111	24	100	44201	Ozone	Virginia	Fairfax
6/28/2006	24-003-0014	0.077	ppm	104	24	100	44201	Ozone	Maryland	Anne Arundel
6/28/2006	24-033-8003	0.079	ppm	109	24	100	44201	Ozone	Maryland	Prince George's
6/29/2006	24-025-1001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Harford
6/29/2006	24-033-8003	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's

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7/3/2006	24-003-0014	0.079	ppm	109	24	100	44201	Ozone	Maryland	Anne Arundel
7/3/2006	24-025-1001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Harford
7/3/2006	24-025-9001	0.08	ppm	111	24	100	44201	Ozone	Maryland	Harford
7/3/2006	24-033-8003	0.08	ppm	111	19	79	44201	Ozone	Maryland	Prince George's
7/10/2006	24-025-9001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Harford
7/11/2006	11-001-0025	0.08	ppm	111	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/11/2006	11-001-0043	0.08	ppm	111	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/11/2006	24-005-1007	0.082	ppm	116	24	100	44201	Ozone	Maryland	Baltimore
7/11/2006	24-005-3001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Baltimore
7/11/2006	24-025-1001	0.087	ppm	129	24	100	44201	Ozone	Maryland	Harford
7/11/2006	24-025-9001	0.09	ppm	137	24	100	44201	Ozone	Maryland	Harford
7/11/2006	24-033-0030	0.086	ppm	127	24	100	44201	Ozone	Maryland	Prince George's
7/12/2006	24-005-3001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Baltimore
7/17/2006	11-001-0025	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/17/2006	11-001-0041	0.087	ppm	129	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/17/2006	11-001-0043	0.091	ppm	140	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/17/2006	24-003-0014	0.094	ppm	147	24	100	44201	Ozone	Maryland	Anne Arundel
7/17/2006	24-005-1007	0.078	ppm	106	24	100	44201	Ozone	Maryland	Baltimore
7/17/2006	24-005-3001	0.091	ppm	140	24	100	44201	Ozone	Maryland	Baltimore
7/17/2006	24-017-0010	0.099	ppm	159	24	100	44201	Ozone	Maryland	Charles
7/17/2006	24-021-0037	0.083	ppm	119	24	100	44201	Ozone	Maryland	Frederick
7/17/2006	24-025-1001	0.095	ppm	150	24	100	44201	Ozone	Maryland	Harford
7/17/2006	24-025-9001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Harford
7/17/2006	24-033-0030	0.084	ppm	122	24	100	44201	Ozone	Maryland	Prince George's
7/17/2006	24-033-8003	0.100	ppm	161	24	100	44201	Ozone	Maryland	Prince George's

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TABLE A2-1: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/17/2006	51-013-0020	0.095	ppm	150	24	100	44201	Ozone	Virginia	Arlington
7/17/2006	51-059-0030	0.107	ppm	179	24	100	44201	Ozone	Virginia	Fairfax
7/17/2006	51-107-1005	0.080	ppm	111	24	100	44201	Ozone	Virginia	Loudoun
7/17/2006	51-179-0001	0.088	ppm	132	24	100	44201	Ozone	Virginia	Stafford
7/17/2006	51-510-0009	0.098	ppm	156	24	100	44201	Ozone	Virginia	Alexandria City
7/18/2006	11-001-0025	0.083	ppm	119	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/18/2006	11-001-0041	0.093	ppm	145	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/18/2006	11-001-0043	0.096	ppm	151	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/18/2006	24-003-0014	0.105	ppm	174	24	100	44201	Ozone	Maryland	Anne Arundel
7/18/2006	24-005-3001	0.110	ppm	187	24	100	44201	Ozone	Maryland	Baltimore
7/18/2006	24-009-0011	0.082	ppm	116	24	100	44201	Ozone	Maryland	Calvert
7/18/2006	24-017-0010	0.094	ppm	147	24	100	44201	Ozone	Maryland	Charles
7/18/2006	24-025-1001	0.100	ppm	161	24	100	44201	Ozone	Maryland	Harford
7/18/2006	24-025-9001	0.085	ppm	124	24	100	44201	Ozone	Maryland	Harford
7/18/2006	24-033-0030	0.080	ppm	111	24	100	44201	Ozone	Maryland	Prince George's
7/18/2006	24-033-8003	0.102	ppm	166	24	100	44201	Ozone	Maryland	Prince George's
7/18/2006	51-013-0020	0.097	ppm	154	24	100	44201	Ozone	Virginia	Arlington
7/18/2006	51-059-0030	0.109	ppm	185	24	100	44201	Ozone	Virginia	Fairfax
7/18/2006	51-107-1005	0.076	ppm	101	24	100	44201	Ozone	Virginia	Loudoun
7/18/2006	51-179-0001	0.109	ppm	185	24	100	44201	Ozone	Virginia	Stafford
7/18/2006	51-510-0009	0.118	ppm	202	24	100	44201	Ozone	Virginia	Alexandria City
7/19/2006	11-001-0025	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/19/2006	11-001-0041	0.080	ppm	111	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/19/2006	11-001-0043	0.087	ppm	129	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/19/2006	24-005-3001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Baltimore
7/19/2006	24-025-1001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Harford
7/19/2006	24-025-9001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Harford
7/19/2006	24-031-3001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Montgomery

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TABLE A2-1: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/19/2006	24-033-0030	0.077	ppm	104	24	100	44201	Ozone	Maryland	Prince George's
7/19/2006	51-013-0020	0.085	ppm	124	24	100	44201	Ozone	Virginia	Arlington
7/19/2006	51-059-0030	0.085	ppm	124	24	100	44201	Ozone	Virginia	Fairfax
7/19/2006	51-107-1005	0.088	ppm	132	24	100	44201	Ozone	Virginia	Loudoun
7/19/2006	51-153-0009	0.080	ppm	111	24	100	44201	Ozone	Virginia	Prince William
7/19/2006	51-179-0001	0.101	ppm	164	24	100	44201	Ozone	Virginia	Stafford
7/19/2006	51-510-0009	0.083	ppm	119	24	100	44201	Ozone	Virginia	Alexandria City
7/20/2006	11-001-0043	0.078	ppm	106	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/20/2006	51-013-0020	0.077	ppm	104	24	100	44201	Ozone	Virginia	Arlington
7/20/2006	51-107-1005	0.079	ppm	109	24	100	44201	Ozone	Virginia	Loudoun
7/21/2006	24-005-3001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Baltimore
7/21/2006	24-025-1001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Harford
7/21/2006	24-025-9001	0.080	ppm	111	24	100	44201	Ozone	Maryland	Harford
7/21/2006	24-033-0030	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
7/21/2006	24-033-8003	0.084	ppm	122	24	100	44201	Ozone	Maryland	Prince George's
7/24/2006	24-025-1001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Harford
7/27/2006	24-025-1001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Harford
7/27/2006	24-025-9001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Harford
7/27/2006	24-033-0030	0.079	ppm	109	24	100	44201	Ozone	Maryland	Prince George's
7/29/2006	24-005-3001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Baltimore
7/29/2006	24-025-1001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Harford
7/31/2006	24-003-0014	0.081	ppm	114	24	100	44201	Ozone	Maryland	Anne Arundel
7/31/2006	24-005-3001	0.087	ppm	129	24	100	44201	Ozone	Maryland	Baltimore
7/31/2006	24-009-0011	0.086	ppm	127	24	100	44201	Ozone	Maryland	Calvert

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TABLE A2-1: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/31/2006	24-017-0010	0.08	ppm	111	24	100	44201	Ozone	Maryland	Charles
7/31/2006	24-033-8003	0.084	ppm	122	24	100	44201	Ozone	Maryland	Prince George's
8/1/2006	11-001-0041	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/1/2006	11-001-0043	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/1/2006	24-003-0014	0.085	ppm	124	24	100	44201	Ozone	Maryland	Anne Arundel
8/1/2006	24-005-3001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Baltimore
8/1/2006	24-009-0011	0.081	ppm	114	24	100	44201	Ozone	Maryland	Calvert
8/1/2006	24-017-0010	0.078	ppm	106	24	100	44201	Ozone	Maryland	Charles
8/1/2006	24-025-1001	0.084	ppm	122	24	100	44201	Ozone	Maryland	Harford
8/1/2006	24-033-8003	0.094	ppm	147	24	100	44201	Ozone	Maryland	Prince George's
8/1/2006	51-013-0020	0.078	ppm	106	24	100	44201	Ozone	Virginia	Arlington
8/1/2006	51-059-0030	0.078	ppm	106	24	100	44201	Ozone	Virginia	Fairfax
8/1/2006	51-510-0009	0.08	ppm	111	24	100	44201	Ozone	Virginia	Alexandria City
8/2/2006	11-001-0043	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/2/2006	24-003-0014	0.078	ppm	106	24	100	44201	Ozone	Maryland	Anne Arundel
8/2/2006	24-005-1007	0.076	ppm	101	24	100	44201	Ozone	Maryland	Baltimore
8/2/2006	24-005-3001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Baltimore
8/2/2006	24-009-0011	0.082	ppm	116	24	100	44201	Ozone	Maryland	Calvert
8/2/2006	24-031-3001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Montgomery
8/2/2006	24-033-0030	0.084	ppm	122	24	100	44201	Ozone	Maryland	Prince George's
8/2/2006	24-033-8003	0.083	ppm	119	24	100	44201	Ozone	Maryland	Prince George's
8/2/2006	51-013-0020	0.077	ppm	104	24	100	44201	Ozone	Virginia	Arlington
8/2/2006	51-510-0009	0.076	ppm	101	24	100	44201	Ozone	Virginia	Alexandria City
8/3/2006	24-033-0030	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
8/3/2006	24-033-8003	0.078	ppm	106	24	100	44201	Ozone	Maryland	Prince George's
8/6/2006	11-001-0025	0.081	ppm	114	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/6/2006	11-001-0043	0.084	ppm	122	24	100	44201	Ozone	District Of Columbia	District of Columbia

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TABLE A2-1: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
8/6/2006	24-005-1007	0.081	ppm	114	24	100	44201	Ozone	Maryland	Baltimore
8/6/2006	24-005-3001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Baltimore
8/6/2006	24-013-0001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Carroll
8/6/2006	24-021-0037	0.076	ppm	101	24	100	44201	Ozone	Maryland	Frederick
8/6/2006	24-031-3001	0.088	ppm	132	24	100	44201	Ozone	Maryland	Montgomery
8/6/2006	24-033-0030	0.084	ppm	122	24	100	44201	Ozone	Maryland	Prince George's
8/6/2006	51-510-0009	0.076	ppm	101	24	100	44201	Ozone	Virginia	Alexandria City
8/7/2006	11-001-0041	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/7/2006	11-001-0043	0.077	ppm	104	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/7/2006	24-005-3001	0.08	ppm	111	24	100	44201	Ozone	Maryland	Baltimore
8/7/2006	24-025-1001	0.089	ppm	135	24	100	44201	Ozone	Maryland	Harford
8/7/2006	24-025-9001	0.092	ppm	142	24	100	44201	Ozone	Maryland	Harford
8/7/2006	24-033-0030	0.083	ppm	119	24	100	44201	Ozone	Maryland	Prince George's
8/7/2006	51-510-0009	0.078	ppm	106	24	100	44201	Ozone	Virginia	Alexandria City
8/13/2006	24-033-0030	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
8/16/2006	11-001-0043	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/16/2006	24-033-0030	0.077	ppm	104	24	100	44201	Ozone	Maryland	Prince George's
8/16/2006	51-059-0030	0.085	ppm	124	24	100	44201	Ozone	Virginia	Fairfax
8/16/2006	51-179-0001	0.082	ppm	116	24	100	44201	Ozone	Virginia	Stafford
8/16/2006	51-510-0009	0.076	ppm	101	24	100	44201	Ozone	Virginia	Alexandria City
8/17/2006	51-061-0002	0.076	ppm	101	24	100	44201	Ozone	Virginia	Fauquier
8/17/2006	51-107-1005	0.082	ppm	116	24	100	44201	Ozone	Virginia	Loudoun
8/17/2006	51-153-0009	0.086	ppm	127	24	100	44201	Ozone	Virginia	Prince William
8/18/2006	24-013-0001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Carroll
8/18/2006	24-021-0037	0.086	ppm	127	24	100	44201	Ozone	Maryland	Frederick
8/18/2006	51-107-1005	0.084	ppm	122	24	100	44201	Ozone	Virginia	Loudoun

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
8/18/2006	51-153-0009	0.077	ppm	104	24	100	44201	Ozone	Virginia	Prince William
8/22/2006	11-001-0041	0.081	ppm	114	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/22/2006	11-001-0043	0.081	ppm	114	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/22/2006	24-005-3001	0.088	ppm	132	24	100	44201	Ozone	Maryland	Baltimore
8/22/2006	24-025-1001	0.087	ppm	129	24	100	44201	Ozone	Maryland	Harford
8/22/2006	24-025-9001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Harford
8/22/2006	24-033-0030	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
8/22/2006	24-510-0054	0.078	ppm	106	24	100	44201	Ozone	Maryland	Baltimore (City)
8/22/2006	51-013-0020	0.076	ppm	101	24	100	44201	Ozone	Virginia	Arlington
8/22/2006	51-059-0030	0.081	ppm	114	24	100	44201	Ozone	Virginia	Fairfax
8/22/2006	51-510-0009	0.078	ppm	106	24	100	44201	Ozone	Virginia	Alexandria City
8/23/2006	11-001-0025	0.081	ppm	114	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/23/2006	11-001-0041	0.085	ppm	124	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/23/2006	11-001-0043	0.090	ppm	137	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/23/2006	24-003-0014	0.090	ppm	137	24	100	44201	Ozone	Maryland	Anne Arundel
8/23/2006	24-009-0011	0.090	ppm	137	24	100	44201	Ozone	Maryland	Calvert
8/23/2006	24-017-0010	0.089	ppm	135	24	100	44201	Ozone	Maryland	Charles
8/23/2006	24-021-0037	0.076	ppm	101	24	100	44201	Ozone	Maryland	Frederick
8/23/2006	24-031-3001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Montgomery
8/23/2006	24-033-0030	0.081	ppm	114	24	100	44201	Ozone	Maryland	Prince George's
8/23/2006	51-013-0020	0.080	ppm	111	24	100	44201	Ozone	Virginia	Arlington
8/23/2006	51-059-0030	0.087	ppm	129	24	100	44201	Ozone	Virginia	Fairfax
8/23/2006	51-107-1005	0.082	ppm	116	24	100	44201	Ozone	Virginia	Loudoun
8/23/2006	51-153-0009	0.077	ppm	104	24	100	44201	Ozone	Virginia	Prince William
8/23/2006	51-179-0001	0.091	ppm	140	24	100	44201	Ozone	Virginia	Stafford
8/23/2006	51-510-0009	0.084	ppm	122	24	100	44201	Ozone	Virginia	Alexandria City
8/24/2006	11-001-0041	0.085	ppm	124	24	100	44201	Ozone	District Of Columbia	District of Columbia

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
8/24/2006	11-001-0043	0.082	ppm	116	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/24/2006	24-003-0014	0.086	ppm	127	24	100	44201	Ozone	Maryland	Anne Arundel
8/24/2006	24-005-3001	0.085	ppm	124	24	100	44201	Ozone	Maryland	Baltimore
8/24/2006	24-009-0011	0.087	ppm	129	24	100	44201	Ozone	Maryland	Calvert
8/24/2006	24-017-0010	0.085	ppm	124	24	100	44201	Ozone	Maryland	Charles
8/24/2006	24-021-0037	0.077	ppm	104	24	100	44201	Ozone	Maryland	Frederick
8/24/2006	24-025-1001	0.080	ppm	111	24	100	44201	Ozone	Maryland	Harford
8/24/2006	24-033-0030	0.083	ppm	119	24	100	44201	Ozone	Maryland	Prince George's
8/24/2006	51-059-0030	0.080	ppm	111	24	100	44201	Ozone	Virginia	Fairfax
8/24/2006	51-107-1005	0.077	ppm	104	24	100	44201	Ozone	Virginia	Loudoun
8/24/2006	51-510-0009	0.076	ppm	101	24	100	44201	Ozone	Virginia	Alexandria City
8/25/2006	11-001-0025	0.080	ppm	111	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/25/2006	11-001-0041	0.087	ppm	129	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/25/2006	11-001-0043	0.083	ppm	119	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/25/2006	24-003-0014	0.084	ppm	122	24	100	44201	Ozone	Maryland	Anne Arundel
8/25/2006	24-005-1007	0.076	ppm	101	24	100	44201	Ozone	Maryland	Baltimore
8/25/2006	24-005-3001	0.098	ppm	156	24	100	44201	Ozone	Maryland	Baltimore
8/25/2006	24-009-0011	0.080	ppm	111	24	100	44201	Ozone	Maryland	Calvert
8/25/2006	24-013-0001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Carroll
8/25/2006	24-017-0010	0.078	ppm	106	24	100	44201	Ozone	Maryland	Charles
8/25/2006	24-021-0037	0.085	ppm	124	24	100	44201	Ozone	Maryland	Frederick
8/25/2006	24-025-1001	0.085	ppm	124	24	100	44201	Ozone	Maryland	Harford
8/25/2006	24-025-9001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Harford
8/25/2006	24-031-3001	0.080	ppm	111	24	100	44201	Ozone	Maryland	Montgomery
8/25/2006	24-033-0030	0.085	ppm	124	24	100	44201	Ozone	Maryland	Prince George's
8/25/2006	24-033-8003	0.095	ppm	150	15	63	44201	Ozone	Maryland	Prince George's
8/25/2006	24-510-0054	0.085	ppm	124	24	100	44201	Ozone	Maryland	Baltimore (City)
8/25/2006	51-013-0020	0.081	ppm	114	24	100	44201	Ozone	Virginia	Arlington

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
8/25/2006	51-059-0030	0.086	ppm	127	24	100	44201	Ozone	Virginia	Fairfax
8/25/2006	51-107-1005	0.081	ppm	114	24	100	44201	Ozone	Virginia	Loudoun
8/25/2006	51-153-0009	0.076	ppm	101	24	100	44201	Ozone	Virginia	Prince William
8/25/2006	51-510-0009	0.083	ppm	119	24	100	44201	Ozone	Virginia	Alexandria City
8/26/2006	51-061-0002	0.086	ppm	127	24	100	44201	Ozone	Virginia	Fauquier
8/26/2006	51-107-1005	0.082	ppm	116	24	100	44201	Ozone	Virginia	Loudoun
8/26/2006	51-153-0009	0.090	ppm	137	24	100	44201	Ozone	Virginia	Prince William
8/26/2006	51-179-0001	0.081	ppm	114	24	100	44201	Ozone	Virginia	Stafford
2007		2007				2007				2007
5/22/2007	24-021-0037	0.078	ppm	106	24	100	44201	Ozone	Maryland	Frederick
5/25/2007	11-001-0025	0.076	ppm	101	24	100	44201	Ozone	District Of Columbia	District of Columbia
5/25/2007	11-001-0041	0.078	ppm	106	24	100	44201	Ozone	District Of Columbia	District of Columbia
5/25/2007	24-021-0037	0.076	ppm	101	24	100	44201	Ozone	Maryland	Frederick
5/25/2007	24-025-9001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Harford
5/25/2007	24-033-0030	0.077	ppm	104	24	100	44201	Ozone	Maryland	Prince George's
5/25/2007	51-107-1005	0.080	ppm	111	24	100	44201	Ozone	Virginia	Loudoun
5/26/2007	11-001-0041	0.078	ppm	106	24	100	44201	Ozone	District Of Columbia	District of Columbia
5/26/2007	11-001-0043	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
5/26/2007	24-003-0014	0.085	ppm	124	24	100	44201	Ozone	Maryland	Anne Arundel
5/26/2007	24-005-3001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Baltimore
5/26/2007	24-009-0011	0.079	ppm	109	24	100	44201	Ozone	Maryland	Calvert
5/26/2007	24-017-0010	0.080	ppm	111	24	100	44201	Ozone	Maryland	Charles
5/26/2007	24-033-8003	0.091	ppm	140	24	100	44201	Ozone	Maryland	Prince George's
5/26/2007	51-013-0020	0.080	ppm	111	24	100	44201	Ozone	Virginia	Arlington
5/26/2007	51-059-0030	0.079	ppm	109	24	100	44201	Ozone	Virginia	Fairfax
5/26/2007	51-510-0009	0.080	ppm	111	24	100	44201	Ozone	Virginia	Alexandria City

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TABLE A2-1: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
5/27/2007	24-025-1001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Harford
5/27/2007	24-025-9001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Harford
5/29/2007	11-001-0043	0.078	ppm	106	24	100	44201	Ozone	District Of Columbia	District of Columbia
5/29/2007	24-003-0014	0.076	ppm	101	24	100	44201	Ozone	Maryland	Anne Arundel
5/29/2007	51-059-0030	0.076	ppm	101	24	100	44201	Ozone	Virginia	Fairfax
5/29/2007	51-179-0001	0.089	ppm	135	24	100	44201	Ozone	Virginia	Stafford
5/30/2007	11-001-0025	0.084	ppm	122	24	100	44201	Ozone	District Of Columbia	District of Columbia
5/30/2007	11-001-0041	0.087	ppm	129	24	100	44201	Ozone	District Of Columbia	District of Columbia
5/30/2007	11-001-0043	0.086	ppm	127	24	100	44201	Ozone	District Of Columbia	District of Columbia
5/30/2007	24-005-3001	0.080	ppm	111	24	100	44201	Ozone	Maryland	Baltimore
5/30/2007	24-013-0001	0.080	ppm	111	24	100	44201	Ozone	Maryland	Carroll
5/30/2007	24-017-0010	0.077	ppm	104	24	100	44201	Ozone	Maryland	Charles
5/30/2007	24-021-0037	0.089	ppm	135	24	100	44201	Ozone	Maryland	Frederick
5/30/2007	24-025-1001	0.089	ppm	135	24	100	44201	Ozone	Maryland	Harford
5/30/2007	24-025-9001	0.100	ppm	161	24	100	44201	Ozone	Maryland	Harford
5/30/2007	24-033-0030	0.085	ppm	124	17	71	44201	Ozone	Maryland	Prince George's
5/30/2007	24-033-8003	0.079	ppm	109	24	100	44201	Ozone	Maryland	Prince George's
5/30/2007	51-013-0020	0.085	ppm	124	24	100	44201	Ozone	Virginia	Arlington
5/30/2007	51-059-0030	0.082	ppm	116	24	100	44201	Ozone	Virginia	Fairfax
5/30/2007	51-107-1005	0.079	ppm	109	24	100	44201	Ozone	Virginia	Loudoun
5/30/2007	51-153-0009	0.078	ppm	106	24	100	44201	Ozone	Virginia	Prince William
5/30/2007	51-179-0001	0.083	ppm	119	24	100	44201	Ozone	Virginia	Stafford
5/30/2007	51-510-0009	0.081	ppm	114	24	100	44201	Ozone	Virginia	Alexandria City
5/31/2007	11-001-0043	0.076	ppm	101	24	100	44201	Ozone	District Of Columbia	District of Columbia
5/31/2007	24-003-0014	0.077	ppm	104	24	100	44201	Ozone	Maryland	Anne Arundel
5/31/2007	24-005-1007	0.076	ppm	101	24	100	44201	Ozone	Maryland	Baltimore
5/31/2007	24-005-3001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Baltimore

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
5/31/2007	24-009-0011	0.079	ppm	109	24	100	44201	Ozone	Maryland	Calvert
5/31/2007	24-013-0001	0.088	ppm	132	24	100	44201	Ozone	Maryland	Carroll
5/31/2007	24-017-0010	0.078	ppm	106	24	100	44201	Ozone	Maryland	Charles
5/31/2007	24-021-0037	0.086	ppm	127	24	100	44201	Ozone	Maryland	Frederick
5/31/2007	24-025-1001	0.086	ppm	127	24	100	44201	Ozone	Maryland	Harford
5/31/2007	24-025-9001	0.086	ppm	127	24	100	44201	Ozone	Maryland	Harford
5/31/2007	24-033-0030	0.084	ppm	122	24	100	44201	Ozone	Maryland	Prince George's
5/31/2007	24-033-8003	0.080	ppm	111	24	100	44201	Ozone	Maryland	Prince George's
5/31/2007	51-013-0020	0.077	ppm	104	24	100	44201	Ozone	Virginia	Arlington
5/31/2007	51-107-1005	0.086	ppm	127	24	100	44201	Ozone	Virginia	Loudoun
5/31/2007	51-153-0009	0.076	ppm	101	24	100	44201	Ozone	Virginia	Prince William
5/31/2007	51-179-0001	0.076	ppm	101	24	100	44201	Ozone	Virginia	Stafford
6/1/2007	11-001-0025	0.077	ppm	104	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/1/2007	24-013-0001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Carroll
6/1/2007	24-021-0037	0.076	ppm	101	24	100	44201	Ozone	Maryland	Frederick
6/1/2007	24-025-1001	0.080	ppm	111	24	100	44201	Ozone	Maryland	Harford
6/1/2007	24-025-9001	0.084	ppm	122	24	100	44201	Ozone	Maryland	Harford
6/1/2007	24-033-0030	0.080	ppm	111	24	100	44201	Ozone	Maryland	Prince George's
6/1/2007	51-013-0020	0.079	ppm	109	24	100	44201	Ozone	Virginia	Arlington
6/1/2007	51-107-1005	0.076	ppm	101	24	100	44201	Ozone	Virginia	Loudoun
6/2/2007	24-013-0001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Carroll
6/7/2007	11-001-0043	0.076	ppm	101	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/7/2007	24-013-0001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Carroll
6/7/2007	51-013-0020	0.079	ppm	109	24	100	44201	Ozone	Virginia	Arlington
6/7/2007	51-059-0030	0.078	ppm	106	24	100	44201	Ozone	Virginia	Fairfax
6/8/2007	11-001-0041	0.076	ppm	101	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/8/2007	11-001-0043	0.077	ppm	104	24	100	44201	Ozone	District Of Columbia	District of Columbia

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
6/8/2007	24-003-0014	0.085	ppm	124	24	100	44201	Ozone	Maryland	Anne Arundel
6/8/2007	24-005-3001	0.085	ppm	124	24	100	44201	Ozone	Maryland	Baltimore
6/8/2007	24-025-1001	0.099	ppm	159	24	100	44201	Ozone	Maryland	Harford
6/8/2007	24-025-9001	0.108	ppm	182	24	100	44201	Ozone	Maryland	Harford
6/8/2007	24-033-8003	0.078	ppm	106	24	100	44201	Ozone	Maryland	Prince George's
6/8/2007	51-013-0020	0.081	ppm	114	24	100	44201	Ozone	Virginia	Arlington
6/11/2007	51-179-0001	0.076	ppm	101	24	100	44201	Ozone	Virginia	Stafford
6/18/2007	11-001-0025	0.087	ppm	129	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/18/2007	11-001-0041	0.090	ppm	137	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/18/2007	11-001-0043	0.093	ppm	145	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/18/2007	24-003-0014	0.103	ppm	169	24	100	44201	Ozone	Maryland	Anne Arundel
6/18/2007	24-005-3001	0.090	ppm	137	24	100	44201	Ozone	Maryland	Baltimore
6/18/2007	24-009-0011	0.082	ppm	116	24	100	44201	Ozone	Maryland	Calvert
6/18/2007	24-013-0001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Carroll
6/18/2007	24-017-0010	0.100	ppm	161	24	100	44201	Ozone	Maryland	Charles
6/18/2007	24-021-0037	0.083	ppm	119	24	100	44201	Ozone	Maryland	Frederick
6/18/2007	24-025-1001	0.088	ppm	132	24	100	44201	Ozone	Maryland	Harford
6/18/2007	24-025-9001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Harford
6/18/2007	24-031-3001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Montgomery
6/18/2007	24-033-0030	0.082	ppm	116	24	100	44201	Ozone	Maryland	Prince George's
6/18/2007	24-033-8003	0.097	ppm	154	24	100	44201	Ozone	Maryland	Prince George's
6/18/2007	24-510-0054	0.085	ppm	124	24	100	44201	Ozone	Maryland	Baltimore (City)
6/18/2007	51-013-0020	0.085	ppm	124	24	100	44201	Ozone	Virginia	Arlington
6/18/2007	51-059-0030	0.090	ppm	137	24	100	44201	Ozone	Virginia	Fairfax
6/18/2007	51-107-1005	0.087	ppm	129	24	100	44201	Ozone	Virginia	Loudoun
6/18/2007	51-179-0001	0.085	ppm	124	24	100	44201	Ozone	Virginia	Stafford

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
6/18/2007	51-510-0009	0.084	ppm	122	24	100	44201	Ozone	Virginia	Alexandria City
6/19/2007	11-001-0041	0.080	ppm	111	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/19/2007	11-001-0043	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/19/2007	24-009-0011	0.079	ppm	109	24	100	44201	Ozone	Maryland	Calvert
6/19/2007	24-013-0001	0.092	ppm	142	24	100	44201	Ozone	Maryland	Carroll
6/19/2007	24-017-0010	0.083	ppm	119	24	100	44201	Ozone	Maryland	Charles
6/19/2007	24-021-0037	0.080	ppm	111	24	100	44201	Ozone	Maryland	Frederick
6/19/2007	24-025-1001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Harford
6/19/2007	24-025-9001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Harford
6/19/2007	24-031-3001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Montgomery
6/19/2007	24-033-0030	0.079	ppm	109	18	75	44201	Ozone	Maryland	Prince George's
6/19/2007	51-013-0020	0.088	ppm	132	24	100	44201	Ozone	Virginia	Arlington
6/19/2007	51-059-0030	0.082	ppm	116	24	100	44201	Ozone	Virginia	Fairfax
6/19/2007	51-107-1005	0.086	ppm	127	24	100	44201	Ozone	Virginia	Loudoun
6/19/2007	51-510-0009	0.083	ppm	119	24	100	44201	Ozone	Virginia	Alexandria City
6/25/2007	24-013-0001	0.080	ppm	111	24	100	44201	Ozone	Maryland	Carroll
6/25/2007	24-021-0037	0.077	ppm	104	24	100	44201	Ozone	Maryland	Frederick
6/26/2007	11-001-0025	0.077	ppm	104	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/26/2007	24-013-0001	0.091	ppm	140	24	100	44201	Ozone	Maryland	Carroll
6/26/2007	24-017-0010	0.077	ppm	104	24	100	44201	Ozone	Maryland	Charles
6/26/2007	24-021-0037	0.083	ppm	119	24	100	44201	Ozone	Maryland	Frederick
6/26/2007	24-025-9001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Harford
6/26/2007	24-031-3001	0.091	ppm	140	24	100	44201	Ozone	Maryland	Montgomery
6/26/2007	24-033-0030	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
6/26/2007	51-107-1005	0.081	ppm	114	24	100	44201	Ozone	Virginia	Loudoun
6/27/2007	24-005-3001	0.080	ppm	111	24	100	44201	Ozone	Maryland	Baltimore
6/27/2007	24-025-1001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Harford

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
6/27/2007	24-025-9001	0.092	ppm	142	24	100	44201	Ozone	Maryland	Harford
6/27/2007	51-013-0020	0.078	ppm	106	24	100	44201	Ozone	Virginia	Arlington
6/27/2007	51-059-0030	0.078	ppm	106	24	100	44201	Ozone	Virginia	Fairfax
6/27/2007	51-510-0009	0.081	ppm	114	24	100	44201	Ozone	Virginia	Alexandria City
7/7/2007	24-003-0014	0.081	ppm	114	24	100	44201	Ozone	Maryland	Anne Arundel
7/7/2007	24-033-8003	0.078	ppm	106	24	100	44201	Ozone	Maryland	Prince George's
7/8/2007	24-003-0014	0.077	ppm	104	24	100	44201	Ozone	Maryland	Anne Arundel
7/8/2007	24-025-1001	0.091	ppm	140	24	100	44201	Ozone	Maryland	Harford
7/9/2007	11-001-0025	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/9/2007	11-001-0041	0.085	ppm	124	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/9/2007	11-001-0043	0.085	ppm	124	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/9/2007	24-003-0014	0.089	ppm	135	24	100	44201	Ozone	Maryland	Anne Arundel
7/9/2007	24-005-3001	0.094	ppm	147	24	100	44201	Ozone	Maryland	Baltimore
7/9/2007	24-009-0011	0.078	ppm	106	24	100	44201	Ozone	Maryland	Calvert
7/9/2007	24-013-0001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Carroll
7/9/2007	24-021-0037	0.076	ppm	101	24	100	44201	Ozone	Maryland	Frederick
7/9/2007	24-025-1001	0.113	ppm	195	24	100	44201	Ozone	Maryland	Harford
7/9/2007	24-025-9001	0.113	ppm	195	24	100	44201	Ozone	Maryland	Harford
7/9/2007	24-031-3001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Montgomery
7/9/2007	24-033-0030	0.086	ppm	127	24	100	44201	Ozone	Maryland	Prince George's
7/9/2007	24-033-8003	0.081	ppm	114	24	100	44201	Ozone	Maryland	Prince George's
7/9/2007	24-510-0054	0.079	ppm	109	24	100	44201	Ozone	Maryland	Baltimore (City)
7/9/2007	51-013-0020	0.085	ppm	124	24	100	44201	Ozone	Virginia	Arlington
7/9/2007	51-059-0030	0.085	ppm	124	24	100	44201	Ozone	Virginia	Fairfax
7/9/2007	51-510-0009	0.085	ppm	124	24	100	44201	Ozone	Virginia	Alexandria City
7/10/2007	24-013-0001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Carroll

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/14/2007	24-025-1001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Harford
7/14/2007	24-025-9001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Harford
7/15/2007	24-025-9001	0.084	ppm	122	24	100	44201	Ozone	Maryland	Harford
7/16/2007	24-003-0014	0.084	ppm	122	24	100	44201	Ozone	Maryland	Anne Arundel
7/16/2007	24-033-8003	0.080	ppm	111	24	100	44201	Ozone	Maryland	Prince George's
7/17/2007	11-001-0025	0.085	ppm	124	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/17/2007	11-001-0041	0.091	ppm	140	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/17/2007	11-001-0043	0.092	ppm	142	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/17/2007	24-003-0014	0.091	ppm	140	24	100	44201	Ozone	Maryland	Anne Arundel
7/17/2007	24-009-0011	0.076	ppm	101	24	100	44201	Ozone	Maryland	Calvert
7/17/2007	24-013-0001	0.089	ppm	135	24	100	44201	Ozone	Maryland	Carroll
7/17/2007	24-017-0010	0.083	ppm	119	24	100	44201	Ozone	Maryland	Charles
7/17/2007	24-021-0037	0.083	ppm	119	24	100	44201	Ozone	Maryland	Frederick
7/17/2007	24-031-3001	0.088	ppm	132	24	100	44201	Ozone	Maryland	Montgomery
7/17/2007	24-033-0030	0.084	ppm	122	24	100	44201	Ozone	Maryland	Prince George's
7/17/2007	24-033-8003	0.088	ppm	132	24	100	44201	Ozone	Maryland	Prince George's
7/17/2007	51-013-0020	0.095	ppm	150	24	100	44201	Ozone	Virginia	Arlington
7/17/2007	51-059-0030	0.094	ppm	147	24	100	44201	Ozone	Virginia	Fairfax
7/17/2007	51-107-1005	0.080	ppm	111	24	100	44201	Ozone	Virginia	Loudoun
7/17/2007	51-153-0009	0.076	ppm	101	24	100	44201	Ozone	Virginia	Prince William
7/17/2007	51-179-0001	0.088	ppm	132	24	100	44201	Ozone	Virginia	Stafford
7/17/2007	51-510-0009	0.090	ppm	137	24	100	44201	Ozone	Virginia	Alexandria City
7/26/2007	24-021-0037	0.082	ppm	116	24	100	44201	Ozone	Maryland	Frederick
7/26/2007	24-031-3001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Montgomery
7/26/2007	51-107-1005	0.077	ppm	104	24	100	44201	Ozone	Virginia	Loudoun
7/28/2007	11-001-0041	0.082	ppm	116	24	100	44201	Ozone	District Of Columbia	District of Columbia

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/28/2007	24-005-3001	0.080	ppm	111	24	100	44201	Ozone	Maryland	Baltimore
7/28/2007	24-025-1001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Harford
7/28/2007	24-033-0030	0.077	ppm	104	24	100	44201	Ozone	Maryland	Prince George's
7/28/2007	51-013-0020	0.088	ppm	132	24	100	44201	Ozone	Virginia	Arlington
7/28/2007	51-510-0009	0.078	ppm	106	24	100	44201	Ozone	Virginia	Alexandria City
7/31/2007	24-003-0014	0.082	ppm	116	24	100	44201	Ozone	Maryland	Anne Arundel
7/31/2007	24-033-8003	0.078	ppm	106	24	100	44201	Ozone	Maryland	Prince George's
7/31/2007	51-059-0030	0.077	ppm	104	24	100	44201	Ozone	Virginia	Fairfax
7/31/2007	51-179-0001	0.077	ppm	104	24	100	44201	Ozone	Virginia	Stafford
8/1/2007	24-003-0014	0.084	ppm	122	24	100	44201	Ozone	Maryland	Anne Arundel
8/1/2007	24-017-0010	0.077	ppm	104	24	100	44201	Ozone	Maryland	Charles
8/1/2007	24-033-8003	0.081	ppm	114	24	100	44201	Ozone	Maryland	Prince George's
8/1/2007	51-013-0020	0.080	ppm	111	24	100	44201	Ozone	Virginia	Arlington
8/1/2007	51-059-0030	0.080	ppm	111	24	100	44201	Ozone	Virginia	Fairfax
8/1/2007	51-179-0001	0.085	ppm	124	24	100	44201	Ozone	Virginia	Stafford
8/1/2007	51-510-0009	0.076	ppm	101	24	100	44201	Ozone	Virginia	Alexandria City
8/2/2007	11-001-0025	0.078	ppm	106	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/2/2007	24-003-0014	0.076	ppm	101	24	100	44201	Ozone	Maryland	Anne Arundel
8/2/2007	24-005-3001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Baltimore
8/2/2007	24-013-0001	0.095	ppm	150	24	100	44201	Ozone	Maryland	Carroll
8/2/2007	24-021-0037	0.088	ppm	132	24	100	44201	Ozone	Maryland	Frederick
8/2/2007	24-025-1001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Harford
8/2/2007	24-025-9001	0.085	ppm	124	24	100	44201	Ozone	Maryland	Harford
8/2/2007	24-031-3001	0.103	ppm	169	24	100	44201	Ozone	Maryland	Montgomery
8/2/2007	24-033-0030	0.084	ppm	122	24	100	44201	Ozone	Maryland	Prince George's
8/2/2007	24-033-8003	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
8/2/2007	51-107-1005	0.091	ppm	140	24	100	44201	Ozone	Virginia	Loudoun

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TABLE A2-1: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
8/2/2007	51-179-0001	0.079	ppm	109	24	100	44201	Ozone	Virginia	Stafford
8/3/2007	11-001-0025	0.083	ppm	119	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/3/2007	24-013-0001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Carroll
8/3/2007	24-017-0010	0.077	ppm	104	24	100	44201	Ozone	Maryland	Charles
8/3/2007	24-025-1001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Harford
8/3/2007	24-025-9001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Harford
8/3/2007	24-031-3001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Montgomery
8/3/2007	24-033-0030	0.077	ppm	104	24	100	44201	Ozone	Maryland	Prince George's
8/4/2007	11-001-0025	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/4/2007	11-001-0041	0.089	ppm	135	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/4/2007	11-001-0043	0.087	ppm	129	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/4/2007	24-003-0014	0.118	ppm	202	24	100	44201	Ozone	Maryland	Anne Arundel
8/4/2007	24-005-3001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Baltimore
8/4/2007	24-009-0011	0.089	ppm	135	24	100	44201	Ozone	Maryland	Calvert
8/4/2007	24-013-0001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Carroll
8/4/2007	24-017-0010	0.092	ppm	142	24	100	44201	Ozone	Maryland	Charles
8/4/2007	24-021-0037	0.079	ppm	109	24	100	44201	Ozone	Maryland	Frederick
8/4/2007	24-025-1001	0.087	ppm	129	24	100	44201	Ozone	Maryland	Harford
8/4/2007	24-025-9001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Harford
8/4/2007	24-031-3001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Montgomery
8/4/2007	24-033-0030	0.082	ppm	116	24	100	44201	Ozone	Maryland	Prince George's
8/4/2007	24-033-8003	0.110	ppm	187	24	100	44201	Ozone	Maryland	Prince George's
8/4/2007	51-013-0020	0.088	ppm	132	24	100	44201	Ozone	Virginia	Arlington
8/4/2007	51-059-0030	0.088	ppm	132	24	100	44201	Ozone	Virginia	Fairfax
8/4/2007	51-107-1005	0.080	ppm	111	24	100	44201	Ozone	Virginia	Loudoun
8/4/2007	51-179-0001	0.081	ppm	114	24	100	44201	Ozone	Virginia	Stafford
8/4/2007	51-510-0009	0.085	ppm	124	24	100	44201	Ozone	Virginia	Alexandria City
8/5/2007	24-013-0001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Carroll

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TABLE A2-1: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
8/5/2007	51-107-1005	0.079	ppm	109	24	100	44201	Ozone	Virginia	Loudoun
8/5/2007	51-153-0009	0.076	ppm	101	24	100	44201	Ozone	Virginia	Prince William
8/6/2007	24-025-1001	0.085	ppm	124	24	100	44201	Ozone	Maryland	Harford
8/6/2007	24-025-9001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Harford
8/7/2007	11-001-0025	0.087	ppm	129	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/7/2007	11-001-0041	0.091	ppm	140	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/7/2007	11-001-0043	0.089	ppm	135	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/7/2007	24-003-0014	0.080	ppm	111	24	100	44201	Ozone	Maryland	Anne Arundel
8/7/2007	24-005-3001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Baltimore
8/7/2007	24-017-0010	0.080	ppm	111	24	100	44201	Ozone	Maryland	Charles
8/7/2007	24-025-1001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Harford
8/7/2007	24-033-0030	0.089	ppm	135	24	100	44201	Ozone	Maryland	Prince George's
8/7/2007	24-033-8003	0.082	ppm	116	24	100	44201	Ozone	Maryland	Prince George's
8/7/2007	51-013-0020	0.086	ppm	127	24	100	44201	Ozone	Virginia	Arlington
8/7/2007	51-059-0030	0.079	ppm	109	24	100	44201	Ozone	Virginia	Fairfax
8/7/2007	51-510-0009	0.083	ppm	119	24	100	44201	Ozone	Virginia	Alexandria City
8/12/2007	24-005-3001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Baltimore
8/12/2007	24-025-1001	0.087	ppm	129	24	100	44201	Ozone	Maryland	Harford
8/13/2007	24-017-0010	0.076	ppm	101	24	100	44201	Ozone	Maryland	Charles
8/14/2007	24-017-0010	0.077	ppm	104	24	100	44201	Ozone	Maryland	Charles
8/15/2007	11-001-0025	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/15/2007	11-001-0041	0.085	ppm	124	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/15/2007	11-001-0043	0.084	ppm	122	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/15/2007	24-003-0014	0.089	ppm	135	24	100	44201	Ozone	Maryland	Anne Arundel
8/15/2007	24-005-3001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Baltimore
8/15/2007	24-025-1001	0.090	ppm	137	24	100	44201	Ozone	Maryland	Harford
8/15/2007	24-025-9001	0.085	ppm	124	24	100	44201	Ozone	Maryland	Harford

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
8/15/2007	24-033-8003	0.080	ppm	111	24	100	44201	Ozone	Maryland	Prince George's
8/15/2007	51-013-0020	0.084	ppm	122	24	100	44201	Ozone	Virginia	Arlington
8/15/2007	51-059-0030	0.078	ppm	106	24	100	44201	Ozone	Virginia	Fairfax
8/16/2007	24-009-0011	0.076	ppm	101	24	100	44201	Ozone	Maryland	Calvert
8/17/2007	24-003-0014	0.084	ppm	122	24	100	44201	Ozone	Maryland	Anne Arundel
8/17/2007	24-025-1001	0.084	ppm	122	24	100	44201	Ozone	Maryland	Harford
8/17/2007	24-033-8003	0.080	ppm	111	24	100	44201	Ozone	Maryland	Prince George's
8/24/2007	24-013-0001	0.080	ppm	111	24	100	44201	Ozone	Maryland	Carroll
8/24/2007	24-031-3001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Montgomery
8/25/2007	24-013-0001	0.080	ppm	111	24	100	44201	Ozone	Maryland	Carroll
8/25/2007	24-017-0010	0.077	ppm	104	24	100	44201	Ozone	Maryland	Charles
8/25/2007	24-025-1001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Harford
8/25/2007	24-025-9001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Harford
8/25/2007	24-031-3001	0.088	ppm	132	24	100	44201	Ozone	Maryland	Montgomery
8/30/2007	11-001-0041	0.078	ppm	106	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/30/2007	11-001-0043	0.076	ppm	101	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/30/2007	24-003-0014	0.076	ppm	101	24	100	44201	Ozone	Maryland	Anne Arundel
8/30/2007	24-025-1001	0.086	ppm	127	24	100	44201	Ozone	Maryland	Harford
8/30/2007	24-025-9001	0.085	ppm	124	24	100	44201	Ozone	Maryland	Harford
8/30/2007	51-013-0020	0.077	ppm	104	24	100	44201	Ozone	Virginia	Arlington
9/4/2007	24-017-0010	0.078	ppm	106	24	100	44201	Ozone	Maryland	Charles
9/5/2007	11-001-0041	0.076	ppm	101	24	100	44201	Ozone	District Of Columbia	District of Columbia
9/5/2007	24-013-0001	0.089	ppm	135	24	100	44201	Ozone	Maryland	Carroll
9/5/2007	24-021-0037	0.088	ppm	132	24	100	44201	Ozone	Maryland	Frederick
9/5/2007	24-025-1001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Harford

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
9/5/2007	24-025-9001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Harford
9/5/2007	24-031-3001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Montgomery
9/5/2007	51-107-1005	0.087	ppm	129	24	100	44201	Ozone	Virginia	Loudoun
9/5/2007	51-153-0009	0.082	ppm	116	24	100	44201	Ozone	Virginia	Prince William
9/6/2007	24-013-0001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Carroll
9/6/2007	24-021-0037	0.078	ppm	106	24	100	44201	Ozone	Maryland	Frederick
9/6/2007	24-031-3001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Montgomery
9/7/2007	24-013-0001	0.085	ppm	124	24	100	44201	Ozone	Maryland	Carroll
9/7/2007	24-021-0037	0.081	ppm	114	24	100	44201	Ozone	Maryland	Frederick
9/7/2007	24-031-3001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Montgomery
9/8/2007	24-013-0001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Carroll
9/8/2007	24-031-3001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Montgomery
9/25/2007	24-013-0001	0.087	ppm	129	24	100	44201	Ozone	Maryland	Carroll
9/25/2007	24-021-0037	0.086	ppm	127	24	100	44201	Ozone	Maryland	Frederick
9/25/2007	24-031-3001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Montgomery
9/25/2007	51-107-1005	0.078	ppm	106	24	100	44201	Ozone	Virginia	Loudoun
9/26/2007	24-003-0014	0.080	ppm	111	24	100	44201	Ozone	Maryland	Anne Arundel
9/26/2007	24-009-0011	0.078	ppm	106	24	100	44201	Ozone	Maryland	Calvert
9/26/2007	24-017-0010	0.084	ppm	122	24	100	44201	Ozone	Maryland	Charles
9/26/2007	24-025-1001	0.084	ppm	122	24	100	44201	Ozone	Maryland	Harford
9/26/2007	24-025-9001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Harford
9/26/2007	24-031-3001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Montgomery
9/26/2007	24-033-8003	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
9/26/2007	51-013-0020	0.077	ppm	104	24	100	44201	Ozone	Virginia	Arlington
10/9/2007	24-003-0014	0.079	ppm	109	24	100	44201	Ozone	Maryland	Anne Arundel
10/9/2007	51-013-0020	0.076	ppm	101	24	100	44201	Ozone	Virginia	Arlington

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
2008				2008				2008		2008
4/18/2008	24-003-0014	0.087	ppm	129	24	100	44201	Ozone	Maryland	Anne Arundel
4/18/2008	24-005-3001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Baltimore
4/18/2008	24-009-0011	0.079	ppm	109	24	100	44201	Ozone	Maryland	Calvert
4/18/2008	24-017-0010	0.083	ppm	119	24	100	44201	Ozone	Maryland	Charles
4/18/2008	24-025-1001	0.086	ppm	127	24	100	44201	Ozone	Maryland	Harford
4/18/2008	24-025-9001	0.085	ppm	124	24	100	44201	Ozone	Maryland	Harford
4/18/2008	24-033-0030	0.077	ppm	104	24	100	44201	Ozone	Maryland	Prince George's
4/18/2008	24-033-8003	0.079	ppm	109	24	100	44201	Ozone	Maryland	Prince George's
4/18/2008	51-153-0009	0.076	ppm	101	24	100	44201	Ozone	Virginia	Prince William
4/19/2008	24-003-0014	0.081	ppm	114	24	100	44201	Ozone	Maryland	Anne Arundel
4/19/2008	24-005-3001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Baltimore
4/19/2008	24-009-0011	0.076	ppm	101	24	100	44201	Ozone	Maryland	Calvert
4/19/2008	24-013-0001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Carroll
4/19/2008	24-025-1001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Harford
4/19/2008	24-025-9001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Harford
4/19/2008	24-033-0030	0.077	ppm	104	24	100	44201	Ozone	Maryland	Prince George's
4/19/2008	24-033-8003	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
5/7/2008	24-031-3001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Montgomery
5/30/2008	24-013-0001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Carroll
6/7/2008	24-003-0014	0.077	ppm	104	24	100	44201	Ozone	Maryland	Anne Arundel
6/7/2008	24-025-1001	0.088	ppm	132	24	100	44201	Ozone	Maryland	Harford
6/7/2008	24-025-9001	0.092	ppm	142	24	100	44201	Ozone	Maryland	Harford
6/7/2008	24-033-8003	0.081	ppm	114	24	100	44201	Ozone	Maryland	Prince George's

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
6/10/2008	24-005-1007	0.099	ppm	159	24	100	44201	Ozone	Maryland	Baltimore
6/10/2008	24-013-0001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Carroll
6/10/2008	24-025-9001	0.08	ppm	111	24	100	44201	Ozone	Maryland	Harford
6/10/2008	24-031-3001	0.085	ppm	124	24	100	44201	Ozone	Maryland	Montgomery
6/10/2008	24-033-0030	0.085	ppm	124	24	100	44201	Ozone	Maryland	Prince George's
6/10/2008	51-013-0020	0.08	ppm	111	24	100	44201	Ozone	Virginia	Arlington
6/12/2008	11-001-0025	0.089	ppm	135	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/12/2008	11-001-0041	0.086	ppm	127	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/12/2008	11-001-0043	0.096	ppm	151	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/12/2008	24-003-0014	0.076	ppm	101	24	100	44201	Ozone	Maryland	Anne Arundel
6/12/2008	24-005-3001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Baltimore
6/12/2008	24-017-0010	0.078	ppm	106	24	100	44201	Ozone	Maryland	Charles
6/12/2008	24-025-1001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Harford
6/12/2008	24-033-8003	0.08	ppm	111	24	100	44201	Ozone	Maryland	Prince George's
6/12/2008	51-013-0020	0.093	ppm	145	24	100	44201	Ozone	Virginia	Arlington
6/12/2008	51-059-0030	0.085	ppm	124	24	100	44201	Ozone	Virginia	Fairfax
6/12/2008	51-153-0009	0.082	ppm	116	18	75	44201	Ozone	Virginia	Prince William
6/12/2008	51-510-0009	0.077	ppm	104	24	100	44201	Ozone	Virginia	Alexandria City
6/13/2008	11-001-0043	0.078	ppm	106	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/13/2008	24-003-0014	0.078	ppm	106	24	100	44201	Ozone	Maryland	Anne Arundel
6/13/2008	24-005-1007	0.097	ppm	154	24	100	44201	Ozone	Maryland	Baltimore
6/13/2008	24-005-3001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Baltimore
6/13/2008	24-013-0001	0.096	ppm	151	24	100	44201	Ozone	Maryland	Carroll
6/13/2008	24-017-0010	0.076	ppm	101	24	100	44201	Ozone	Maryland	Charles
6/13/2008	24-021-0037	0.085	ppm	124	24	100	44201	Ozone	Maryland	Frederick
6/13/2008	24-025-1001	0.085	ppm	124	24	100	44201	Ozone	Maryland	Harford

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
6/13/2008	24-025-9001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Harford
6/13/2008	24-031-3001	0.094	ppm	147	24	100	44201	Ozone	Maryland	Montgomery
6/13/2008	24-033-0030	0.085	ppm	124	24	100	44201	Ozone	Maryland	Prince George's
6/13/2008	24-033-8003	0.077	ppm	104	24	100	44201	Ozone	Maryland	Prince George's
6/13/2008	51-013-0020	0.079	ppm	109	24	100	44201	Ozone	Virginia	Arlington
6/14/2008	24-005-3001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Baltimore
6/14/2008	24-025-1001	0.093	ppm	145	24	100	44201	Ozone	Maryland	Harford
6/14/2008	24-025-9001	0.089	ppm	135	24	100	44201	Ozone	Maryland	Harford
6/21/2008	11-001-0041	0.077	ppm	104	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/21/2008	11-001-0043	0.078	ppm	106	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/21/2008	24-005-1007	0.087	ppm	129	24	100	44201	Ozone	Maryland	Baltimore
6/21/2008	24-005-3001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Baltimore
6/21/2008	24-025-9001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Harford
6/21/2008	24-031-3001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Montgomery
6/21/2008	24-033-0030	0.08	ppm	111	24	100	44201	Ozone	Maryland	Prince George's
6/21/2008	51-013-0020	0.076	ppm	101	24	100	44201	Ozone	Virginia	Arlington
6/25/2008	24-025-9001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Harford
7/3/2008	24-025-1001	0.089	ppm	135	24	100	44201	Ozone	Maryland	Harford
7/3/2008	24-025-9001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Harford
7/8/2008	24-025-9001	0.08	ppm	111	24	100	44201	Ozone	Maryland	Harford
7/11/2008	24-003-0014	0.076	ppm	101	24	100	44201	Ozone	Maryland	Anne Arundel
7/11/2008	24-005-3001	0.084	ppm	122	24	100	44201	Ozone	Maryland	Baltimore
7/11/2008	24-025-1001	0.100	ppm	161	24	100	44201	Ozone	Maryland	Harford

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TABLE A2-1: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/11/2008	24-025-9001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Harford
7/12/2008	24-021-0037	0.076	ppm	101	24	100	44201	Ozone	Maryland	Frederick
7/12/2008	24-025-1001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Harford
7/15/2008	11-001-0041	0.081	ppm	114	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/15/2008	11-001-0043	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/15/2008	24-003-0014	0.081	ppm	114	24	100	44201	Ozone	Maryland	Anne Arundel
7/15/2008	51-013-0020	0.081	ppm	114	24	100	44201	Ozone	Virginia	Arlington
7/16/2008	11-001-0041	0.087	ppm	129	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/16/2008	11-001-0043	0.084	ppm	122	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/16/2008	24-003-0014	0.077	ppm	104	24	100	44201	Ozone	Maryland	Anne Arundel
7/16/2008	24-005-1007	0.08	ppm	111	24	100	44201	Ozone	Maryland	Baltimore
7/16/2008	24-005-3001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Baltimore
7/16/2008	24-017-0010	0.078	ppm	106	24	100	44201	Ozone	Maryland	Charles
7/16/2008	24-025-1001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Harford
7/16/2008	24-033-0030	0.081	ppm	114	24	100	44201	Ozone	Maryland	Prince George's
7/16/2008	24-033-8003	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
7/16/2008	51-013-0020	0.084	ppm	122	24	100	44201	Ozone	Virginia	Arlington
7/16/2008	51-059-0030	0.088	ppm	132	24	100	44201	Ozone	Virginia	Fairfax
7/16/2008	51-179-0001	0.085	ppm	124	24	100	44201	Ozone	Virginia	Stafford
7/17/2008	11-001-0025	0.087	ppm	129	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/17/2008	11-001-0041	0.092	ppm	142	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/17/2008	11-001-0043	0.100	ppm	161	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/17/2008	24-003-0014	0.087	ppm	129	24	100	44201	Ozone	Maryland	Anne Arundel
7/17/2008	24-005-3001	0.08	ppm	111	24	100	44201	Ozone	Maryland	Baltimore
7/17/2008	24-009-0011	0.08	ppm	111	24	100	44201	Ozone	Maryland	Calvert
7/17/2008	24-017-0010	0.089	ppm	135	24	100	44201	Ozone	Maryland	Charles
7/17/2008	24-025-1001	0.088	ppm	132	24	100	44201	Ozone	Maryland	Harford

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/17/2008	24-033-0030	0.081	ppm	114	24	100	44201	Ozone	Maryland	Prince George's
7/17/2008	24-033-8003	0.08	ppm	111	24	100	44201	Ozone	Maryland	Prince George's
7/17/2008	51-013-0020	0.104	ppm	172	24	100	44201	Ozone	Virginia	Arlington
7/17/2008	51-059-0030	0.095	ppm	150	24	100	44201	Ozone	Virginia	Fairfax
7/17/2008	51-510-0009	0.09	ppm	137	24	100	44201	Ozone	Virginia	Alexandria City
7/18/2008	11-001-0025	0.083	ppm	119	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/18/2008	11-001-0041	0.082	ppm	116	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/18/2008	11-001-0043	0.086	ppm	127	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/18/2008	24-003-0014	0.077	ppm	104	24	100	44201	Ozone	Maryland	Anne Arundel
7/18/2008	24-005-1007	0.088	ppm	132	24	100	44201	Ozone	Maryland	Baltimore
7/18/2008	24-005-3001	0.099	ppm	159	24	100	44201	Ozone	Maryland	Baltimore
7/18/2008	24-013-0001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Carroll
7/18/2008	24-017-0010	0.076	ppm	101	24	100	44201	Ozone	Maryland	Charles
7/18/2008	24-025-1001	0.102	ppm	166	24	100	44201	Ozone	Maryland	Harford
7/18/2008	24-025-9001	0.099	ppm	159	24	100	44201	Ozone	Maryland	Harford
7/18/2008	24-031-3001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Montgomery
7/18/2008	24-033-0030	0.097	ppm	154	24	100	44201	Ozone	Maryland	Prince George's
7/18/2008	24-033-8003	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
7/18/2008	24-510-0054	0.082	ppm	116	24	100	44201	Ozone	Maryland	Baltimore (City)
7/18/2008	51-013-0020	0.089	ppm	135	24	100	44201	Ozone	Virginia	Arlington
7/18/2008	51-059-0030	0.078	ppm	106	24	100	44201	Ozone	Virginia	Fairfax
7/18/2008	51-510-0009	0.077	ppm	104	24	100	44201	Ozone	Virginia	Alexandria City
7/28/2008	24-025-1001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Harford
7/29/2008	24-005-1007	0.087	ppm	129	24	100	44201	Ozone	Maryland	Baltimore
7/29/2008	24-005-3001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Baltimore
7/29/2008	24-013-0001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Carroll
7/29/2008	24-025-1001	0.085	ppm	124	24	100	44201	Ozone	Maryland	Harford

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TABLE A2-1: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/29/2008	24-025-9001	0.087	ppm	129	24	100	44201	Ozone	Maryland	Harford
7/29/2008	24-033-0030	0.078	ppm	106	24	100	44201	Ozone	Maryland	Prince George's
8/19/2008	24-009-0011	0.076	ppm	101	24	100	44201	Ozone	Maryland	Calvert
8/19/2008	24-017-0010	0.077	ppm	104	24	100	44201	Ozone	Maryland	Charles
8/25/2008	24-003-0014	0.079	ppm	109	24	100	44201	Ozone	Maryland	Anne Arundel
8/25/2008	24-033-8003	0.078	ppm	106	24	100	44201	Ozone	Maryland	Prince George's
9/3/2008	11-001-0043	0.080	ppm	111	24	100	44201	Ozone	District Of Columbia	District of Columbia
9/3/2008	24-003-0014	0.086	ppm	127	24	100	44201	Ozone	Maryland	Anne Arundel
9/3/2008	24-009-0011	0.087	ppm	129	24	100	44201	Ozone	Maryland	Calvert
9/3/2008	24-017-0010	0.086	ppm	127	24	100	44201	Ozone	Maryland	Charles
9/3/2008	24-033-8003	0.079	ppm	109	24	100	44201	Ozone	Maryland	Prince George's
9/3/2008	51-059-0030	0.085	ppm	124	24	100	44201	Ozone	Virginia	Fairfax
9/4/2008	24-003-0014	0.079	ppm	109	24	100	44201	Ozone	Maryland	Anne Arundel
9/4/2008	24-009-0011	0.077	ppm	104	24	100	44201	Ozone	Maryland	Calvert
9/4/2008	24-017-0010	0.077	ppm	104	24	100	44201	Ozone	Maryland	Charles
9/4/2008	24-021-0037	0.082	ppm	116	24	100	44201	Ozone	Maryland	Frederick
9/4/2008	24-025-1001	0.08	ppm	111	24	100	44201	Ozone	Maryland	Harford
9/4/2008	51-059-0030	0.077	ppm	104	24	100	44201	Ozone	Virginia	Fairfax
2010				2010				2010		2010
4/26/2009	24-025-1001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Harford
6/8/2009	11-001-0025	0.082	ppm	116	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/8/2009	11-001-0041	0.078	ppm	106	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/8/2009	11-001-0043	0.085	ppm	124	24	100	44201	Ozone	District Of Columbia	District of Columbia

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TABLE A2-1: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
6/8/2009	24-005-1007	0.076	ppm	101	24	100	44201	Ozone	Maryland	Baltimore
6/8/2009	24-033-0030	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
6/8/2009	51-013-0020	0.078	ppm	106	24	100	44201	Ozone	Virginia	Arlington
6/25/2009	24-005-3001	0.086	ppm	127	24	100	44201	Ozone	Maryland	Baltimore
6/25/2009	24-009-0011	0.076	ppm	101	24	100	44201	Ozone	Maryland	Calvert
6/25/2009	24-025-1001	0.109	ppm	185	24	100	44201	Ozone	Maryland	Harford
6/25/2009	24-025-9001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Harford
6/26/2009	11-001-0041	0.08	ppm	111	18	75	44201	Ozone	District Of Columbia	District of Columbia
6/26/2009	11-001-0043	0.076	ppm	101	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/26/2009	24-025-1001	0.091	ppm	140	24	100	44201	Ozone	Maryland	Harford
6/26/2009	24-025-9001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Harford
6/26/2009	51-013-0020	0.077	ppm	104	24	100	44201	Ozone	Virginia	Arlington
6/26/2009	24-033-0030	???	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
7/13/2009	24-025-1001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Harford
7/15/2009	24-025-1001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Harford
7/16/2009	24-025-1001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Harford
8/16/2009	24-025-1001	0.085	ppm	124	24	100	44201	Ozone	Maryland	Harford
8/18/2009	24-025-1001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Harford
8/27/2009	24-025-1001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Harford
8/27/2009	51-059-0030	0.08	ppm	111	24	100	44201	Ozone	Virginia	Fairfax
2010				2010				2010		2010
5/5/2010	24-025-1001	0.077	ppm	104	16	67	44201	Ozone	Maryland	Harford
5/21/2010	24-025-1001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Harford

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
5/27/2010	11-001-0043	0.080	ppm	111	24	100	44201	Ozone	District Of Columbia	District of Columbia
5/27/2010	24-003-0014	0.078	ppm	106	24	100	44201	Ozone	Maryland	Anne Arundel
5/27/2010	24-005-3001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Baltimore
5/27/2010	24-025-1001	0.089	ppm	135	24	100	44201	Ozone	Maryland	Harford
5/27/2010	24-033-0030	0.087	ppm	129	24	100	44201	Ozone	Maryland	Prince George's
5/27/2010	51-013-0020	0.083	ppm	119	24	100	44201	Ozone	Virginia	Arlington
5/27/2010	51-059-0030	0.088	ppm	132	24	100	44201	Ozone	Virginia	Fairfax
5/27/2010	51-179-0001	0.080	ppm	111	24	100	44201	Ozone	Virginia	Stafford
5/27/2010	51-510-0009	0.078	ppm	106	24	100	44201	Ozone	Virginia	Alexandria City
6/2/2010	11-001-0043	0.078	ppm	106	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/2/2010	24-025-1001	0.087	ppm	129	24	100	44201	Ozone	Maryland	Harford
6/2/2010	24-025-9001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Harford
6/2/2010	24-033-0030	0.080	ppm	111	24	100	44201	Ozone	Maryland	Prince George's
6/4/2010	24-033-0030	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
6/12/2010	24-031-3001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Montgomery
6/18/2010	51-059-0030	0.083	ppm	119	13	54	44201	Ozone	Virginia	Fairfax
6/21/2010	24-009-0011	0.082	ppm	116	24	100	44201	Ozone	Maryland	Calvert
6/21/2010	24-017-0010	0.076	ppm	101	24	100	44201	Ozone	Maryland	Charles
6/21/2010	24-033-8003	0.077	ppm	104	24	100	44201	Ozone	Maryland	Prince George's
6/22/2010	11-001-0041	0.077	ppm	104	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/22/2010	11-001-0043	0.077	ppm	104	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/22/2010	24-005-1007	0.085	ppm	124	24	100	44201	Ozone	Maryland	Baltimore
6/22/2010	24-005-3001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Baltimore

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
6/22/2010	24-025-1001	0.087	ppm	129	24	100	44201	Ozone	Maryland	Harford
6/22/2010	24-025-9001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Harford
6/22/2010	24-031-3001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Montgomery
6/22/2010	24-033-0030	0.091	ppm	140	24	100	44201	Ozone	Maryland	Prince George's
6/22/2010	51-013-0020	0.079	ppm	109	24	100	44201	Ozone	Virginia	Arlington
6/23/2010	24-009-0011	0.076	ppm	101	24	100	44201	Ozone	Maryland	Calvert
6/23/2010	24-025-1001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Harford
6/25/2010	24-005-3001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Baltimore
6/25/2010	24-025-1001	0.087	ppm	129	24	100	44201	Ozone	Maryland	Harford
6/25/2010	24-033-8003	0.080	ppm	111	24	100	44201	Ozone	Maryland	Prince George's
6/26/2010	24-005-3001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Baltimore
6/26/2010	24-025-1001	0.087	ppm	129	24	100	44201	Ozone	Maryland	Harford
6/26/2010	24-025-9001	0.086	ppm	127	24	100	44201	Ozone	Maryland	Harford
6/26/2010	24-033-0030	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
6/27/2010	24-025-1001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Harford
7/3/2010	11-001-0041	0.076	ppm	101	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/3/2010	11-001-0043	0.078	ppm	106	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/3/2010	24-025-1001	0.08	ppm	111	24	100	44201	Ozone	Maryland	Harford
7/3/2010	24-033-0030	0.082	ppm	116	24	100	44201	Ozone	Maryland	Prince George's
7/4/2010	11-001-0041	0.086	ppm	127	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/4/2010	11-001-0043	0.078	ppm	106	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/4/2010	24-005-3001	0.08	ppm	111	24	100	44201	Ozone	Maryland	Baltimore
7/4/2010	24-025-1001	0.09	ppm	137	24	100	44201	Ozone	Maryland	Harford
7/4/2010	24-033-0030	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
7/4/2010	51-013-0020	0.078	ppm	106	24	100	44201	Ozone	Virginia	Arlington
7/4/2010	51-059-0030	0.076	ppm	101	24	100	44201	Ozone	Virginia	Fairfax

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/5/2010	24-003-0014	0.077	ppm	104	24	100	44201	Ozone	Maryland	Anne Arundel
7/5/2010	24-005-3001	0.084	ppm	122	24	100	44201	Ozone	Maryland	Baltimore
7/5/2010	24-009-0011	0.082	ppm	116	24	100	44201	Ozone	Maryland	Calvert
7/5/2010	24-017-0010	0.080	ppm	111	24	100	44201	Ozone	Maryland	Charles
7/5/2010	24-025-1001	0.097	ppm	154	24	100	44201	Ozone	Maryland	Harford
7/5/2010	24-025-9001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Harford
7/5/2010	24-033-8003	0.080	ppm	111	24	100	44201	Ozone	Maryland	Prince George's
7/6/2010	11-001-0041	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/6/2010	11-001-0043	0.082	ppm	116	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/6/2010	24-003-0014	0.099	ppm	159	24	100	44201	Ozone	Maryland	Anne Arundel
7/6/2010	24-005-3001	0.09	ppm	137	24	100	44201	Ozone	Maryland	Baltimore
7/6/2010	24-009-0011	0.087	ppm	129	24	100	44201	Ozone	Maryland	Calvert
7/6/2010	24-013-0001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Carroll
7/6/2010	24-017-0010	0.087	ppm	129	24	100	44201	Ozone	Maryland	Charles
7/6/2010	24-021-0037	0.084	ppm	122	24	100	44201	Ozone	Maryland	Frederick
7/6/2010	24-025-1001	0.092	ppm	142	24	100	44201	Ozone	Maryland	Harford
7/6/2010	24-033-0030	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
7/6/2010	24-033-8003	0.090	ppm	137	24	100	44201	Ozone	Maryland	Prince George's
7/6/2010	51-013-0020	0.076	ppm	101	24	100	44201	Ozone	Virginia	Arlington
7/6/2010	51-059-0030	0.078	ppm	106	24	100	44201	Ozone	Virginia	Fairfax
7/7/2010	11-001-0025	0.087	ppm	129	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/7/2010	11-001-0041	0.096	ppm	151	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/7/2010	11-001-0043	0.100	ppm	161	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/7/2010	24-003-0014	0.082	ppm	116	24	100	44201	Ozone	Maryland	Anne Arundel
7/7/2010	24-005-3001	0.084	ppm	122	24	100	44201	Ozone	Maryland	Baltimore
7/7/2010	24-009-0011	0.090	ppm	137	24	100	44201	Ozone	Maryland	Calvert
7/7/2010	24-013-0001	0.085	ppm	124	24	100	44201	Ozone	Maryland	Carroll
7/7/2010	24-017-0010	0.082	ppm	116	24	100	44201	Ozone	Maryland	Charles

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/7/2010	24-021-0037	0.077	ppm	104	24	100	44201	Ozone	Maryland	Frederick
7/7/2010	24-025-1001	0.088	ppm	132	24	100	44201	Ozone	Maryland	Harford
7/7/2010	24-033-0030	0.094	ppm	147	24	100	44201	Ozone	Maryland	Prince George's
7/7/2010	24-033-8003	0.085	ppm	124	23	96	44201	Ozone	Maryland	Prince George's
7/7/2010	51-013-0020	0.092	ppm	142	24	100	44201	Ozone	Virginia	Arlington
7/7/2010	51-059-0030	0.095	ppm	150	24	100	44201	Ozone	Virginia	Fairfax
7/7/2010	51-179-0001	0.088	ppm	132	24	100	44201	Ozone	Virginia	Stafford
7/7/2010	51-510-0009	0.092	ppm	142	24	100	44201	Ozone	Virginia	Alexandria City
7/8/2010	24-013-0001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Carroll
7/8/2010	24-021-0037	0.093	ppm	145	24	100	44201	Ozone	Maryland	Frederick
7/8/2010	51-153-0009	0.093	ppm	145	24	100	44201	Ozone	Virginia	Prince William
7/15/2010	11-001-0041	0.076	ppm	101	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/15/2010	11-001-0043	0.078	ppm	106	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/15/2010	24-003-0014	0.076	ppm	101	24	100	44201	Ozone	Maryland	Anne Arundel
7/15/2010	51-013-0020	0.078	ppm	106	24	100	44201	Ozone	Virginia	Arlington
7/16/2010	24-025-1001	0.086	ppm	127	18	75	44201	Ozone	Maryland	Harford
7/16/2010	24-025-9001	0.08	ppm	111	24	100	44201	Ozone	Maryland	Harford
7/17/2010	24-025-1001	0.086	ppm	127	24	100	44201	Ozone	Maryland	Harford
7/23/2010	24-003-0014	0.082	ppm	116	24	100	44201	Ozone	Maryland	Anne Arundel
7/23/2010	24-005-3001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Baltimore
7/23/2010	24-025-1001	0.101	ppm	164	24	100	44201	Ozone	Maryland	Harford
7/23/2010	24-025-9001	0.086	ppm	127	24	100	44201	Ozone	Maryland	Harford
7/27/2010	24-005-1007	0.078	ppm	106	24	100	44201	Ozone	Maryland	Baltimore
7/27/2010	24-013-0001	0.08	ppm	111	24	100	44201	Ozone	Maryland	Carroll
7/28/2010	24-033-0030	0.077	ppm	104	24	100	44201	Ozone	Maryland	Prince George's

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TABLE A2-1: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/31/2010	24-005-1007	0.076	ppm	101	24	100	44201	Ozone	Maryland	Baltimore
7/31/2010	24-025-1001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Harford
8/7/2010	11-001-0041	0.077	ppm	104	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/9/2010	24-005-1007	0.076	ppm	101	24	100	44201	Ozone	Maryland	Baltimore
8/9/2010	24-025-1001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Harford
8/9/2010	24-033-0030	0.079	ppm	109	24	100	44201	Ozone	Maryland	Prince George's
8/10/2010	11-001-0025	0.080	ppm	111	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/10/2010	11-001-0041	0.090	ppm	137	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/10/2010	11-001-0043	0.080	ppm	111	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/10/2010	24-003-0014	0.099	ppm	159	24	100	44201	Ozone	Maryland	Anne Arundel
8/10/2010	24-005-1007	0.086	ppm	127	24	100	44201	Ozone	Maryland	Baltimore
8/10/2010	24-005-3001	0.115	ppm	200	24	100	44201	Ozone	Maryland	Baltimore
8/10/2010	24-009-0011	0.079	ppm	109	24	100	44201	Ozone	Maryland	Calvert
8/10/2010	24-013-0001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Carroll
8/10/2010	24-017-0010	0.077	ppm	104	24	100	44201	Ozone	Maryland	Charles
8/10/2010	24-021-0037	0.085	ppm	124	24	100	44201	Ozone	Maryland	Frederick
8/10/2010	24-025-1001	0.110	ppm	187	24	100	44201	Ozone	Maryland	Harford
8/10/2010	24-033-0030	0.082	ppm	116	24	100	44201	Ozone	Maryland	Prince George's
8/10/2010	24-033-8003	0.090	ppm	137	24	100	44201	Ozone	Maryland	Prince George's
8/10/2010	24-510-0054	0.100	ppm	161	24	100	44201	Ozone	Maryland	Baltimore (City)
8/10/2010	51-013-0020	0.088	ppm	132	17	71	44201	Ozone	Virginia	Arlington
8/10/2010	51-059-0030	0.082	ppm	116	24	100	44201	Ozone	Virginia	Fairfax
8/10/2010	51-510-0009	0.081	ppm	114	24	100	44201	Ozone	Virginia	Alexandria City
8/11/2010	11-001-0025	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia

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TABLE A2-1: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
8/11/2010	11-001-0041	0.085	ppm	124	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/11/2010	11-001-0043	0.081	ppm	114	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/11/2010	24-003-0014	0.096	ppm	151	24	100	44201	Ozone	Maryland	Anne Arundel
8/11/2010	24-009-0011	0.097	ppm	154	24	100	44201	Ozone	Maryland	Calvert
8/11/2010	24-017-0010	0.093	ppm	145	24	100	44201	Ozone	Maryland	Charles
8/11/2010	24-033-0030	0.080	ppm	111	24	100	44201	Ozone	Maryland	Prince George's
8/11/2010	24-033-8003	0.088	ppm	132	24	100	44201	Ozone	Maryland	Prince George's
8/11/2010	51-013-0020	0.085	ppm	124	24	100	44201	Ozone	Virginia	Arlington
8/11/2010	51-059-0030	0.089	ppm	135	24	100	44201	Ozone	Virginia	Fairfax
8/11/2010	51-510-0009	0.082	ppm	116	24	100	44201	Ozone	Virginia	Alexandria City
8/17/2010	11-001-0025	0.078	ppm	106	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/17/2010	11-001-0041	0.089	ppm	135	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/17/2010	11-001-0043	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/17/2010	24-003-0014	0.081	ppm	114	13	54	44201	Ozone	Maryland	Anne Arundel
8/17/2010	51-013-0020	0.089	ppm	135	24	100	44201	Ozone	Virginia	Arlington
8/17/2010	51-059-0030	0.089	ppm	135	24	100	44201	Ozone	Virginia	Fairfax
8/17/2010	51-179-0001	0.078	ppm	106	24	100	44201	Ozone	Virginia	Stafford
8/17/2010	51-510-0009	0.085	ppm	124	24	100	44201	Ozone	Virginia	Alexandria City
8/19/2010	11-001-0041	0.086	ppm	127	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/19/2010	11-001-0043	0.081	ppm	114	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/19/2010	24-005-3001	0.087	ppm	129	24	100	44201	Ozone	Maryland	Baltimore
8/19/2010	24-025-1001	0.093	ppm	145	24	100	44201	Ozone	Maryland	Harford
8/19/2010	51-059-0030	0.078	ppm	106	24	100	44201	Ozone	Virginia	Fairfax
8/19/2010	51-510-0009	0.077	ppm	104	24	100	44201	Ozone	Virginia	Alexandria City
8/20/2010	11-001-0041	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/20/2010	11-001-0043	0.081	ppm	114	24	100	44201	Ozone	District Of Columbia	District of Columbia

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TABLE A2-1: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
8/20/2010	24-003-0014	0.084	ppm	122	24	100	44201	Ozone	Maryland	Anne Arundel
8/20/2010	24-005-3001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Baltimore
8/20/2010	24-033-8003	0.077	ppm	104	24	100	44201	Ozone	Maryland	Prince George's
8/20/2010	51-013-0020	0.077	ppm	104	24	100	44201	Ozone	Virginia	Arlington
8/20/2010	51-059-0030	0.080	ppm	111	24	100	44201	Ozone	Virginia	Fairfax
8/20/2010	51-179-0001	0.076	ppm	101	24	100	44201	Ozone	Virginia	Stafford
8/20/2010	51-510-0009	0.080	ppm	111	24	100	44201	Ozone	Virginia	Alexandria City
8/28/2010	51-013-0020	0.076	ppm	101	24	100	44201	Ozone	Virginia	Arlington
8/29/2010	11-001-0041	0.080	ppm	111	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/29/2010	24-003-0014	0.078	ppm	106	24	100	44201	Ozone	Maryland	Anne Arundel
8/29/2010	24-025-1001	0.096	ppm	151	24	100	44201	Ozone	Maryland	Harford
8/29/2010	51-510-0009	0.078	ppm	106	24	100	44201	Ozone	Virginia	Alexandria City
8/30/2010	11-001-0043	0.077	ppm	104	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/30/2010	24-003-0014	0.087	ppm	129	24	100	44201	Ozone	Maryland	Anne Arundel
8/30/2010	24-005-3001	0.078	ppm	106	17	71	44201	Ozone	Maryland	Baltimore
8/30/2010	24-009-0011	0.098	ppm	156	24	100	44201	Ozone	Maryland	Calvert
8/30/2010	24-017-0010	0.087	ppm	129	24	100	44201	Ozone	Maryland	Charles
8/30/2010	24-025-1001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Harford
8/30/2010	24-033-0030	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
8/30/2010	24-033-8003	0.084	ppm	122	24	100	44201	Ozone	Maryland	Prince George's
8/30/2010	51-013-0020	0.085	ppm	124	24	100	44201	Ozone	Virginia	Arlington
8/30/2010	51-059-0030	0.091	ppm	140	24	100	44201	Ozone	Virginia	Fairfax
8/30/2010	51-153-0009	0.079	ppm	109	24	100	44201	Ozone	Virginia	Prince William
8/30/2010	51-179-0001	0.086	ppm	127	24	100	44201	Ozone	Virginia	Stafford
8/30/2010	51-510-0009	0.081	ppm	114	24	100	44201	Ozone	Virginia	Alexandria City
8/31/2010	11-001-0025	0.077	ppm	104	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/31/2010	11-001-0041	0.085	ppm	124	24	100	44201	Ozone	District Of Columbia	District of Columbia

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TABLE A2-1: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
8/31/2010	11-001-0043	0.088	ppm	132	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/31/2010	24-005-3001	0.08	ppm	111	24	100	44201	Ozone	Maryland	Baltimore
8/31/2010	24-025-1001	0.09	ppm	137	24	100	44201	Ozone	Maryland	Harford
8/31/2010	24-031-3001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Montgomery
8/31/2010	51-013-0020	0.087	ppm	129	19	79	44201	Ozone	Virginia	Arlington
8/31/2010	51-059-0030	0.086	ppm	127	24	100	44201	Ozone	Virginia	Fairfax
8/31/2010	51-510-0009	0.081	ppm	114	24	100	44201	Ozone	Virginia	Alexandria City
9/1/2010	11-001-0025	0.085	ppm	124	24	100	44201	Ozone	District Of Columbia	District of Columbia
9/1/2010	11-001-0041	0.080	ppm	111	24	100	44201	Ozone	District Of Columbia	District of Columbia
9/1/2010	11-001-0043	0.086	ppm	127	24	100	44201	Ozone	District Of Columbia	District of Columbia
9/1/2010	24-005-3001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Baltimore
9/1/2010	24-025-1001	0.09	ppm	137	24	100	44201	Ozone	Maryland	Harford
9/1/2010	24-025-9001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Harford
9/1/2010	24-031-3001	0.080	ppm	111	24	100	44201	Ozone	Maryland	Montgomery
9/1/2010	24-033-0030	0.085	ppm	124	24	100	44201	Ozone	Maryland	Prince George's
9/1/2010	24-510-0054	0.077	ppm	104	24	100	44201	Ozone	Maryland	Baltimore (City)
9/2/2010	24-005-1007	0.092	ppm	142	24	100	44201	Ozone	Maryland	Baltimore
9/2/2010	24-013-0001	0.084	ppm	122	24	100	44201	Ozone	Maryland	Carroll
9/2/2010	24-021-0037	0.083	ppm	119	24	100	44201	Ozone	Maryland	Frederick
9/2/2010	24-025-1001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Harford
9/2/2010	24-031-3001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Montgomery
9/2/2010	24-033-0030	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
9/3/2010	24-021-0037	0.083	ppm	119	24	100	44201	Ozone	Maryland	Frederick
9/23/2010	24-021-0037	0.076	ppm	101	24	100	44201	Ozone	Maryland	Frederick
9/23/2010	51-059-0030	0.080	ppm	111	24	100	44201	Ozone	Virginia	Fairfax
9/24/2010	24-025-1001	0.077	ppm	104	18	75	44201	Ozone	Maryland	Harford

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TABLE A2-1: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
9/24/2010	24-025-9001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Harford

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
6/7/2008	11-001-0025	0.049	ppm	42	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/7/2008	11-001-0041	0.06	ppm	51	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/7/2008	11-001-0043	0.057	ppm	48	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/7/2008	24-003-0014	0.077	ppm	104	24	100	44201	Ozone	Maryland	Anne Arundel
6/7/2008	24-005-1007	0.06	ppm	51	24	100	44201	Ozone	Maryland	Baltimore
6/7/2008	24-005-3001	0.072	ppm	90	24	100	44201	Ozone	Maryland	Baltimore
6/7/2008	24-009-0011	0.06	ppm	51	24	100	44201	Ozone	Maryland	Calvert
6/7/2008	24-013-0001	0.058	ppm	49	24	100	44201	Ozone	Maryland	Carroll
6/7/2008	24-017-0010	0.061	ppm	54	24	100	44201	Ozone	Maryland	Charles
6/7/2008	24-021-0037	0.057	ppm	48	24	100	44201	Ozone	Maryland	Frederick
6/7/2008	24-025-1001	0.088	ppm	132	24	100	44201	Ozone	Maryland	Harford
6/7/2008	24-025-9001	0.092	ppm	142	24	100	44201	Ozone	Maryland	Harford
6/7/2008	24-031-3001	0.061	ppm	54	24	100	44201	Ozone	Maryland	Montgomery
6/7/2008	24-033-0030	0.064	ppm	64	24	100	44201	Ozone	Maryland	Prince George's
6/7/2008	24-033-8003	0.081	ppm	114	24	100	44201	Ozone	Maryland	Prince George's
6/7/2008	24-510-0054	0.042	ppm	36	24	100	44201	Ozone	Maryland	Baltimore (City)
6/7/2008	51-059-0030	0.065	ppm	67	24	100	44201	Ozone	Virginia	Fairfax
6/7/2008	51-061-0002	0.04	ppm	34	24	100	44201	Ozone	Virginia	Fauquier
6/7/2008	51-107-1005	0.055	ppm	47	24	100	44201	Ozone	Virginia	Loudoun
6/7/2008	51-153-0009	0.052	ppm	44	24	100	44201	Ozone	Virginia	Prince William
6/7/2008	51-179-0001	0.04	ppm	34	24	100	44201	Ozone	Virginia	Stafford
6/12/2008	11-001-0025	0.089	ppm	135	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/12/2008	11-001-0041	0.086	ppm	127	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/12/2008	11-001-0043	0.096	ppm	151	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/12/2008	24-003-0014	0.076	ppm	101	24	100	44201	Ozone	Maryland	Anne Arundel
6/12/2008	24-005-1007	0.068	ppm	77	24	100	44201	Ozone	Maryland	Baltimore
6/12/2008	24-005-3001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Baltimore
6/12/2008	24-009-0011	0.068	ppm	77	24	100	44201	Ozone	Maryland	Calvert
6/12/2008	24-013-0001	0.064	ppm	64	24	100	44201	Ozone	Maryland	Carroll

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
6/12/2008	24-017-0010	0.078	ppm	106	24	100	44201	Ozone	Maryland	Charles
6/12/2008	24-021-0037	0.071	ppm	87	24	100	44201	Ozone	Maryland	Frederick
6/12/2008	24-025-1001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Harford
6/12/2008	24-025-9001	0.074	ppm	97	24	100	44201	Ozone	Maryland	Harford
6/12/2008	24-031-3001	0.075	ppm	100	24	100	44201	Ozone	Maryland	Montgomery
6/12/2008	24-033-8003	0.08	ppm	111	24	100	44201	Ozone	Maryland	Prince George's
6/12/2008	24-510-0054	0.053	ppm	45	24	100	44201	Ozone	Maryland	Baltimore (City)
6/12/2008	51-013-0020	0.093	ppm	145	24	100	44201	Ozone	Virginia	Arlington
6/12/2008	51-059-0030	0.085	ppm	124	24	100	44201	Ozone	Virginia	Fairfax
6/12/2008	51-061-0002	0.069	ppm	80	24	100	44201	Ozone	Virginia	Fauquier
6/12/2008	51-153-0009	0.082	ppm	116	18	75	44201	Ozone	Virginia	Prince William
6/12/2008	51-179-0001	0.065	ppm	67	24	100	44201	Ozone	Virginia	Stafford
6/12/2008	51-510-0009	0.077	ppm	104	24	100	44201	Ozone	Virginia	Alexandria City
6/13/2008	11-001-0025	0.074	ppm	97	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/13/2008	11-001-0041	0.075	ppm	100	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/13/2008	11-001-0043	0.078	ppm	106	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/13/2008	24-003-0014	0.078	ppm	106	24	100	44201	Ozone	Maryland	Anne Arundel
6/13/2008	24-005-1007	0.097	ppm	154	24	100	44201	Ozone	Maryland	Baltimore
6/13/2008	24-005-3001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Baltimore
6/13/2008	24-009-0011	0.075	ppm	100	24	100	44201	Ozone	Maryland	Calvert
6/13/2008	24-013-0001	0.096	ppm	151	24	100	44201	Ozone	Maryland	Carroll
6/13/2008	24-017-0010	0.076	ppm	101	24	100	44201	Ozone	Maryland	Charles
6/13/2008	24-021-0037	0.085	ppm	124	24	100	44201	Ozone	Maryland	Frederick
6/13/2008	24-025-1001	0.085	ppm	124	24	100	44201	Ozone	Maryland	Harford
6/13/2008	24-025-9001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Harford
6/13/2008	24-031-3001	0.094	ppm	147	24	100	44201	Ozone	Maryland	Montgomery
6/13/2008	24-033-0030	0.085	ppm	124	24	100	44201	Ozone	Maryland	Prince George's
6/13/2008	24-033-8003	0.077	ppm	104	24	100	44201	Ozone	Maryland	Prince George's
6/13/2008	24-510-0054	0.059	ppm	50	24	100	44201	Ozone	Maryland	Baltimore (City)

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
6/13/2008	51-013-0020	0.079	ppm	109	24	100	44201	Ozone	Virginia	Arlington
6/13/2008	51-059-0030	0.074	ppm	97	24	100	44201	Ozone	Virginia	Fairfax
6/13/2008	51-061-0002	0.058	ppm	49	24	100	44201	Ozone	Virginia	Fauquier
6/13/2008	51-153-0009	0.071	ppm	87	24	100	44201	Ozone	Virginia	Prince William
6/13/2008	51-179-0001	0.071	ppm	87	19	79	44201	Ozone	Virginia	Stafford
6/13/2008	51-510-0009	0.071	ppm	87	24	100	44201	Ozone	Virginia	Alexandria City
6/14/2008	11-001-0025	0.057	ppm	48	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/14/2008	11-001-0041	0.066	ppm	71	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/14/2008	11-001-0043	0.067	ppm	74	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/14/2008	24-003-0014	0.066	ppm	71	24	100	44201	Ozone	Maryland	Anne Arundel
6/14/2008	24-005-1007	0.064	ppm	64	24	100	44201	Ozone	Maryland	Baltimore
6/14/2008	24-005-3001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Baltimore
6/14/2008	24-009-0011	0.064	ppm	64	24	100	44201	Ozone	Maryland	Calvert
6/14/2008	24-013-0001	0.057	ppm	48	24	100	44201	Ozone	Maryland	Carroll
6/14/2008	24-017-0010	0.061	ppm	54	24	100	44201	Ozone	Maryland	Charles
6/14/2008	24-021-0037	0.054	ppm	46	24	100	44201	Ozone	Maryland	Frederick
6/14/2008	24-025-1001	0.093	ppm	145	24	100	44201	Ozone	Maryland	Harford
6/14/2008	24-025-9001	0.089	ppm	135	24	100	44201	Ozone	Maryland	Harford
6/14/2008	24-031-3001	0.068	ppm	77	24	100	44201	Ozone	Maryland	Montgomery
6/14/2008	24-033-0030	0.074	ppm	97	24	100	44201	Ozone	Maryland	Prince George's
6/14/2008	24-033-8003	0.067	ppm	74	24	100	44201	Ozone	Maryland	Prince George's
6/14/2008	24-510-0054	0.052	ppm	44	24	100	44201	Ozone	Maryland	Baltimore (City)
6/14/2008	51-013-0020	0.065	ppm	67	24	100	44201	Ozone	Virginia	Arlington
6/14/2008	51-059-0030	0.058	ppm	49	24	100	44201	Ozone	Virginia	Fairfax
6/14/2008	51-061-0002	0.046	ppm	39	24	100	44201	Ozone	Virginia	Fauquier
6/14/2008	51-107-1005	0.056	ppm	47	24	100	44201	Ozone	Virginia	Loudoun
6/14/2008	51-153-0009	0.054	ppm	46	24	100	44201	Ozone	Virginia	Prince William
6/14/2008	51-179-0001	0.051	ppm	43	24	100	44201	Ozone	Virginia	Stafford
6/14/2008	51-510-0009	0.055	ppm	47	24	100	44201	Ozone	Virginia	Alexandria City

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
6/21/2008	11-001-0025	0.072	ppm	90	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/21/2008	11-001-0041	0.077	ppm	104	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/21/2008	11-001-0043	0.078	ppm	106	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/21/2008	24-003-0014	0.073	ppm	93	24	100	44201	Ozone	Maryland	Anne Arundel
6/21/2008	24-005-1007	0.087	ppm	129	24	100	44201	Ozone	Maryland	Baltimore
6/21/2008	24-005-3001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Baltimore
6/21/2008	24-009-0011	0.068	ppm	77	24	100	44201	Ozone	Maryland	Calvert
6/21/2008	24-013-0001	0.073	ppm	93	24	100	44201	Ozone	Maryland	Carroll
6/21/2008	24-017-0010	0.066	ppm	71	24	100	44201	Ozone	Maryland	Charles
6/21/2008	24-021-0037	0.073	ppm	93	24	100	44201	Ozone	Maryland	Frederick
6/21/2008	24-025-1001	ND								
6/21/2008	24-025-9001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Harford
6/21/2008	24-031-3001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Montgomery
6/21/2008	24-033-0030	0.08	ppm	111	24	100	44201	Ozone	Maryland	Prince George's
6/21/2008	24-033-8003	0.071	ppm	87	24	100	44201	Ozone	Maryland	Prince George's
6/21/2008	24-510-0054	0.058	ppm	49	24	100	44201	Ozone	Maryland	Baltimore (City)
6/21/2008	51-013-0020	0.076	ppm	101	24	100	44201	Ozone	Virginia	Arlington
6/21/2008	51-059-0005	0.068	ppm	77	24	100	44201	Ozone	Virginia	Fairfax
6/21/2008	51-059-0018	0.072	ppm	90	24	100	44201	Ozone	Virginia	Fairfax
6/21/2008	51-059-0030	0.068	ppm	77	24	100	44201	Ozone	Virginia	Fairfax
6/21/2008	51-059-5001	0.074	ppm	97	24	100	44201	Ozone	Virginia	Fairfax
6/21/2008	51-061-0002	0.052	ppm	44	24	100	44201	Ozone	Virginia	Fauquier
6/21/2008	51-107-1005	0.07	ppm	84	24	100	44201	Ozone	Virginia	Loudoun
6/21/2008	51-153-0009	0.067	ppm	74	24	100	44201	Ozone	Virginia	Prince William
6/21/2008	51-179-0001	0.057	ppm	48	24	100	44201	Ozone	Virginia	Stafford
6/21/2008	51-510-0009	0.065	ppm	67	24	100	44201	Ozone	Virginia	Alexandria City
7/3/2008	11-001-0025	0.065	ppm	67	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/3/2008	11-001-0041	0.069	ppm	80	24	100	44201	Ozone	District Of Columbia	District of Columbia

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/3/2008	11-001-0043	0.064	ppm	64	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/3/2008	24-003-0014	0.073	ppm	93	24	100	44201	Ozone	Maryland	Anne Arundel
7/3/2008	24-005-1007	0.072	ppm	90	24	100	44201	Ozone	Maryland	Baltimore
7/3/2008	24-005-3001	0.074	ppm	97	24	100	44201	Ozone	Maryland	Baltimore
7/3/2008	24-009-0011	0.073	ppm	93	24	100	44201	Ozone	Maryland	Calvert
7/3/2008	24-013-0001	0.065	ppm	67	24	100	44201	Ozone	Maryland	Carroll
7/3/2008	24-017-0010	0.073	ppm	93	24	100	44201	Ozone	Maryland	Charles
7/3/2008	24-021-0037	0.066	ppm	71	24	100	44201	Ozone	Maryland	Frederick
7/3/2008	24-025-1001	0.089	ppm	135	24	100	44201	Ozone	Maryland	Harford
7/3/2008	24-025-9001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Harford
7/3/2008	24-031-3001	0.072	ppm	90	24	100	44201	Ozone	Maryland	Montgomery
7/3/2008	24-033-0030	0.07	ppm	84	24	100	44201	Ozone	Maryland	Prince George's
7/3/2008	24-033-8003	0.071	ppm	87	24	100	44201	Ozone	Maryland	Prince George's
7/3/2008	24-510-0054	0.062	ppm	58	24	100	44201	Ozone	Maryland	Baltimore (City)
7/3/2008	51-013-0020	0.068	ppm	77	24	100	44201	Ozone	Virginia	Arlington
7/3/2008	51-059-0030	0.066	ppm	71	24	100	44201	Ozone	Virginia	Fairfax
7/3/2008	51-061-0002	0.058	ppm	49	24	100	44201	Ozone	Virginia	Fauquier
7/3/2008	51-107-1005	0.066	ppm	71	24	100	44201	Ozone	Virginia	Loudoun
7/3/2008	51-153-0009	0.064	ppm	64	24	100	44201	Ozone	Virginia	Prince William
7/3/2008	51-179-0001	0.058	ppm	49	24	100	44201	Ozone	Virginia	Stafford
7/3/2008	51-510-0009	0.063	ppm	61	24	100	44201	Ozone	Virginia	Alexandria City
7/11/2008	11-001-0025	0.068	ppm	77	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/11/2008	11-001-0041	0.075	ppm	100	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/11/2008	11-001-0043	0.074	ppm	97	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/11/2008	24-003-0014	0.076	ppm	101	24	100	44201	Ozone	Maryland	Anne Arundel
7/11/2008	24-005-1007	0.071	ppm	87	24	100	44201	Ozone	Maryland	Baltimore
7/11/2008	24-005-3001	0.084	ppm	122	24	100	44201	Ozone	Maryland	Baltimore
7/11/2008	24-009-0011	0.063	ppm	61	24	100	44201	Ozone	Maryland	Calvert

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/11/2008	24-013-0001	0.065	ppm	67	24	100	44201	Ozone	Maryland	Carroll
7/11/2008	24-017-0010	0.064	ppm	64	24	100	44201	Ozone	Maryland	Charles
7/11/2008	24-021-0037	0.066	ppm	71	24	100	44201	Ozone	Maryland	Frederick
7/11/2008	24-025-1001	0.100	ppm	161	24	100	44201	Ozone	Maryland	Harford
7/11/2008	24-025-9001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Harford
7/11/2008	24-031-3001	0.065	ppm	67	24	100	44201	Ozone	Maryland	Montgomery
7/11/2008	24-033-0030	0.07	ppm	84	24	100	44201	Ozone	Maryland	Prince George's
7/11/2008	24-033-8003	0.067	ppm	74	24	100	44201	Ozone	Maryland	Prince George's
7/11/2008	24-510-0054	0.056	ppm	47	24	100	44201	Ozone	Maryland	Baltimore (City)
7/11/2008	51-013-0020	0.07	ppm	84	24	100	44201	Ozone	Virginia	Arlington
7/11/2008	51-059-0030	0.066	ppm	71	24	100	44201	Ozone	Virginia	Fairfax
7/11/2008	51-061-0002	0.054	ppm	46	24	100	44201	Ozone	Virginia	Fauquier
7/11/2008	51-107-1005	0.061	ppm	54	24	100	44201	Ozone	Virginia	Loudoun
7/11/2008	51-153-0009	0.057	ppm	48	24	100	44201	Ozone	Virginia	Prince William
7/11/2008	51-179-0001	0.055	ppm	47	24	100	44201	Ozone	Virginia	Stafford
7/11/2008	51-510-0009	0.061	ppm	54	24	100	44201	Ozone	Virginia	Alexandria City
7/12/2008	11-001-0025	0.059	ppm	50	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/12/2008	11-001-0041	0.064	ppm	64	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/12/2008	11-001-0043	0.062	ppm	58	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/12/2008	24-003-0014	0.071	ppm	87	24	100	44201	Ozone	Maryland	Anne Arundel
7/12/2008	24-005-1007	0.075	ppm	100	24	100	44201	Ozone	Maryland	Baltimore
7/12/2008	24-005-3001	0.07	ppm	84	24	100	44201	Ozone	Maryland	Baltimore
7/12/2008	24-009-0011	0.069	ppm	80	24	100	44201	Ozone	Maryland	Calvert
7/12/2008	24-013-0001	0.073	ppm	93	24	100	44201	Ozone	Maryland	Carroll
7/12/2008	24-017-0010	0.066	ppm	71	24	100	44201	Ozone	Maryland	Charles
7/12/2008	24-021-0037	0.076	ppm	101	24	100	44201	Ozone	Maryland	Frederick
7/12/2008	24-025-1001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Harford
7/12/2008	24-025-9001	0.071	ppm	87	24	100	44201	Ozone	Maryland	Harford
7/12/2008	24-031-3001	0.072	ppm	90	24	100	44201	Ozone	Maryland	Montgomery

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/12/2008	24-033-0030	0.069	ppm	80	24	100	44201	Ozone	Maryland	Prince George's
7/12/2008	24-033-8003	0.065	ppm	67	24	100	44201	Ozone	Maryland	Prince George's
7/12/2008	24-510-0054	0.057	ppm	48	24	100	44201	Ozone	Maryland	Baltimore (City)
7/12/2008	51-013-0020	0.065	ppm	67	24	100	44201	Ozone	Virginia	Arlington
7/12/2008	51-059-0030	0.062	ppm	58	24	100	44201	Ozone	Virginia	Fairfax
7/12/2008	51-061-0002	0.059	ppm	50	24	100	44201	Ozone	Virginia	Fauquier
7/12/2008	51-107-1005	0.071	ppm	87	24	100	44201	Ozone	Virginia	Loudoun
7/12/2008	51-153-0009	0.066	ppm	71	24	100	44201	Ozone	Virginia	Prince William
7/12/2008	51-179-0001	0.056	ppm	47	24	100	44201	Ozone	Virginia	Stafford
7/12/2008	51-510-0009	0.06	ppm	51	24	100	44201	Ozone	Virginia	Alexandria City
7/15/2008	11-001-0025	0.07	ppm	84	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/15/2008	11-001-0041	0.081	ppm	114	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/15/2008	11-001-0043	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/15/2008	24-003-0014	0.081	ppm	114	24	100	44201	Ozone	Maryland	Anne Arundel
7/15/2008	24-005-1007	0.062	ppm	58	24	100	44201	Ozone	Maryland	Baltimore
7/15/2008	24-005-3001	0.071	ppm	87	24	100	44201	Ozone	Maryland	Baltimore
7/15/2008	24-009-0011	0.071	ppm	87	24	100	44201	Ozone	Maryland	Calvert
7/15/2008	24-013-0001	0.065	ppm	67	24	100	44201	Ozone	Maryland	Carroll
7/15/2008	24-017-0010	0.072	ppm	90	24	100	44201	Ozone	Maryland	Charles
7/15/2008	24-021-0037	0.06	ppm	51	24	100	44201	Ozone	Maryland	Frederick
7/15/2008	24-025-1001	0.071	ppm	87	24	100	44201	Ozone	Maryland	Harford
7/15/2008	24-025-9001	0.061	ppm	54	24	100	44201	Ozone	Maryland	Harford
7/15/2008	24-031-3001	0.059	ppm	50	24	100	44201	Ozone	Maryland	Montgomery
7/15/2008	24-033-0030	0.064	ppm	64	24	100	44201	Ozone	Maryland	Prince George's
7/15/2008	24-033-8003	0.074	ppm	97	24	100	44201	Ozone	Maryland	Prince George's
7/15/2008	24-510-0054	0.046	ppm	39	24	100	44201	Ozone	Maryland	Baltimore (City)
7/15/2008	51-013-0020	0.081	ppm	114	24	100	44201	Ozone	Virginia	Arlington
7/15/2008	51-059-0005	0.065	ppm	67	24	100	44201	Ozone	Virginia	Fairfax
7/15/2008	51-059-0030	0.074	ppm	97	24	100	44201	Ozone	Virginia	Fairfax

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/15/2008	51-061-0002	0.051	ppm	43	24	100	44201	Ozone	Virginia	Fauquier
7/15/2008	51-107-1005	0.068	ppm	77	24	100	44201	Ozone	Virginia	Loudoun
7/15/2008	51-153-0009	0.063	ppm	61	24	100	44201	Ozone	Virginia	Prince William
7/15/2008	51-179-0001	0.07	ppm	84	24	100	44201	Ozone	Virginia	Stafford
7/15/2008	51-510-0009	0.07	ppm	84	24	100	44201	Ozone	Virginia	Alexandria City
7/16/2008	11-001-0025	0.075	ppm	100	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/16/2008	11-001-0041	0.087	ppm	129	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/16/2008	11-001-0043	0.084	ppm	122	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/16/2008	24-003-0014	0.077	ppm	104	24	100	44201	Ozone	Maryland	Anne Arundel
7/16/2008	24-005-1007	0.08	ppm	111	24	100	44201	Ozone	Maryland	Baltimore
7/16/2008	24-005-3001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Baltimore
7/16/2008	24-009-0011	0.075	ppm	100	24	100	44201	Ozone	Maryland	Calvert
7/16/2008	24-013-0001	0.071	ppm	87	24	100	44201	Ozone	Maryland	Carroll
7/16/2008	24-017-0010	0.078	ppm	106	24	100	44201	Ozone	Maryland	Charles
7/16/2008	24-021-0037	0.075	ppm	100	24	100	44201	Ozone	Maryland	Frederick
7/16/2008	24-025-1001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Harford
7/16/2008	24-025-9001	0.074	ppm	97	24	100	44201	Ozone	Maryland	Harford
7/16/2008	24-031-3001	0.072	ppm	90	24	100	44201	Ozone	Maryland	Montgomery
7/16/2008	24-033-0030	0.081	ppm	114	24	100	44201	Ozone	Maryland	Prince George's
7/16/2008	24-033-8003	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
7/16/2008	24-510-0054	0.052	ppm	44	24	100	44201	Ozone	Maryland	Baltimore (City)
7/16/2008	51-013-0020	0.084	ppm	122	24	100	44201	Ozone	Virginia	Arlington
~~7/16/2008~~	~~51-059-0005~~	~~0.077~~	~~ppm~~	~~104~~	~~24~~	~~100~~	~~44201~~	~~Ozone~~	~~Virginia~~	~~Fairfax~~
7/16/2008	51-059-0030	0.088	ppm	132	24	100	44201	Ozone	Virginia	Fairfax
7/16/2008	51-061-0002	0.065	ppm	67	24	100	44201	Ozone	Virginia	Fauquier
7/16/2008	51-153-0009	0.071	ppm	87	24	100	44201	Ozone	Virginia	Prince William
7/16/2008	51-179-0001	0.085	ppm	124	24	100	44201	Ozone	Virginia	Stafford
7/16/2008	51-510-0009	0.075	ppm	100	24	100	44201	Ozone	Virginia	Alexandria City

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/17/2008	11-001-0025	0.087	ppm	129	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/17/2008	11-001-0041	0.092	ppm	142	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/17/2008	11-001-0043	0.100	ppm	161	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/17/2008	24-003-0014	0.087	ppm	129	24	100	44201	Ozone	Maryland	Anne Arundel
7/17/2008	24-005-1007	0.072	ppm	90	24	100	44201	Ozone	Maryland	Baltimore
7/17/2008	24-005-3001	0.08	ppm	111	24	100	44201	Ozone	Maryland	Baltimore
7/17/2008	24-009-0011	0.08	ppm	111	24	100	44201	Ozone	Maryland	Calvert
7/17/2008	24-013-0001	0.069	ppm	80	24	100	44201	Ozone	Maryland	Carroll
7/17/2008	24-017-0010	0.089	ppm	135	24	100	44201	Ozone	Maryland	Charles
7/17/2008	24-021-0037	0.074	ppm	97	24	100	44201	Ozone	Maryland	Frederick
7/17/2008	24-025-1001	0.088	ppm	132	24	100	44201	Ozone	Maryland	Harford
7/17/2008	24-025-9001	0.067	ppm	74	24	100	44201	Ozone	Maryland	Harford
7/17/2008	24-031-3001	0.07	ppm	84	24	100	44201	Ozone	Maryland	Montgomery
7/17/2008	24-031-3001	0.07	ppm	84	24	100	44201	Ozone	Maryland	Montgomery
7/17/2008	24-033-0030	0.081	ppm	114	24	100	44201	Ozone	Maryland	Prince George's
7/17/2008	24-033-8003	0.08	ppm	111	24	100	44201	Ozone	Maryland	Prince George's
7/17/2008	24-510-0054	0.059	ppm	50	24	100	44201	Ozone	Maryland	Baltimore (City)
7/17/2008	51-013-0020	0.104	ppm	172	24	100	44201	Ozone	Virginia	Arlington
~~7/17/2008~~	~~51-059-0005~~	~~0.079~~	~~ppm~~	~~109~~	~~24~~	~~100~~	~~44201~~	~~Ozone~~	~~Virginia~~	~~Fairfax~~
7/17/2008	51-059-0030	0.095	ppm	150	24	100	44201	Ozone	Virginia	Fairfax
7/17/2008	51-061-0002	0.063	ppm	61	24	100	44201	Ozone	Virginia	Fauquier
7/17/2008	51-061-0002	0.063	ppm	61	24	100	44201	Ozone	Virginia	Fauquier
7/17/2008	51-153-0009	0.075	ppm	100	24	100	44201	Ozone	Virginia	Prince William
7/17/2008	51-153-0009	0.075	ppm	100	24	100	44201	Ozone	Virginia	Prince William
7/17/2008	51-179-0001	0.064	ppm	64	24	100	44201	Ozone	Virginia	Stafford
7/17/2008	51-179-0001	0.064	ppm	64	24	100	44201	Ozone	Virginia	Stafford
7/17/2008	51-510-0009	0.09	ppm	137	24	100	44201	Ozone	Virginia	Alexandria City
7/18/2008	11-001-0025	0.083	ppm	119	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/18/2008	11-001-0041	0.082	ppm	116	24	100	44201	Ozone	District Of Columbia	District of Columbia

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/18/2008	11-001-0043	0.086	ppm	127	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/18/2008	24-003-0014	0.077	ppm	104	24	100	44201	Ozone	Maryland	Anne Arundel
7/18/2008	24-005-1007	0.088	ppm	132	24	100	44201	Ozone	Maryland	Baltimore
7/18/2008	24-005-3001	0.099	ppm	159	24	100	44201	Ozone	Maryland	Baltimore
7/18/2008	24-009-0011	0.073	ppm	93	24	100	44201	Ozone	Maryland	Calvert
7/18/2008	24-013-0001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Carroll
7/18/2008	24-017-0010	0.076	ppm	101	24	100	44201	Ozone	Maryland	Charles
7/18/2008	24-021-0037	0.073	ppm	93	24	100	44201	Ozone	Maryland	Frederick
7/18/2008	24-025-1001	0.102	ppm	166	24	100	44201	Ozone	Maryland	Harford
7/18/2008	24-025-9001	0.099	ppm	159	24	100	44201	Ozone	Maryland	Harford
7/18/2008	24-031-3001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Montgomery
7/18/2008	24-033-0030	0.097	ppm	154	24	100	44201	Ozone	Maryland	Prince George's
7/18/2008	24-033-8003	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
7/18/2008	24-510-0054	0.082	ppm	116	24	100	44201	Ozone	Maryland	Baltimore (City)
7/18/2008	51-013-0020	0.089	ppm	135	24	100	44201	Ozone	Virginia	Arlington
7/18/2008	51-059-0030	0.078	ppm	106	24	100	44201	Ozone	Virginia	Fairfax
7/18/2008	51-061-0002	0.058	ppm	49	24	100	44201	Ozone	Virginia	Fauquier
7/18/2008	51-153-0009	0.074	ppm	97	24	100	44201	Ozone	Virginia	Prince William
7/18/2008	51-179-0001	0.066	ppm	71	24	100	44201	Ozone	Virginia	Stafford
7/18/2008	51-510-0009	0.077	ppm	104	24	100	44201	Ozone	Virginia	Alexandria City
9/3/2008	11-001-0025	0.075	ppm	100	24	100	44201	Ozone	District Of Columbia	District of Columbia
9/3/2008	11-001-0041	0.075	ppm	100	24	100	44201	Ozone	District Of Columbia	District of Columbia
9/3/2008	11-001-0043	0.080	ppm	111	24	100	44201	Ozone	District Of Columbia	District of Columbia
9/3/2008	24-003-0014	0.086	ppm	127	24	100	44201	Ozone	Maryland	Anne Arundel
9/3/2008	24-005-1007	0.053	ppm	45	24	100	44201	Ozone	Maryland	Baltimore
9/3/2008	24-005-3001	0.073	ppm	93	24	100	44201	Ozone	Maryland	Baltimore
9/3/2008	24-009-0011	0.087	ppm	129	24	100	44201	Ozone	Maryland	Calvert
9/3/2008	24-013-0001	0.068	ppm	77	24	100	44201	Ozone	Maryland	Carroll

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
9/3/2008	24-017-0010	0.086	ppm	127	24	100	44201	Ozone	Maryland	Charles
9/3/2008	24-021-0037	0.074	ppm	97	24	100	44201	Ozone	Maryland	Frederick
9/3/2008	24-025-1001	0.062	ppm	58	24	100	44201	Ozone	Maryland	Harford
9/3/2008	24-025-9001	0.055	ppm	47	24	100	44201	Ozone	Maryland	Harford
9/3/2008	24-031-3001	0.067	ppm	74	24	100	44201	Ozone	Maryland	Montgomery
9/3/2008	24-033-0030	0.063	ppm	61	24	100	44201	Ozone	Maryland	Prince George's
9/3/2008	24-033-8003	0.079	ppm	109	24	100	44201	Ozone	Maryland	Prince George's
9/3/2008	24-510-0054	0.048	ppm	41	24	100	44201	Ozone	Maryland	Baltimore (City)
9/3/2008	51-013-0020	0.073	ppm	93	24	100	44201	Ozone	Virginia	Arlington
9/3/2008	51-059-0005	0.066	ppm	71	24	100	44201	Ozone	Virginia	Fairfax
9/3/2008	51-059-0030	0.085	ppm	124	24	100	44201	Ozone	Virginia	Fairfax
9/3/2008	51-059-1005	0.075	ppm	100	24	100	44201	Ozone	Virginia	Fairfax
9/3/2008	51-059-5001	0.071	ppm	87	24	100	44201	Ozone	Virginia	Fairfax
9/3/2008	51-061-0002	0.048	ppm	41	18	75	44201	Ozone	Virginia	Fauquier
9/3/2008	51-153-0009	0.065	ppm	67	24	100	44201	Ozone	Virginia	Prince William
9/3/2008	51-179-0001	0.054	ppm	46	24	100	44201	Ozone	Virginia	Stafford
9/3/2008	51-510-0009	0.062	ppm	58	24	100	44201	Ozone	Virginia	Alexandria City
9/4/2008	11-001-0025	0.068	ppm	77	24	100	44201	Ozone	District Of Columbia	District of Columbia
9/4/2008	11-001-0041	0.07	ppm	84	24	100	44201	Ozone	District Of Columbia	District of Columbia
9/4/2008	11-001-0043	0.07	ppm	84	24	100	44201	Ozone	District Of Columbia	District of Columbia
9/4/2008	24-003-0014	0.079	ppm	109	24	100	44201	Ozone	Maryland	Anne Arundel
9/4/2008	24-005-1007	0.072	ppm	90	24	100	44201	Ozone	Maryland	Baltimore
9/4/2008	24-005-3001	0.071	ppm	87	24	100	44201	Ozone	Maryland	Baltimore
9/4/2008	24-009-0011	0.077	ppm	104	24	100	44201	Ozone	Maryland	Calvert
9/4/2008	24-013-0001	0.075	ppm	100	24	100	44201	Ozone	Maryland	Carroll
9/4/2008	24-017-0010	0.077	ppm	104	24	100	44201	Ozone	Maryland	Charles
9/4/2008	24-021-0037	0.082	ppm	116	24	100	44201	Ozone	Maryland	Frederick
9/4/2008	24-025-1001	0.08	ppm	111	24	100	44201	Ozone	Maryland	Harford
9/4/2008	24-025-9001	0.067	ppm	74	24	100	44201	Ozone	Maryland	Harford
9/4/2008	24-031-3001	0.071	ppm	87	19	79	44201	Ozone	Maryland	Montgomery

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
9/4/2008	24-033-0030	0.071	ppm	87	24	100	44201	Ozone	Maryland	Prince George's
9/4/2008	24-033-8003	0.07	ppm	84	24	100	44201	Ozone	Maryland	Prince George's
9/4/2008	24-510-0054	0.053	ppm	45	24	100	44201	Ozone	Maryland	Baltimore (City)
9/4/2008	51-013-0020	0.07	ppm	84	24	100	44201	Ozone	Virginia	Arlington
9/4/2008	51-059-0030	0.077	ppm	104	24	100	44201	Ozone	Virginia	Fairfax
9/4/2008	51-061-0002	0.055	ppm	47	24	100	44201	Ozone	Virginia	Fauquier
9/4/2008	51-107-1005	0.073	ppm	93	24	100	44201	Ozone	Virginia	Loudoun
9/4/2008	51-153-0009	0.061	ppm	54	24	100	44201	Ozone	Virginia	Prince William
9/4/2008	51-179-0001	0.069	ppm	80	24	100	44201	Ozone	Virginia	Stafford
9/4/2008	51-510-0009	0.065	ppm	67	24	100	44201	Ozone	Virginia	Alexandria City
6/25/2009	11-001-0025	0.067	ppm	74	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/25/2009	11-001-0041	0.064	ppm	64	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/25/2009	11-001-0043	0.071	ppm	87	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/25/2009	24-003-0014	0.071	ppm	87	24	100	44201	Ozone	Maryland	Anne Arundel
6/25/2009	24-005-1007	0.056	ppm	47	24	100	44201	Ozone	Maryland	Baltimore
6/25/2009	24-005-3001	0.086	ppm	127	24	100	44201	Ozone	Maryland	Baltimore
6/25/2009	24-009-0011	0.076	ppm	101	24	100	44201	Ozone	Maryland	Calvert
6/25/2009	24-013-0001	0.051	ppm	43	24	100	44201	Ozone	Maryland	Carroll
6/25/2009	24-017-0010	0.072	ppm	90	24	100	44201	Ozone	Maryland	Charles
6/25/2009	24-021-0037	0.058	ppm	49	24	100	44201	Ozone	Maryland	Frederick
6/25/2009	24-025-1001	0.109	ppm	185	24	100	44201	Ozone	Maryland	Harford
6/25/2009	24-025-9001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Harford
6/25/2009	24-031-3001	0.054	ppm	46	24	100	44201	Ozone	Maryland	Montgomery
6/25/2009	24-033-0030	0.051	ppm	43	24	100	44201	Ozone	Maryland	Prince George's
6/25/2009	24-033-8003	0.071	ppm	87	24	100	44201	Ozone	Maryland	Prince George's
6/25/2009	24-510-0054	0.07	ppm	84	24	100	44201	Ozone	Maryland	Baltimore (City)
6/25/2009	51-013-0020	0.067	ppm	74	24	100	44201	Ozone	Virginia	Arlington
6/25/2009	51-059-0030	0.062	ppm	58	24	100	44201	Ozone	Virginia	Fairfax
6/25/2009	51-061-0002	0.05	ppm	42	24	100	44201	Ozone	Virginia	Fauquier

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
6/25/2009	51-107-1005	0.059	ppm	50	24	100	44201	Ozone	Virginia	Loudoun
6/25/2009	51-153-0009	0.057	ppm	48	24	100	44201	Ozone	Virginia	Prince William
6/25/2009	51-179-0001	0.054	ppm	46	24	100	44201	Ozone	Virginia	Stafford
6/25/2009	51-510-0009	0.056	ppm	47	24	100	44201	Ozone	Virginia	Alexandria City
6/26/2009	11-001-0025	0.074	ppm	97	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/26/2009	11-001-0041	0.08	ppm	111	18	75	44201	Ozone	District Of Columbia	District of Columbia
6/26/2009	11-001-0043	0.076	ppm	101	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/26/2009	24-003-0014	0.065	ppm	67	24	100	44201	Ozone	Maryland	Anne Arundel
6/26/2009	24-005-1007	0.059	ppm	50	24	100	44201	Ozone	Maryland	Baltimore
6/26/2009	24-005-3001	0.074	ppm	97	24	100	44201	Ozone	Maryland	Baltimore
6/26/2009	24-009-0011	0.06	ppm	51	24	100	44201	Ozone	Maryland	Calvert
6/26/2009	24-013-0001	0.054	ppm	46	24	100	44201	Ozone	Maryland	Carroll
6/26/2009	24-017-0010	0.055	ppm	47	24	100	44201	Ozone	Maryland	Charles
6/26/2009	24-021-0037	0.061	ppm	54	24	100	44201	Ozone	Maryland	Frederick
6/26/2009	24-025-1001	0.091	ppm	140	24	100	44201	Ozone	Maryland	Harford
6/26/2009	24-025-9001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Harford
6/26/2009	24-031-3001	0.06	ppm	51	24	100	44201	Ozone	Maryland	Montgomery
6/26/2009	24-033-0030	0.073	ppm	93	24	100	44201	Ozone	Maryland	Prince George's
6/26/2009	24-033-8003	0.062	ppm	58	24	100	44201	Ozone	Maryland	Prince George's
6/26/2009	24-510-0054	0.065	ppm	67	24	100	44201	Ozone	Maryland	Baltimore (City)
6/26/2009	51-013-0020	0.077	ppm	104	24	100	44201	Ozone	Virginia	Arlington
6/26/2009	51-059-0030	0.071	ppm	87	24	100	44201	Ozone	Virginia	Fairfax
6/26/2009	51-061-0002	0.04	ppm	34	24	100	44201	Ozone	Virginia	Fauquier
6/26/2009	51-107-1005	0.057	ppm	48	24	100	44201	Ozone	Virginia	Loudoun
6/26/2009	51-153-0009	0.051	ppm	43	24	100	44201	Ozone	Virginia	Prince William
6/26/2009	51-179-0001	0.053	ppm	45	24	100	44201	Ozone	Virginia	Stafford
6/26/2009	51-510-0009	0.069	ppm	80	24	100	44201	Ozone	Virginia	Alexandria City
8/16/2009	24-003-0014	0.053	ppm	45	24	100	44201	Ozone	Maryland	Anne Arundel

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
8/16/2009	24-005-1007	0.062	ppm	58	24	100	44201	Ozone	Maryland	Baltimore
8/16/2009	24-005-3001	0.067	ppm	74	24	100	44201	Ozone	Maryland	Baltimore
8/16/2009	24-013-0001	0.057	ppm	48	24	100	44201	Ozone	Maryland	Carroll
8/16/2009	24-025-1001	0.085	ppm	124	24	100	44201	Ozone	Maryland	Harford
8/16/2009	24-025-9001	0.068	ppm	77	24	100	44201	Ozone	Maryland	Harford
8/16/2009	24-510-0054	0.065	ppm	67	24	100	44201	Ozone	Maryland	Baltimore (City)
8/17/2009	24-003-0014	0.053	ppm	45	24	100	44201	Ozone	Maryland	Anne Arundel
8/17/2009	24-005-1007	0.068	ppm	77	24	100	44201	Ozone	Maryland	Baltimore
8/17/2009	24-005-3001	0.062	ppm	58	24	100	44201	Ozone	Maryland	Baltimore
8/17/2009	24-013-0001	0.062	ppm	58	24	100	44201	Ozone	Maryland	Carroll
8/17/2009	24-025-1001	0.067	ppm	74	24	100	44201	Ozone	Maryland	Harford
8/17/2009	24-025-9001	0.066	ppm	71	24	100	44201	Ozone	Maryland	Harford
8/17/2009	24-510-0054	0.06	ppm	51	24	100	44201	Ozone	Maryland	Baltimore (City)
8/18/2009	24-003-0014	0.062	ppm	58	24	100	44201	Ozone	Maryland	Anne Arundel
8/18/2009	24-005-1007	0.058	ppm	49	24	100	44201	Ozone	Maryland	Baltimore
8/18/2009	24-005-3001	0.067	ppm	74	24	100	44201	Ozone	Maryland	Baltimore
8/18/2009	24-013-0001	0.048	ppm	41	24	100	44201	Ozone	Maryland	Carroll
8/18/2009	24-025-1001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Harford
8/18/2009	24-025-9001	0.064	ppm	64	24	100	44201	Ozone	Maryland	Harford
8/18/2009	24-510-0054	0.063	ppm	61	24	100	44201	Ozone	Maryland	Baltimore (City)
8/27/2009	11-001-0025	0.073	ppm	93	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/27/2009	11-001-0041	0.067	ppm	74	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/27/2009	11-001-0043	0.074	ppm	97	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/27/2009	24-003-0014	0.066	ppm	71	24	100	44201	Ozone	Maryland	Anne Arundel
8/27/2009	24-005-1007	0.066	ppm	71	24	100	44201	Ozone	Maryland	Baltimore
8/27/2009	24-005-3001	0.065	ppm	67	24	100	44201	Ozone	Maryland	Baltimore
8/27/2009	24-009-0011	0.061	ppm	54	24	100	44201	Ozone	Maryland	Calvert

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
8/27/2009	24-013-0001	0.056	ppm	47	24	100	44201	Ozone	Maryland	Carroll
8/27/2009	24-017-0010	0.064	ppm	64	24	100	44201	Ozone	Maryland	Charles
8/27/2009	24-021-0037	0.067	ppm	74	24	100	44201	Ozone	Maryland	Frederick
8/27/2009	24-025-1001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Harford
8/27/2009	24-025-9001	0.061	ppm	54	24	100	44201	Ozone	Maryland	Harford
8/27/2009	24-031-3001	0.061	ppm	54	24	100	44201	Ozone	Maryland	Montgomery
8/27/2009	24-033-0030	0.07	ppm	84	24	100	44201	Ozone	Maryland	Prince George's
8/27/2009	24-033-8003	0.065	ppm	67	24	100	44201	Ozone	Maryland	Prince George's
8/28/2009	24-510-0054	0.031	ppm	26	24	100	44201	Ozone	Maryland	Baltimore (City)
8/27/2009	51-013-0020	0.067	ppm	74	24	100	44201	Ozone	Virginia	Arlington
8/27/2009	51-059-0005	0.064	ppm	64	24	100	44201	Ozone	Virginia	Fairfax
8/27/2009	51-059-0018	0.075	ppm	100	24	100	44201	Ozone	Virginia	Fairfax
8/27/2009	51-059-0030	0.08	ppm	111	24	100	44201	Ozone	Virginia	Fairfax
8/27/2009	51-059-5001	0.068	ppm	77	24	100	44201	Ozone	Virginia	Fairfax
8/27/2009	51-061-0002	0.049	ppm	42	24	100	44201	Ozone	Virginia	Fauquier
8/27/2009	51-107-1005	0.065	ppm	67	24	100	44201	Ozone	Virginia	Loudoun
8/27/2009	51-153-0009	0.058	ppm	49	24	100	44201	Ozone	Virginia	Prince William
8/27/2009	51-179-0001	0.069	ppm	80	24	100	44201	Ozone	Virginia	Stafford
8/27/2009	51-510-0009	0.065	ppm	67	24	100	44201	Ozone	Virginia	Alexandria City
5/27/2010	11-001-0025	0.074	ppm	97	24	100	44201	Ozone	District Of Columbia	District of Columbia
5/27/2010	11-001-0041	0.069	ppm	80	24	100	44201	Ozone	District Of Columbia	District of Columbia
5/27/2010	11-001-0043	0.080	ppm	111	24	100	44201	Ozone	District Of Columbia	District of Columbia
5/27/2010	24-003-0014	0.078	ppm	106	24	100	44201	Ozone	Maryland	Anne Arundel
5/27/2010	24-005-1007	0.075	ppm	100	24	100	44201	Ozone	Maryland	Baltimore
5/27/2010	24-005-3001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Baltimore
5/27/2010	24-009-0011	0.071	ppm	87	24	100	44201	Ozone	Maryland	Calvert
5/27/2010	24-013-0001	0.067	ppm	74	24	100	44201	Ozone	Maryland	Carroll
5/27/2010	24-017-0010	0.064	ppm	64	24	100	44201	Ozone	Maryland	Charles
5/27/2010	24-021-0037	0.065	ppm	67	24	100	44201	Ozone	Maryland	Frederick

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
5/27/2010	24-025-1001	0.089	ppm	135	24	100	44201	Ozone	Maryland	Harford
5/27/2010	24-025-9001	0.075	ppm	100	24	100	44201	Ozone	Maryland	Harford
5/27/2010	24-031-3001	0.065	ppm	67	24	100	44201	Ozone	Maryland	Montgomery
5/27/2010	24-033-0030	0.087	ppm	129	24	100	44201	Ozone	Maryland	Prince George's
5/27/2010	24-033-8003	0.074	ppm	97	24	100	44201	Ozone	Maryland	Prince George's
5/27/2010	24-510-0054	0.065	ppm	67	24	100	44201	Ozone	Maryland	Baltimore (City)
5/27/2010	51-013-0020	0.083	ppm	119	24	100	44201	Ozone	Virginia	Arlington
5/27/2010	51-059-0030	0.088	ppm	132	24	100	44201	Ozone	Virginia	Fairfax
5/27/2010	51-061-0002	0.054	ppm	46	24	100	44201	Ozone	Virginia	Fauquier
5/27/2010	51-107-1005	0.065	ppm	67	24	100	44201	Ozone	Virginia	Loudoun
5/27/2010	51-153-0009	0.061	ppm	54	24	100	44201	Ozone	Virginia	Prince William
5/27/2010	51-179-0001	0.080	ppm	111	24	100	44201	Ozone	Virginia	Stafford
5/27/2010	51-510-0009	0.078	ppm	106	24	100	44201	Ozone	Virginia	Alexandria City
6/2/2010	11-001-0025	0.075	ppm	100	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/2/2010	11-001-0041	0.064	ppm	64	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/2/2010	11-001-0043	0.078	ppm	106	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/2/2010	24-003-0014	0.066	ppm	71	24	100	44201	Ozone	Maryland	Anne Arundel
6/2/2010	24-005-1007	0.069	ppm	80	24	100	44201	Ozone	Maryland	Baltimore
6/2/2010	24-005-3001	0.071	ppm	87	24	100	44201	Ozone	Maryland	Baltimore
6/2/2010	24-009-0011	0.062	ppm	58	24	100	44201	Ozone	Maryland	Calvert
6/2/2010	24-013-0001	0.063	ppm	61	24	100	44201	Ozone	Maryland	Carroll
6/2/2010	24-017-0010	0.063	ppm	61	24	100	44201	Ozone	Maryland	Charles
6/2/2010	24-021-0037	0.062	ppm	58	24	100	44201	Ozone	Maryland	Frederick
6/2/2010	24-025-1001	0.087	ppm	129	24	100	44201	Ozone	Maryland	Harford
6/2/2010	24-025-9001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Harford
6/2/2010	24-031-3001	0.073	ppm	93	24	100	44201	Ozone	Maryland	Montgomery
6/2/2010	24-033-0030	0.080	ppm	111	24	100	44201	Ozone	Maryland	Prince George's
6/2/2010	24-033-8003	0.068	ppm	77	24	100	44201	Ozone	Maryland	Prince George's
6/2/2010	51-013-0020	0.075	ppm	100	24	100	44201	Ozone	Virginia	Arlington

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
6/2/2010	51-059-0030	0.071	ppm	87	24	100	44201	Ozone	Virginia	Fairfax
6/2/2010	51-061-0002	0.053	ppm	45	24	100	44201	Ozone	Virginia	Fauquier
6/2/2010	51-107-1005	0.064	ppm	64	24	100	44201	Ozone	Virginia	Loudoun
6/2/2010	51-153-0009	0.063	ppm	61	24	100	44201	Ozone	Virginia	Prince William
6/2/2010	51-179-0001	0.063	ppm	61	24	100	44201	Ozone	Virginia	Stafford
6/2/2010	51-510-0009	0.069	ppm	80	18	75	44201	Ozone	Virginia	Alexandria City
6/21/2010	11-001-0025	0.064	ppm	64	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/21/2010	11-001-0041	0.069	ppm	80	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/21/2010	11-001-0043	0.069	ppm	80	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/21/2010	24-003-0014	0.07	ppm	84	24	100	44201	Ozone	Maryland	Anne Arundel
6/21/2010	24-005-1007	0.055	ppm	47	24	100	44201	Ozone	Maryland	Baltimore
6/21/2010	24-009-0011	0.082	ppm	116	24	100	44201	Ozone	Maryland	Calvert
6/21/2010	24-013-0001	0.058	ppm	49	24	100	44201	Ozone	Maryland	Carroll
6/21/2010	24-017-0010	0.076	ppm	101	24	100	44201	Ozone	Maryland	Charles
6/21/2010	24-021-0037	0.064	ppm	64	24	100	44201	Ozone	Maryland	Frederick
6/21/2010	24-025-1001	0.07	ppm	84	24	100	44201	Ozone	Maryland	Harford
6/21/2010	24-025-9001	0.065	ppm	67	24	100	44201	Ozone	Maryland	Harford
6/21/2010	24-031-3001	0.065	ppm	67	24	100	44201	Ozone	Maryland	Montgomery
6/21/2010	24-033-0030	0.064	ppm	64	24	100	44201	Ozone	Maryland	Prince George's
6/21/2010	24-033-8003	0.077	ppm	104	24	100	44201	Ozone	Maryland	Prince George's
6/21/2010	24-510-0054	0.045	ppm	38	24	100	44201	Ozone	Maryland	Baltimore (City)
6/21/2010	51-013-0020	0.066	ppm	71	24	100	44201	Ozone	Virginia	Arlington
6/21/2010	51-059-0018	0.068	ppm	77	24	100	44201	Ozone	Virginia	Fairfax
6/21/2010	51-059-0030	0.070	ppm	84	24	100	44201	Ozone	Virginia	Fairfax
6/21/2010	51-061-0002	0.051	ppm	43	24	100	44201	Ozone	Virginia	Fauquier
6/21/2010	51-107-1005	0.060	ppm	51	24	100	44201	Ozone	Virginia	Loudoun
6/21/2010	51-153-0009	0.059	ppm	50	24	100	44201	Ozone	Virginia	Prince William
6/21/2010	51-179-0001	0.058	ppm	49	24	100	44201	Ozone	Virginia	Stafford

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
6/21/2010	51-510-0009	0.062	ppm	58	24	100	44201	Ozone	Virginia	Alexandria City
6/22/2010	11-001-0025	0.072	ppm	90	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/22/2010	11-001-0041	0.077	ppm	104	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/22/2010	11-001-0043	0.077	ppm	104	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/22/2010	24-003-0014	0.068	ppm	77	24	100	44201	Ozone	Maryland	Anne Arundel
6/22/2010	24-005-1007	0.085	ppm	124	24	100	44201	Ozone	Maryland	Baltimore
6/22/2010	24-005-3001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Baltimore
6/22/2010	24-009-0011	0.067	ppm	74	24	100	44201	Ozone	Maryland	Calvert
6/22/2010	24-013-0001	0.073	ppm	93	24	100	44201	Ozone	Maryland	Carroll
6/22/2010	24-017-0010	0.067	ppm	74	24	100	44201	Ozone	Maryland	Charles
6/22/2010	24-021-0037	0.065	ppm	67	24	100	44201	Ozone	Maryland	Frederick
6/22/2010	24-025-1001	0.087	ppm	129	24	100	44201	Ozone	Maryland	Harford
6/22/2010	24-025-9001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Harford
6/22/2010	24-031-3001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Montgomery
6/22/2010	24-033-0030	0.091	ppm	140	24	100	44201	Ozone	Maryland	Prince George's
6/22/2010	24-033-8003	0.071	ppm	87	24	100	44201	Ozone	Maryland	Prince George's
6/22/2010	24-510-0054	0.062	ppm	58	24	100	44201	Ozone	Maryland	Baltimore (City)
6/22/2010	51-013-0020	0.079	ppm	109	24	100	44201	Ozone	Virginia	Arlington
6/22/2010	51-059-0030	0.071	ppm	87	24	100	44201	Ozone	Virginia	Fairfax
6/22/2010	51-061-0002	0.059	ppm	50	24	100	44201	Ozone	Virginia	Fauquier
6/22/2010	51-107-1005	0.066	ppm	71	24	100	44201	Ozone	Virginia	Loudoun
6/22/2010	51-153-0009	0.064	ppm	64	24	100	44201	Ozone	Virginia	Prince William
6/22/2010	51-179-0001	0.061	ppm	54	18	75	44201	Ozone	Virginia	Stafford
6/22/2010	51-510-0009	0.070	ppm	84	24	100	44201	Ozone	Virginia	Alexandria City
6/23/2010	11-001-0025	0.063	ppm	61	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/23/2010	11-001-0041	0.068	ppm	77	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/23/2010	11-001-0043	0.067	ppm	74	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/23/2010	24-003-0014	0.072	ppm	90	24	100	44201	Ozone	Maryland	Anne Arundel

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
6/23/2010	24-005-1007	0.064	ppm	64	24	100	44201	Ozone	Maryland	Baltimore
6/23/2010	24-005-3001	0.069	ppm	80	24	100	44201	Ozone	Maryland	Baltimore
6/23/2010	24-009-0011	0.076	ppm	101	24	100	44201	Ozone	Maryland	Calvert
6/23/2010	24-017-0010	0.073	ppm	93	24	100	44201	Ozone	Maryland	Charles
6/23/2010	24-021-0037	0.064	ppm	64	24	100	44201	Ozone	Maryland	Frederick
6/23/2010	24-025-1001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Harford
6/23/2010	24-025-9001	0.066	ppm	71	24	100	44201	Ozone	Maryland	Harford
6/23/2010	24-031-3001	0.069	ppm	80	24	100	44201	Ozone	Maryland	Montgomery
6/23/2010	24-033-0030	0.068	ppm	77	24	100	44201	Ozone	Maryland	Prince George's
6/23/2010	24-033-8003	0.073	ppm	93	24	100	44201	Ozone	Maryland	Prince George's
6/23/2010	24-510-0054	0.051	ppm	43	24	100	44201	Ozone	Maryland	Baltimore (City)
6/23/2010	51-013-0020	0.067	ppm	74	24	100	44201	Ozone	Virginia	Arlington
6/23/2010	51-059-0030	0.068	ppm	77	24	100	44201	Ozone	Virginia	Fairfax
6/23/2010	51-061-0002	0.047	ppm	40	24	100	44201	Ozone	Virginia	Fauquier
6/23/2010	51-107-1005	0.063	ppm	61	24	100	44201	Ozone	Virginia	Loudoun
6/23/2010	51-153-0009	0.058	ppm	49	24	100	44201	Ozone	Virginia	Prince William
6/23/2010	51-179-0001	0.057	ppm	48	24	100	44201	Ozone	Virginia	Stafford
6/23/2010	51-510-0009	0.064	ppm	64	18	75	44201	Ozone	Virginia	Alexandria City
6/24/2010	11-001-0025	0.051	ppm	43	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/24/2010	11-001-0041	0.056	ppm	47	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/24/2010	11-001-0043	0.053	ppm	45	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/24/2010	24-003-0014	0.061	ppm	54	24	100	44201	Ozone	Maryland	Anne Arundel
6/24/2010	24-005-1007	0.051	ppm	43	24	100	44201	Ozone	Maryland	Baltimore
6/24/2010	24-005-3001	0.053	ppm	45	24	100	44201	Ozone	Maryland	Baltimore
6/24/2010	24-009-0011	0.054	ppm	46	24	100	44201	Ozone	Maryland	Calvert
6/24/2010	24-013-0001	0.055	ppm	47	24	100	44201	Ozone	Maryland	Carroll
6/24/2010	24-017-0010	0.053	ppm	45	24	100	44201	Ozone	Maryland	Charles
6/24/2010	24-021-0037	0.056	ppm	47	24	100	44201	Ozone	Maryland	Frederick
6/24/2010	24-025-1001	0.054	ppm	46	24	100	44201	Ozone	Maryland	Harford

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
6/24/2010	24-025-9001	0.053	ppm	45	24	100	44201	Ozone	Maryland	Harford
6/24/2010	24-031-3001	0.054	ppm	46	24	100	44201	Ozone	Maryland	Montgomery
6/24/2010	24-033-0030	0.053	ppm	45	24	100	44201	Ozone	Maryland	Prince George's
6/24/2010	24-033-8003	0.061	ppm	54	24	100	44201	Ozone	Maryland	Prince George's
6/24/2010	51-013-0020	0.052	ppm	44	24	100	44201	Ozone	Virginia	Arlington
6/24/2010	51-059-0018	0.054	ppm	46	24	100	44201	Ozone	Virginia	Fairfax
6/24/2010	51-059-0030	0.053	ppm	45	24	100	44201	Ozone	Virginia	Fairfax
6/24/2010	51-061-0002	0.037	ppm	31	24	100	44201	Ozone	Virginia	Fauquier
6/24/2010	51-107-1005	0.052	ppm	44	24	100	44201	Ozone	Virginia	Loudoun
6/24/2010	51-153-0009	0.048	ppm	41	24	100	44201	Ozone	Virginia	Prince William
6/24/2010	51-179-0001	0.047	ppm	40	24	100	44201	Ozone	Virginia	Stafford
6/24/2010	51-510-0009	0.050	ppm	42	24	100	44201	Ozone	Virginia	Alexandria City
6/25/2010	11-001-0025	0.064	ppm	64	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/25/2010	11-001-0041	0.070	ppm	84	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/25/2010	11-001-0043	0.071	ppm	87	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/25/2010	24-003-0014	0.075	ppm	100	24	100	44201	Ozone	Maryland	Anne Arundel
6/25/2010	24-005-1007	0.062	ppm	58	24	100	44201	Ozone	Maryland	Baltimore
6/25/2010	24-005-3001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Baltimore
6/25/2010	24-009-0011	0.067	ppm	74	24	100	44201	Ozone	Maryland	Calvert
6/25/2010	24-013-0001	0.06	ppm	51	24	100	44201	Ozone	Maryland	Carroll
6/25/2010	24-017-0010	0.073	ppm	93	24	100	44201	Ozone	Maryland	Charles
6/25/2010	24-021-0037	0.065	ppm	67	24	100	44201	Ozone	Maryland	Frederick
6/25/2010	24-025-1001	0.087	ppm	129	24	100	44201	Ozone	Maryland	Harford
6/25/2010	24-025-9001	0.061	ppm	54	24	100	44201	Ozone	Maryland	Harford
6/25/2010	24-031-3001	0.067	ppm	74	24	100	44201	Ozone	Maryland	Montgomery
6/25/2010	24-033-0030	0.069	ppm	80	24	100	44201	Ozone	Maryland	Prince George's
6/25/2010	24-033-8003	0.080	ppm	111	24	100	44201	Ozone	Maryland	Prince George's
6/25/2010	24-510-0054	0.058	ppm	49	24	100	44201	Ozone	Maryland	Baltimore (City)
6/25/2010	51-013-0020	0.066	ppm	71	24	100	44201	Ozone	Virginia	Arlington

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
6/25/2010	51-059-0030	0.071	ppm	87	24	100	44201	Ozone	Virginia	Fairfax
6/25/2010	51-061-0002	0.051	ppm	43	24	100	44201	Ozone	Virginia	Fauquier
6/25/2010	51-107-1005	0.062	ppm	58	24	100	44201	Ozone	Virginia	Loudoun
6/25/2010	51-153-0009	0.059	ppm	50	24	100	44201	Ozone	Virginia	Prince William
6/25/2010	51-179-0001	0.060	ppm	51	24	100	44201	Ozone	Virginia	Stafford
6/25/2010	51-510-0009	0.064	ppm	64	24	100	44201	Ozone	Virginia	Alexandria City
6/26/2010	11-001-0025	0.070	ppm	84	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/26/2010	11-001-0041	0.075	ppm	100	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/26/2010	11-001-0043	0.074	ppm	97	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/26/2010	24-003-0014	0.065	ppm	67	24	100	44201	Ozone	Maryland	Anne Arundel
6/26/2010	24-005-1007	0.075	ppm	100	24	100	44201	Ozone	Maryland	Baltimore
6/26/2010	24-005-3001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Baltimore
6/26/2010	24-009-0011	0.065	ppm	67	24	100	44201	Ozone	Maryland	Calvert
6/26/2010	24-013-0001	0.073	ppm	93	24	100	44201	Ozone	Maryland	Carroll
6/26/2010	24-017-0010	0.067	ppm	74	24	100	44201	Ozone	Maryland	Charles
6/26/2010	24-021-0037	0.073	ppm	93	24	100	44201	Ozone	Maryland	Frederick
6/26/2010	24-025-1001	0.087	ppm	129	24	100	44201	Ozone	Maryland	Harford
6/26/2010	24-025-9001	0.086	ppm	127	24	100	44201	Ozone	Maryland	Harford
6/26/2010	24-031-3001	0.073	ppm	93	24	100	44201	Ozone	Maryland	Montgomery
6/26/2010	24-033-0030	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
6/26/2010	24-033-8003	0.069	ppm	80	24	100	44201	Ozone	Maryland	Prince George's
6/26/2010	24-510-0054	0.065	ppm	67	24	100	44201	Ozone	Maryland	Baltimore (City)
6/26/2010	51-013-0020	0.072	ppm	90	24	100	44201	Ozone	Virginia	Arlington
6/26/2010	51-059-0030	0.067	ppm	74	24	100	44201	Ozone	Virginia	Fairfax
6/26/2010	51-061-0002	0.054	ppm	46	24	100	44201	Ozone	Virginia	Fauquier
6/26/2010	51-107-1005	0.069	ppm	80	24	100	44201	Ozone	Virginia	Loudoun
6/26/2010	51-153-0009	0.066	ppm	71	24	100	44201	Ozone	Virginia	Prince William
6/26/2010	51-179-0001	0.064	ppm	64	24	100	44201	Ozone	Virginia	Stafford
6/26/2010	51-510-0009	0.066	ppm	71	24	100	44201	Ozone	Virginia	Alexandria City

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
6/27/2010	11-001-0025	0.057	ppm	48	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/27/2010	11-001-0041	0.064	ppm	64	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/27/2010	11-001-0043	0.061	ppm	54	24	100	44201	Ozone	District Of Columbia	District of Columbia
6/27/2010	24-003-0014	0.065	ppm	67	24	100	44201	Ozone	Maryland	Anne Arundel
6/27/2010	24-005-1007	0.058	ppm	49	24	100	44201	Ozone	Maryland	Baltimore
6/27/2010	24-005-3001	0.062	ppm	58	24	100	44201	Ozone	Maryland	Baltimore
6/27/2010	24-009-0011	0.061	ppm	54	24	100	44201	Ozone	Maryland	Calvert
6/27/2010	24-013-0001	0.058	ppm	49	24	100	44201	Ozone	Maryland	Carroll
6/27/2010	24-017-0010	0.057	ppm	48	24	100	44201	Ozone	Maryland	Charles
6/27/2010	24-021-0037	0.059	ppm	50	24	100	44201	Ozone	Maryland	Frederick
6/27/2010	24-025-1001	0.079	ppm	109	24	100	44201	Ozone	Maryland	Harford
6/27/2010	24-025-9001	0.06	ppm	51	24	100	44201	Ozone	Maryland	Harford
6/27/2010	24-031-3001	0.061	ppm	54	24	100	44201	Ozone	Maryland	Montgomery
6/27/2010	24-033-0030	0.061	ppm	54	24	100	44201	Ozone	Maryland	Prince George's
6/27/2010	24-033-8003	0.065	ppm	67	24	100	44201	Ozone	Maryland	Prince George's
6/27/2010	24-510-0054	0.046	ppm	39	24	100	44201	Ozone	Maryland	Baltimore (City)
6/27/2010	51-013-0020	0.060	ppm	51	24	100	44201	Ozone	Virginia	Arlington
6/27/2010	51-059-0018	0.057	ppm	48	24	100	44201	Ozone	Virginia	Fairfax
6/27/2010	51-059-0030	0.058	ppm	49	24	100	44201	Ozone	Virginia	Fairfax
6/27/2010	51-061-0002	0.046	ppm	39	24	100	44201	Ozone	Virginia	Fauquier
6/27/2010	51-107-1005	0.055	ppm	47	24	100	44201	Ozone	Virginia	Loudoun
6/27/2010	51-153-0009	0.053	ppm	45	24	100	44201	Ozone	Virginia	Prince William
6/27/2010	51-179-0001	0.053	ppm	45	24	100	44201	Ozone	Virginia	Stafford
6/27/2010	51-510-0009	0.058	ppm	49	24	100	44201	Ozone	Virginia	Alexandria City
7/3/2010	11-001-0025	0.073	ppm	93	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/3/2010	11-001-0041	0.076	ppm	101	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/3/2010	11-001-0043	0.078	ppm	106	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/3/2010	24-003-0014	0.064	ppm	64	24	100	44201	Ozone	Maryland	Anne Arundel

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/3/2010	24-005-1007	0.059	ppm	50	24	100	44201	Ozone	Maryland	Baltimore
7/3/2010	24-005-3001	0.07	ppm	84	24	100	44201	Ozone	Maryland	Baltimore
7/3/2010	24-009-0011	0.061	ppm	54	24	100	44201	Ozone	Maryland	Calvert
7/3/2010	24-013-0001	0.061	ppm	54	24	100	44201	Ozone	Maryland	Carroll
7/3/2010	24-017-0010	0.061	ppm	54	24	100	44201	Ozone	Maryland	Charles
7/3/2010	24-021-0037	0.058	ppm	49	24	100	44201	Ozone	Maryland	Frederick
7/3/2010	24-025-1001	0.08	ppm	111	24	100	44201	Ozone	Maryland	Harford
7/3/2010	24-025-9001	0.067	ppm	74	24	100	44201	Ozone	Maryland	Harford
7/3/2010	24-031-3001	0.068	ppm	77	24	100	44201	Ozone	Maryland	Montgomery
7/3/2010	24-033-0030	0.082	ppm	116	24	100	44201	Ozone	Maryland	Prince George's
7/3/2010	24-033-8003	0.063	ppm	61	24	100	44201	Ozone	Maryland	Prince George's
7/3/2010	24-510-0054	0.056	ppm	47	24	100	44201	Ozone	Maryland	Baltimore (City)
7/3/2010	51-013-0020	0.069	ppm	80	24	100	44201	Ozone	Virginia	Arlington
7/3/2010	51-059-0030	0.065	ppm	67	24	100	44201	Ozone	Virginia	Fairfax
7/3/2010	51-061-0002	0.054	ppm	46	24	100	44201	Ozone	Virginia	Fauquier
7/3/2010	51-107-1005	0.062	ppm	58	24	100	44201	Ozone	Virginia	Loudoun
7/3/2010	51-153-0009	0.059	ppm	50	24	100	44201	Ozone	Virginia	Prince William
7/3/2010	51-179-0001	0.062	ppm	58	24	100	44201	Ozone	Virginia	Stafford
7/3/2010	51-510-0009	0.062	ppm	58	24	100	44201	Ozone	Virginia	Alexandria City
7/4/2010	11-001-0025	0.069	ppm	80	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/4/2010	11-001-0041	0.086	ppm	127	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/4/2010	11-001-0043	0.078	ppm	106	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/4/2010	24-003-0014	0.073	ppm	93	24	100	44201	Ozone	Maryland	Anne Arundel
7/4/2010	24-005-1007	0.067	ppm	74	24	100	44201	Ozone	Maryland	Baltimore
7/4/2010	24-005-3001	0.08	ppm	111	24	100	44201	Ozone	Maryland	Baltimore
7/4/2010	24-009-0011	0.067	ppm	74	24	100	44201	Ozone	Maryland	Calvert
7/4/2010	24-013-0001	0.07	ppm	84	24	100	44201	Ozone	Maryland	Carroll
7/4/2010	24-017-0010	0.063	ppm	61	24	100	44201	Ozone	Maryland	Charles
7/4/2010	24-021-0037	0.071	ppm	87	24	100	44201	Ozone	Maryland	Frederick

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/4/2010	24-025-1001	0.09	ppm	137	24	100	44201	Ozone	Maryland	Harford
7/4/2010	24-025-9001	0.074	ppm	97	24	100	44201	Ozone	Maryland	Harford
7/4/2010	24-031-3001	0.072	ppm	90	24	100	44201	Ozone	Maryland	Montgomery
7/4/2010	24-033-0030	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
7/4/2010	24-033-8003	0.071	ppm	87	24	100	44201	Ozone	Maryland	Prince George's
7/4/2010	24-510-0054	0.064	ppm	64	24	100	44201	Ozone	Maryland	Baltimore (City)
7/4/2010	51-013-0020	0.078	ppm	106	24	100	44201	Ozone	Virginia	Arlington
7/4/2010	51-059-0030	0.076	ppm	101	24	100	44201	Ozone	Virginia	Fairfax
7/4/2010	51-061-0002	0.059	ppm	50	24	100	44201	Ozone	Virginia	Fauquier
7/4/2010	51-107-1005	0.062	ppm	58	24	100	44201	Ozone	Virginia	Loudoun
7/4/2010	51-153-0009	0.059	ppm	50	24	100	44201	Ozone	Virginia	Prince William
7/4/2010	51-179-0001	0.066	ppm	71	24	100	44201	Ozone	Virginia	Stafford
7/4/2010	51-510-0009	0.074	ppm	97	24	100	44201	Ozone	Virginia	Alexandria City
7/5/2010	11-001-0025	0.065	ppm	67	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/5/2010	11-001-0041	0.073	ppm	93	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/5/2010	11-001-0043	0.071	ppm	87	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/5/2010	24-003-0014	0.077	ppm	104	24	100	44201	Ozone	Maryland	Anne Arundel
7/5/2010	24-005-1007	0.073	ppm	93	24	100	44201	Ozone	Maryland	Baltimore
7/5/2010	24-005-3001	0.084	ppm	122	24	100	44201	Ozone	Maryland	Baltimore
7/5/2010	24-009-0011	0.082	ppm	116	24	100	44201	Ozone	Maryland	Calvert
7/5/2010	24-013-0001	0.073	ppm	93	24	100	44201	Ozone	Maryland	Carroll
7/5/2010	24-017-0010	0.080	ppm	111	24	100	44201	Ozone	Maryland	Charles
7/5/2010	24-021-0037	0.068	ppm	77	24	100	44201	Ozone	Maryland	Frederick
7/5/2010	24-025-1001	0.097	ppm	154	24	100	44201	Ozone	Maryland	Harford
7/5/2010	24-025-9001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Harford
7/5/2010	24-031-3001	0.069	ppm	80	24	100	44201	Ozone	Maryland	Montgomery
7/5/2010	24-033-0030	0.069	ppm	80	24	100	44201	Ozone	Maryland	Prince George's
7/5/2010	24-033-8003	0.080	ppm	111	24	100	44201	Ozone	Maryland	Prince George's
7/5/2010	24-510-0054	0.06	ppm	51	24	100	44201	Ozone	Maryland	Baltimore (City)

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/5/2010	51-013-0020	0.071	ppm	87	24	100	44201	Ozone	Virginia	Arlington
7/5/2010	51-059-0030	0.072	ppm	90	24	100	44201	Ozone	Virginia	Fairfax
7/5/2010	51-061-0002	0.058	ppm	49	24	100	44201	Ozone	Virginia	Fauquier
7/5/2010	51-107-1005	0.064	ppm	64	24	100	44201	Ozone	Virginia	Loudoun
7/5/2010	51-153-0009	0.062	ppm	58	24	100	44201	Ozone	Virginia	Prince William
7/5/2010	51-179-0001	0.069	ppm	80	24	100	44201	Ozone	Virginia	Stafford
7/5/2010	51-510-0009	0.069	ppm	80	24	100	44201	Ozone	Virginia	Alexandria City
7/6/2010	11-001-0025	0.073	ppm	93	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/6/2010	11-001-0041	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/6/2010	11-001-0043	0.082	ppm	116	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/6/2010	24-003-0014	0.099	ppm	159	24	100	44201	Ozone	Maryland	Anne Arundel
7/6/2010	24-005-1007	0.072	ppm	90	24	100	44201	Ozone	Maryland	Baltimore
7/6/2010	24-005-3001	0.09	ppm	137	24	100	44201	Ozone	Maryland	Baltimore
7/6/2010	24-009-0011	0.087	ppm	129	24	100	44201	Ozone	Maryland	Calvert
7/6/2010	24-013-0001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Carroll
7/6/2010	24-017-0010	0.087	ppm	129	24	100	44201	Ozone	Maryland	Charles
7/6/2010	24-021-0037	0.084	ppm	122	24	100	44201	Ozone	Maryland	Frederick
7/6/2010	24-025-1001	0.092	ppm	142	24	100	44201	Ozone	Maryland	Harford
7/6/2010	24-025-9001	0.07	ppm	84	24	100	44201	Ozone	Maryland	Harford
7/6/2010	24-031-3001	0.072	ppm	90	24	100	44201	Ozone	Maryland	Montgomery
7/6/2010	24-033-0030	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
7/6/2010	24-033-8003	0.090	ppm	137	24	100	44201	Ozone	Maryland	Prince George's
7/6/2010	24-510-0054	0.064	ppm	64	24	100	44201	Ozone	Maryland	Baltimore (City)
7/6/2010	51-013-0020	0.076	ppm	101	24	100	44201	Ozone	Virginia	Arlington
7/6/2010	51-059-0030	0.078	ppm	106	24	100	44201	Ozone	Virginia	Fairfax
7/6/2010	51-061-0002	0.060	ppm	51	24	100	44201	Ozone	Virginia	Fauquier
7/6/2010	51-107-1005	0.071	ppm	87	24	100	44201	Ozone	Virginia	Loudoun
7/6/2010	51-153-0009	0.060	ppm	51	24	100	44201	Ozone	Virginia	Prince William
7/6/2010	51-179-0001	0.068	ppm	77	24	100	44201	Ozone	Virginia	Stafford

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/6/2010	51-510-0009	0.070	ppm	84	24	100	44201	Ozone	Virginia	Alexandria City
7/7/2010	11-001-0025	0.087	ppm	129	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/7/2010	11-001-0041	0.096	ppm	151	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/7/2010	11-001-0043	0.100	ppm	161	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/7/2010	24-003-0014	0.082	ppm	116	24	100	44201	Ozone	Maryland	Anne Arundel
7/7/2010	24-005-1007	0.073	ppm	93	24	100	44201	Ozone	Maryland	Baltimore
7/7/2010	24-005-3001	0.084	ppm	122	24	100	44201	Ozone	Maryland	Baltimore
7/7/2010	24-009-0011	0.090	ppm	137	24	100	44201	Ozone	Maryland	Calvert
7/7/2010	24-013-0001	0.085	ppm	124	24	100	44201	Ozone	Maryland	Carroll
7/7/2010	24-017-0010	0.082	ppm	116	24	100	44201	Ozone	Maryland	Charles
7/7/2010	24-021-0037	0.077	ppm	104	24	100	44201	Ozone	Maryland	Frederick
7/7/2010	24-025-1001	0.088	ppm	132	24	100	44201	Ozone	Maryland	Harford
7/7/2010	24-025-9001	0.072	ppm	90	24	100	44201	Ozone	Maryland	Harford
7/7/2010	24-031-3001	0.074	ppm	97	24	100	44201	Ozone	Maryland	Montgomery
7/7/2010	24-033-0030	0.094	ppm	147	24	100	44201	Ozone	Maryland	Prince George's
7/7/2010	24-033-8003	0.085	ppm	124	23	96	44201	Ozone	Maryland	Prince George's
7/7/2010	24-510-0054	0.062	ppm	58	24	100	44201	Ozone	Maryland	Baltimore (City)
7/7/2010	51-013-0020	0.092	ppm	142	24	100	44201	Ozone	Virginia	Arlington
7/7/2010	51-059-0030	0.095	ppm	150	24	100	44201	Ozone	Virginia	Fairfax
7/7/2010	51-061-0002	0.072	ppm	90	24	100	44201	Ozone	Virginia	Fauquier
7/7/2010	51-107-1005	0.084	ppm	122	24	100	44201	Ozone	Virginia	Loudoun
7/7/2010	51-153-0009	0.075	ppm	100	24	100	44201	Ozone	Virginia	Prince William
7/7/2010	51-179-0001	0.088	ppm	132	24	100	44201	Ozone	Virginia	Stafford
7/7/2010	51-510-0009	0.092	ppm	142	24	100	44201	Ozone	Virginia	Alexandria City
7/8/2010	11-001-0025	0.056	ppm	47	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/8/2010	11-001-0041	0.056	ppm	47	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/8/2010	11-001-0043	0.058	ppm	49	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/8/2010	24-003-0014	0.053	ppm	45	24	100	44201	Ozone	Maryland	Anne Arundel

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/8/2010	24-005-1007	0.061	ppm	54	24	100	44201	Ozone	Maryland	Baltimore
7/8/2010	24-005-3001	0.053	ppm	45	24	100	44201	Ozone	Maryland	Baltimore
7/8/2010	24-009-0011	0.045	ppm	38	24	100	44201	Ozone	Maryland	Calvert
7/8/2010	24-013-0001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Carroll
7/8/2010	24-017-0010	0.044	ppm	37	24	100	44201	Ozone	Maryland	Charles
7/8/2010	24-021-0037	0.093	ppm	145	24	100	44201	Ozone	Maryland	Frederick
7/8/2010	24-025-1001	0.057	ppm	48	24	100	44201	Ozone	Maryland	Harford
7/8/2010	24-025-9001	0.05	ppm	42	24	100	44201	Ozone	Maryland	Harford
7/8/2010	24-031-3001	0.073	ppm	93	24	100	44201	Ozone	Maryland	Montgomery
7/8/2010	24-033-0030	0.061	ppm	54	24	100	44201	Ozone	Maryland	Prince George's
7/8/2010	51-013-0020	0.060	ppm	51	24	100	44201	Ozone	Virginia	Arlington
7/8/2010	51-059-0030	0.058	ppm	49	24	100	44201	Ozone	Virginia	Fairfax
7/8/2010	51-061-0002	0.065	ppm	67	24	100	44201	Ozone	Virginia	Fauquier
7/8/2010	51-107-1005	0.092	ppm	142	24	100	44201	Ozone	Virginia	Loudoun
7/8/2010	51-153-0009	0.093	ppm	145	24	100	44201	Ozone	Virginia	Prince William
7/8/2010	51-179-0001	0.058	ppm	49	24	100	44201	Ozone	Virginia	Stafford
7/8/2010	51-510-0009	0.055	ppm	47	24	100	44201	Ozone	Virginia	Alexandria City
7/23/2010	11-001-0025	0.035	ppm	30	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/23/2010	11-001-0041	0.075	ppm	100	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/23/2010	11-001-0043	0.070	ppm	84	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/23/2010	24-003-0014	0.082	ppm	116	24	100	44201	Ozone	Maryland	Anne Arundel
7/23/2010	24-005-1007	0.071	ppm	87	24	100	44201	Ozone	Maryland	Baltimore
7/23/2010	24-005-3001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Baltimore
7/23/2010	24-009-0011	0.058	ppm	49	24	100	44201	Ozone	Maryland	Calvert
7/23/2010	24-013-0001	0.063	ppm	61	24	100	44201	Ozone	Maryland	Carroll
7/23/2010	24-017-0010	0.061	ppm	54	24	100	44201	Ozone	Maryland	Charles
7/23/2010	24-021-0037	0.059	ppm	50	24	100	44201	Ozone	Maryland	Frederick
7/23/2010	24-025-1001	0.101	ppm	164	24	100	44201	Ozone	Maryland	Harford

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/23/2010	24-025-9001	0.086	ppm	127	24	100	44201	Ozone	Maryland	Harford
7/23/2010	24-031-3001	0.072	ppm	90	24	100	44201	Ozone	Maryland	Montgomery
7/23/2010	24-033-0030	0.074	ppm	97	24	100	44201	Ozone	Maryland	Prince George's
7/23/2010	24-033-8003	0.075	ppm	100	24	100	44201	Ozone	Maryland	Prince George's
7/23/2010	51-013-0020	0.065	ppm	67	24	100	44201	Ozone	Virginia	Arlington
7/23/2010	51-059-0030	0.065	ppm	67	24	100	44201	Ozone	Virginia	Fairfax
7/23/2010	51-061-0002	0.050	ppm	42	24	100	44201	Ozone	Virginia	Fauquier
7/23/2010	51-107-1005	0.058	ppm	49	24	100	44201	Ozone	Virginia	Loudoun
7/23/2010	51-153-0009	0.055	ppm	47	24	100	44201	Ozone	Virginia	Prince William
7/23/2010	51-179-0001	0.051	ppm	43	24	100	44201	Ozone	Virginia	Stafford
7/23/2010	51-510-0009	0.066	ppm	71	24	100	44201	Ozone	Virginia	Alexandria City
7/31/2010	11-001-0025	0.066	ppm	71	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/31/2010	11-001-0041	0.070	ppm	84	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/31/2010	11-001-0043	0.069	ppm	80	24	100	44201	Ozone	District Of Columbia	District of Columbia
7/31/2010	24-003-0014	0.067	ppm	74	24	100	44201	Ozone	Maryland	Anne Arundel
7/31/2010	24-005-1007	0.076	ppm	101	24	100	44201	Ozone	Maryland	Baltimore
7/31/2010	24-005-3001	0.075	ppm	100	24	100	44201	Ozone	Maryland	Baltimore
7/31/2010	24-009-0011	0.062	ppm	58	24	100	44201	Ozone	Maryland	Calvert
7/31/2010	24-013-0001	0.066	ppm	71	24	100	44201	Ozone	Maryland	Carroll
7/31/2010	24-017-0010	0.065	ppm	67	24	100	44201	Ozone	Maryland	Charles
7/31/2010	24-021-0037	0.064	ppm	64	24	100	44201	Ozone	Maryland	Frederick
7/31/2010	24-025-1001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Harford
7/31/2010	24-025-9001	0.06	ppm	51	24	100	44201	Ozone	Maryland	Harford
7/31/2010	24-031-3001	0.062	ppm	58	24	100	44201	Ozone	Maryland	Montgomery
7/31/2010	24-033-0030	0.073	ppm	93	24	100	44201	Ozone	Maryland	Prince George's
7/31/2010	24-033-8003	0.066	ppm	71	24	100	44201	Ozone	Maryland	Prince George's
7/31/2010	24-510-0054	0.07	ppm	84	24	100	44201	Ozone	Maryland	Baltimore (City)
7/31/2010	51-013-0020	0.069	ppm	80	24	100	44201	Ozone	Virginia	Arlington
7/31/2010	51-059-0030	0.064	ppm	64	24	100	44201	Ozone	Virginia	Fairfax

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
7/31/2010	51-061-0002	0.056	ppm	47	24	100	44201	Ozone	Virginia	Fauquier
7/31/2010	51-107-1005	0.061	ppm	54	24	100	44201	Ozone	Virginia	Loudoun
7/31/2010	51-153-0009	0.059	ppm	50	24	100	44201	Ozone	Virginia	Prince William
7/31/2010	51-179-0001	0.065	ppm	67	24	100	44201	Ozone	Virginia	Stafford
7/31/2010	51-510-0009	0.065	ppm	67	24	100	44201	Ozone	Virginia	Alexandria City
8/9/2010	11-001-0025	0.072	ppm	90	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/9/2010	11-001-0041	0.070	ppm	84	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/9/2010	11-001-0043	0.066	ppm	71	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/9/2010	24-003-0014	0.065	ppm	67	24	100	44201	Ozone	Maryland	Anne Arundel
8/9/2010	24-005-1007	0.076	ppm	101	24	100	44201	Ozone	Maryland	Baltimore
8/9/2010	24-005-3001	0.065	ppm	67	24	100	44201	Ozone	Maryland	Baltimore
8/9/2010	24-009-0011	0.060	ppm	51	24	100	44201	Ozone	Maryland	Calvert
8/9/2010	24-013-0001	0.072	ppm	90	24	100	44201	Ozone	Maryland	Carroll
~~8/9/2010~~	~~24-017-0010~~	~~0.051~~	~~ppm~~	~~43~~	~~18~~	~~75~~	~~44201~~	~~Ozone~~	~~Maryland~~	~~Charles~~
8/9/2010	24-021-0037	0.071	ppm	87	24	100	44201	Ozone	Maryland	Frederick
8/9/2010	24-025-1001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Harford
8/9/2010	24-025-9001	0.067	ppm	74	24	100	44201	Ozone	Maryland	Harford
8/9/2010	24-031-3001	0.070	ppm	84	24	100	44201	Ozone	Maryland	Montgomery
8/9/2010	24-033-0030	0.079	ppm	109	24	100	44201	Ozone	Maryland	Prince George's
8/9/2010	24-033-8003	0.059	ppm	50	24	100	44201	Ozone	Maryland	Prince George's
8/9/2010	24-510-0054	0.065	ppm	67	24	100	44201	Ozone	Maryland	Baltimore (City)
8/9/2010	51-013-0020	0.068	ppm	77	24	100	44201	Ozone	Virginia	Arlington
8/9/2010	51-059-0030	0.065	ppm	67	24	100	44201	Ozone	Virginia	Fairfax
8/9/2010	51-061-0002	0.053	ppm	45	24	100	44201	Ozone	Virginia	Fauquier
8/9/2010	51-107-1005	0.065	ppm	67	24	100	44201	Ozone	Virginia	Loudoun
8/9/2010	51-153-0009	0.060	ppm	51	24	100	44201	Ozone	Virginia	Prince William
8/9/2010	51-179-0001	0.058	ppm	49	24	100	44201	Ozone	Virginia	Stafford
8/9/2010	51-510-0009	0.062	ppm	58	24	100	44201	Ozone	Virginia	Alexandria City

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
8/10/2010	11-001-0025	0.080	ppm	111	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/10/2010	11-001-0041	0.090	ppm	137	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/10/2010	11-001-0043	0.080	ppm	111	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/10/2010	24-003-0014	0.099	ppm	159	24	100	44201	Ozone	Maryland	Anne Arundel
8/10/2010	24-005-1007	0.086	ppm	127	24	100	44201	Ozone	Maryland	Baltimore
8/10/2010	24-005-3001	0.115	ppm	200	24	100	44201	Ozone	Maryland	Baltimore
8/10/2010	24-009-0011	0.079	ppm	109	24	100	44201	Ozone	Maryland	Calvert
8/10/2010	24-013-0001	0.083	ppm	119	24	100	44201	Ozone	Maryland	Carroll
8/10/2010	24-017-0010	0.077	ppm	104	24	100	44201	Ozone	Maryland	Charles
8/10/2010	24-021-0037	0.085	ppm	124	24	100	44201	Ozone	Maryland	Frederick
8/10/2010	24-025-1001	0.11	ppm	187	24	100	44201	Ozone	Maryland	Harford
8/10/2010	24-025-9001	0.075	ppm	100	24	100	44201	Ozone	Maryland	Harford
8/10/2010	24-031-3001	0.072	ppm	90	24	100	44201	Ozone	Maryland	Montgomery
8/10/2010	24-033-0030	0.082	ppm	116	24	100	44201	Ozone	Maryland	Prince George's
8/10/2010	24-033-8003	0.090	ppm	137	24	100	44201	Ozone	Maryland	Prince George's
8/10/2010	24-510-0054	0.1	ppm	161	24	100	44201	Ozone	Maryland	Baltimore (City)
8/10/2010	51-013-0020	0.088	ppm	132	17	71	44201	Ozone	Virginia	Arlington
8/10/2010	51-059-0030	0.082	ppm	116	24	100	44201	Ozone	Virginia	Fairfax
8/10/2010	51-061-0002	0.059	ppm	50	24	100	44201	Ozone	Virginia	Fauquier
8/10/2010	51-107-1005	0.072	ppm	90	24	100	44201	Ozone	Virginia	Loudoun
8/10/2010	51-153-0009	0.066	ppm	71	24	100	44201	Ozone	Virginia	Prince William
8/10/2010	51-179-0001	0.070	ppm	84	24	100	44201	Ozone	Virginia	Stafford
8/10/2010	51-510-0009	0.081	ppm	114	24	100	44201	Ozone	Virginia	Alexandria City
8/10/2010	51-510-0009	0.081	ppm	114	24	100	44201	Ozone	Virginia	Alexandria City
8/11/2010	11-001-0025	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/11/2010	11-001-0041	0.085	ppm	124	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/11/2010	11-001-0043	0.081	ppm	114	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/11/2010	24-003-0014	0.096	ppm	151	24	100	44201	Ozone	Maryland	Anne Arundel
8/11/2010	24-005-1007	0.071	ppm	87	24	100	44201	Ozone	Maryland	Baltimore
8/11/2010	24-005-3001	0.071	ppm	87	24	100	44201	Ozone	Maryland	Baltimore

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
8/11/2010	24-009-0011	0.097	ppm	154	24	100	44201	Ozone	Maryland	Calvert
8/11/2010	24-013-0001	0.071	ppm	87	24	100	44201	Ozone	Maryland	Carroll
8/11/2010	24-017-0010	0.093	ppm	145	24	100	44201	Ozone	Maryland	Charles
8/11/2010	24-021-0037	0.071	ppm	87	24	100	44201	Ozone	Maryland	Frederick
8/11/2010	24-025-1001	0.072	ppm	90	24	100	44201	Ozone	Maryland	Harford
8/11/2010	24-025-9001	0.06	ppm	51	24	100	44201	Ozone	Maryland	Harford
8/11/2010	24-031-3001	0.069	ppm	80	24	100	44201	Ozone	Maryland	Montgomery
8/11/2010	24-033-0030	0.080	ppm	111	24	100	44201	Ozone	Maryland	Prince George's
8/11/2010	24-033-8003	0.088	ppm	132	24	100	44201	Ozone	Maryland	Prince George's
8/11/2010	24-510-0054	0.065	ppm	67	18	75	44201	Ozone	Maryland	Baltimore (City)
8/11/2010	51-013-0020	0.085	ppm	124	24	100	44201	Ozone	Virginia	Arlington
8/11/2010	51-059-0030	0.089	ppm	135	24	100	44201	Ozone	Virginia	Fairfax
8/11/2010	51-061-0002	0.057	ppm	48	24	100	44201	Ozone	Virginia	Fauquier
8/11/2010	51-107-1005	0.072	ppm	90	24	100	44201	Ozone	Virginia	Loudoun
8/11/2010	51-153-0009	0.065	ppm	67	24	100	44201	Ozone	Virginia	Prince William
8/11/2010	51-179-0001	0.072	ppm	90	24	100	44201	Ozone	Virginia	Stafford
8/11/2010	51-510-0009	0.082	ppm	116	24	100	44201	Ozone	Virginia	Alexandria City
8/11/2010	51-510-0009	0.082	ppm	116	24	100	44201	Ozone	Virginia	Alexandria City
8/17/2010	11-001-0025	0.078	ppm	106	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/17/2010	11-001-0041	0.089	ppm	135	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/17/2010	11-001-0043	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/17/2010	24-003-0014	0.081	ppm	114	13	54	44201	Ozone	Maryland	Anne Arundel
8/17/2010	24-005-1007	0.058	ppm	49	24	100	44201	Ozone	Maryland	Baltimore
8/17/2010	24-005-3001	0.075	ppm	100	24	100	44201	Ozone	Maryland	Baltimore
8/17/2010	24-009-0011	0.064	ppm	64	24	100	44201	Ozone	Maryland	Calvert
8/17/2010	24-013-0001	0.065	ppm	67	24	100	44201	Ozone	Maryland	Carroll
8/17/2010	24-017-0010	0.064	ppm	64	24	100	44201	Ozone	Maryland	Charles
8/17/2010	24-021-0037	0.072	ppm	90	24	100	44201	Ozone	Maryland	Frederick

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
8/17/2010	24-025-1001	0.066	ppm	71	24	100	44201	Ozone	Maryland	Harford
8/17/2010	24-025-9001	0.053	ppm	45	24	100	44201	Ozone	Maryland	Harford
8/17/2010	24-031-3001	0.062	ppm	58	24	100	44201	Ozone	Maryland	Montgomery
8/17/2010	24-033-0030	0.070	ppm	84	24	100	44201	Ozone	Maryland	Prince George's
8/17/2010	24-033-8003	0.071	ppm	87	24	100	44201	Ozone	Maryland	Prince George's
8/17/2010	24-510-0054	0.059	ppm	50	24	100	44201	Ozone	Maryland	Baltimore (City)
8/17/2010	51-013-0020	0.089	ppm	135	24	100	44201	Ozone	Virginia	Arlington
8/17/2010	51-059-0030	0.089	ppm	135	24	100	44201	Ozone	Virginia	Fairfax
8/17/2010	51-061-0002	0.069	ppm	80	24	100	44201	Ozone	Virginia	Fauquier
8/17/2010	51-107-1005	0.072	ppm	90	24	100	44201	Ozone	Virginia	Loudoun
8/17/2010	51-153-0009	0.064	ppm	64	24	100	44201	Ozone	Virginia	Prince William
8/17/2010	51-179-0001	0.078	ppm	106	24	100	44201	Ozone	Virginia	Stafford
8/17/2010	51-510-0009	0.085	ppm	124	24	100	44201	Ozone	Virginia	Alexandria City
8/18/2010	11-001-0025	0.050	ppm	42	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/18/2010	11-001-0041	0.046	ppm	39	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/18/2010	11-001-0043	0.050	ppm	42	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/18/2010	24-003-0014	0.051	ppm	43	24	100	44201	Ozone	Maryland	Anne Arundel
8/18/2010	24-005-1007	0.044	ppm	37	24	100	44201	Ozone	Maryland	Baltimore
8/18/2010	24-005-3001	0.047	ppm	40	24	100	44201	Ozone	Maryland	Baltimore
8/18/2010	24-009-0011	0.044	ppm	37	24	100	44201	Ozone	Maryland	Calvert
8/18/2010	24-013-0001	0.045	ppm	38	24	100	44201	Ozone	Maryland	Carroll
8/18/2010	24-017-0010	0.040	ppm	34	24	100	44201	Ozone	Maryland	Charles
8/18/2010	24-021-0037	0.045	ppm	38	24	100	44201	Ozone	Maryland	Frederick
8/18/2010	24-025-1001	0.052	ppm	44	24	100	44201	Ozone	Maryland	Harford
8/18/2010	24-025-9001	0.04	ppm	34	24	100	44201	Ozone	Maryland	Harford
8/18/2010	24-031-3001	0.042	ppm	36	24	100	44201	Ozone	Maryland	Montgomery
8/18/2010	24-033-0030	0.051	ppm	43	24	100	44201	Ozone	Maryland	Prince George's
8/18/2010	24-033-8003	0.044	ppm	37	24	100	44201	Ozone	Maryland	Prince George's
8/18/2010	24-510-0054	0.039	ppm	33	24	100	44201	Ozone	Maryland	Baltimore (City)

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
8/18/2010	51-013-0020	0.044	ppm	37	24	100	44201	Ozone	Virginia	Arlington
8/18/2010	51-059-0030	0.044	ppm	37	24	100	44201	Ozone	Virginia	Fairfax
8/18/2010	51-061-0002	0.036	ppm	31	24	100	44201	Ozone	Virginia	Fauquier
8/18/2010	51-107-1005	0.044	ppm	37	18	75	44201	Ozone	Virginia	Loudoun
8/18/2010	51-153-0009	0.043	ppm	36	24	100	44201	Ozone	Virginia	Prince William
8/18/2010	51-179-0001	0.044	ppm	37	24	100	44201	Ozone	Virginia	Stafford
8/19/2010	11-001-0025	0.069	ppm	80	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/19/2010	11-001-0041	0.086	ppm	127	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/19/2010	11-001-0043	0.081	ppm	114	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/19/2010	24-003-0014	0.074	ppm	97	24	100	44201	Ozone	Maryland	Anne Arundel
8/19/2010	24-005-1007	0.065	ppm	67	24	100	44201	Ozone	Maryland	Baltimore
8/19/2010	24-005-3001	0.087	ppm	129	24	100	44201	Ozone	Maryland	Baltimore
8/19/2010	24-009-0011	0.068	ppm	77	24	100	44201	Ozone	Maryland	Calvert
8/19/2010	24-013-0001	0.063	ppm	61	24	100	44201	Ozone	Maryland	Carroll
8/19/2010	24-017-0010	0.063	ppm	61	24	100	44201	Ozone	Maryland	Charles
8/19/2010	24-021-0037	0.061	ppm	54	24	100	44201	Ozone	Maryland	Frederick
8/19/2010	24-025-1001	0.093	ppm	145	24	100	44201	Ozone	Maryland	Harford
8/19/2010	24-025-9001	0.072	ppm	90	24	100	44201	Ozone	Maryland	Harford
8/19/2010	24-031-3001	0.067	ppm	74	24	100	44201	Ozone	Maryland	Montgomery
8/19/2010	24-033-0030	0.071	ppm	87	24	100	44201	Ozone	Maryland	Prince George's
8/19/2010	24-033-8003	0.071	ppm	87	24	100	44201	Ozone	Maryland	Prince George's
8/19/2010	24-510-0054	0.075	ppm	100	24	100	44201	Ozone	Maryland	Baltimore (City)
8/19/2010	51-013-0020	0.075	ppm	100	24	100	44201	Ozone	Virginia	Arlington
8/19/2010	51-059-0030	0.078	ppm	106	24	100	44201	Ozone	Virginia	Fairfax
8/19/2010	51-061-0002	0.050	ppm	42	24	100	44201	Ozone	Virginia	Fauquier
8/19/2010	51-107-1005	0.057	ppm	48	24	100	44201	Ozone	Virginia	Loudoun
8/19/2010	51-153-0009	0.054	ppm	46	24	100	44201	Ozone	Virginia	Prince William
8/19/2010	51-179-0001	0.061	ppm	54	24	100	44201	Ozone	Virginia	Stafford
8/19/2010	51-510-0009	0.077	ppm	104	24	100	44201	Ozone	Virginia	Alexandria City

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
8/20/2010	11-001-0025	0.074	ppm	97	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/20/2010	11-001-0041	0.079	ppm	109	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/20/2010	11-001-0043	0.081	ppm	114	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/20/2010	24-003-0014	0.084	ppm	122	24	100	44201	Ozone	Maryland	Anne Arundel
8/20/2010	24-005-1007	0.065	ppm	67	24	100	44201	Ozone	Maryland	Baltimore
8/20/2010	24-005-3001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Baltimore
8/20/2010	24-009-0011	0.066	ppm	71	24	100	44201	Ozone	Maryland	Calvert
8/20/2010	24-013-0001	0.072	ppm	90	24	100	44201	Ozone	Maryland	Carroll
8/20/2010	24-017-0010	0.071	ppm	87	24	100	44201	Ozone	Maryland	Charles
8/20/2010	24-021-0037	0.072	ppm	90	24	100	44201	Ozone	Maryland	Frederick
8/20/2010	24-025-1001	0.072	ppm	90	24	100	44201	Ozone	Maryland	Harford
8/20/2010	24-025-9001	0.058	ppm	49	24	100	44201	Ozone	Maryland	Harford
8/20/2010	24-031-3001	0.071	ppm	87	24	100	44201	Ozone	Maryland	Montgomery
8/20/2010	24-033-0030	0.067	ppm	74	24	100	44201	Ozone	Maryland	Prince George's
8/20/2010	24-033-8003	0.077	ppm	104	24	100	44201	Ozone	Maryland	Prince George's
8/20/2010	24-510-0054	0.062	ppm	58	24	100	44201	Ozone	Maryland	Baltimore (City)
8/20/2010	51-013-0020	0.077	ppm	104	24	100	44201	Ozone	Virginia	Arlington
8/20/2010	51-059-0030	0.080	ppm	111	24	100	44201	Ozone	Virginia	Fairfax
8/20/2010	51-061-0002	0.059	ppm	50	24	100	44201	Ozone	Virginia	Fauquier
8/20/2010	51-107-1005	0.064	ppm	64	24	100	44201	Ozone	Virginia	Loudoun
8/20/2010	51-153-0009	0.060	ppm	51	24	100	44201	Ozone	Virginia	Prince William
8/20/2010	51-179-0001	0.076	ppm	101	24	100	44201	Ozone	Virginia	Stafford
8/20/2010	51-510-0009	0.080	ppm	111	24	100	44201	Ozone	Virginia	Alexandria City
8/26/2010	11-001-0043	0.054	ppm	46	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/26/2010	24-003-0014	0.056	ppm	47	24	100	44201	Ozone	Maryland	Anne Arundel
8/26/2010	24-005-1007	0.046	ppm	39	24	100	44201	Ozone	Maryland	Baltimore
8/26/2010	24-009-0011	0.062	ppm	58	24	100	44201	Ozone	Maryland	Calvert

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
8/26/2010	24-013-0001	0.049	ppm	42	24	100	44201	Ozone	Maryland	Carroll
8/26/2010	24-017-0010	0.059	ppm	50	24	100	44201	Ozone	Maryland	Charles
8/26/2010	24-021-0037	0.052	ppm	44	24	100	44201	Ozone	Maryland	Frederick
8/26/2010	24-025-1001	0.052	ppm	44	24	100	44201	Ozone	Maryland	Harford
8/26/2010	24-025-9001	0.041	ppm	35	24	100	44201	Ozone	Maryland	Harford
8/26/2010	24-031-3001	0.052	ppm	44	24	100	44201	Ozone	Maryland	Montgomery
8/26/2010	24-033-0030	0.052	ppm	44	24	100	44201	Ozone	Maryland	Prince George's
8/26/2010	24-033-8003	0.057	ppm	48	24	100	44201	Ozone	Maryland	Prince George's
8/26/2010	24-510-0054	0.046	ppm	39	24	100	44201	Ozone	Maryland	Baltimore (City)
8/26/2010	51-013-0020	0.055	ppm	47	24	100	44201	Ozone	Virginia	Arlington
8/26/2010	51-061-0002	0.045	ppm	38	24	100	44201	Ozone	Virginia	Fauquier
8/26/2010	51-107-1005	0.056	ppm	47	24	100	44201	Ozone	Virginia	Loudoun
8/26/2010	51-153-0009	0.052	ppm	44	24	100	44201	Ozone	Virginia	Prince William
8/26/2010	51-179-0001	0.054	ppm	46	18	75	44201	Ozone	Virginia	Stafford
8/26/2010	51-510-0009	0.051	ppm	43	24	100	44201	Ozone	Virginia	Alexandria City
8/27/2010	11-001-0043	0.059	ppm	50	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/27/2010	24-003-0014	0.056	ppm	47	24	100	44201	Ozone	Maryland	Anne Arundel
8/27/2010	24-005-1007	0.05	ppm	42	24	100	44201	Ozone	Maryland	Baltimore
8/27/2010	24-009-0011	0.045	ppm	38	24	100	44201	Ozone	Maryland	Calvert
8/27/2010	24-013-0001	0.055	ppm	47	24	100	44201	Ozone	Maryland	Carroll
8/27/2010	24-017-0010	0.049	ppm	42	24	100	44201	Ozone	Maryland	Charles
8/27/2010	24-021-0037	0.053	ppm	45	24	100	44201	Ozone	Maryland	Frederick
8/27/2010	24-025-1001	0.06	ppm	51	24	100	44201	Ozone	Maryland	Harford
8/27/2010	24-025-9001	0.043	ppm	36	24	100	44201	Ozone	Maryland	Harford
8/27/2010	24-031-3001	0.050	ppm	42	24	100	44201	Ozone	Maryland	Montgomery
8/27/2010	24-033-0030	0.052	ppm	44	24	100	44201	Ozone	Maryland	Prince George's
8/27/2010	24-033-8003	0.052	ppm	44	24	100	44201	Ozone	Maryland	Prince George's
8/27/2010	24-510-0054	0.05	ppm	42	24	100	44201	Ozone	Maryland	Baltimore (City)
8/27/2010	51-013-0020	0.058	ppm	49	24	100	44201	Ozone	Virginia	Arlington
8/27/2010	51-013-0020	0.058	ppm	49	24	100	44201	Ozone	Virginia	Arlington

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Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
8/27/2010	51-061-0002	0.053	ppm	45	24	100	44201	Ozone	Virginia	Fauquier
8/27/2010	51-107-1005	0.056	ppm	47	24	100	44201	Ozone	Virginia	Loudoun
8/27/2010	51-153-0009	0.056	ppm	47	24	100	44201	Ozone	Virginia	Prince William
8/27/2010	51-179-0001	0.054	ppm	46	24	100	44201	Ozone	Virginia	Stafford
8/27/2010	51-510-0009	0.059	ppm	50	24	100	44201	Ozone	Virginia	Alexandria City
8/28/2010	11-001-0043	0.069	ppm	80	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/28/2010	24-003-0014	0.067	ppm	74	24	100	44201	Ozone	Maryland	Anne Arundel
8/28/2010	24-005-1007	0.067	ppm	74	24	100	44201	Ozone	Maryland	Baltimore
8/28/2010	24-009-0011	0.057	ppm	48	24	100	44201	Ozone	Maryland	Calvert
8/28/2010	24-013-0001	0.062	ppm	58	24	100	44201	Ozone	Maryland	Carroll
8/28/2010	24-017-0010	0.057	ppm	48	24	100	44201	Ozone	Maryland	Charles
8/28/2010	24-021-0037	0.073	ppm	93	24	100	44201	Ozone	Maryland	Frederick
8/28/2010	24-025-1001	0.075	ppm	100	24	100	44201	Ozone	Maryland	Harford
8/28/2010	24-025-9001	0.051	ppm	43	24	100	44201	Ozone	Maryland	Harford
8/28/2010	24-031-3001	0.062	ppm	58	24	100	44201	Ozone	Maryland	Montgomery
8/28/2010	24-033-0030	0.073	ppm	93	24	100	44201	Ozone	Maryland	Prince George's
8/28/2010	24-033-8003	0.061	ppm	54	24	100	44201	Ozone	Maryland	Prince George's
8/28/2010	24-510-0054	0.071	ppm	87	24	100	44201	Ozone	Maryland	Baltimore (City)
8/28/2010	51-013-0020	0.076	ppm	101	24	100	44201	Ozone	Virginia	Arlington
8/28/2010	51-059-0030	0.075	ppm	100	24	100	44201	Ozone	Virginia	Fairfax
8/28/2010	51-061-0002	0.054	ppm	46	24	100	44201	Ozone	Virginia	Fauquier
8/28/2010	51-107-1005	0.067	ppm	74	24	100	44201	Ozone	Virginia	Loudoun
8/28/2010	51-153-0009	0.064	ppm	64	24	100	44201	Ozone	Virginia	Prince William
8/28/2010	51-179-0001	0.057	ppm	48	24	100	44201	Ozone	Virginia	Stafford
8/28/2010	51-510-0009	0.075	ppm	100	24	100	44201	Ozone	Virginia	Alexandria City
8/29/2010	11-001-0041	0.080	ppm	111	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/29/2010	11-001-0043	0.069	ppm	80	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/29/2010	24-003-0014	0.078	ppm	106	24	100	44201	Ozone	Maryland	Anne Arundel
8/29/2010	24-005-1007	0.063	ppm	61	24	100	44201	Ozone	Maryland	Baltimore

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
8/29/2010	24-009-0011	0.060	ppm	51	24	100	44201	Ozone	Maryland	Calvert
8/29/2010	24-013-0001	0.063	ppm	61	24	100	44201	Ozone	Maryland	Carroll
8/29/2010	24-017-0010	0.057	ppm	48	24	100	44201	Ozone	Maryland	Charles
8/29/2010	24-021-0037	0.065	ppm	67	24	100	44201	Ozone	Maryland	Frederick
8/29/2010	24-025-1001	0.096	ppm	151	24	100	44201	Ozone	Maryland	Harford
8/29/2010	24-025-9001	0.066	ppm	71	24	100	44201	Ozone	Maryland	Harford
8/29/2010	24-031-3001	0.062	ppm	58	24	100	44201	Ozone	Maryland	Montgomery
8/29/2010	24-033-0030	0.068	ppm	77	24	100	44201	Ozone	Maryland	Prince George's
8/29/2010	24-033-8003	0.072	ppm	90	24	100	44201	Ozone	Maryland	Prince George's
8/29/2010	24-510-0054	0.068	ppm	77	24	100	44201	Ozone	Maryland	Baltimore (City)
8/29/2010	51-013-0020	0.073	ppm	93	24	100	44201	Ozone	Virginia	Arlington
8/29/2010	51-059-0030	0.073	ppm	93	24	100	44201	Ozone	Virginia	Fairfax
8/29/2010	51-061-0002	0.051	ppm	43	24	100	44201	Ozone	Virginia	Fauquier
8/29/2010	51-107-1005	0.059	ppm	50	24	100	44201	Ozone	Virginia	Loudoun
8/29/2010	51-153-0009	0.053	ppm	45	24	100	44201	Ozone	Virginia	Prince William
8/29/2010	51-179-0001	0.059	ppm	50	24	100	44201	Ozone	Virginia	Stafford
8/29/2010	51-510-0009	0.078	ppm	106	24	100	44201	Ozone	Virginia	Alexandria City
8/30/2010	11-001-0043	0.077	ppm	104	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/30/2010	24-003-0014	0.087	ppm	129	24	100	44201	Ozone	Maryland	Anne Arundel
8/30/2010	24-005-1007	0.074	ppm	97	24	100	44201	Ozone	Maryland	Baltimore
8/30/2010	24-005-3001	0.078	ppm	106	17	71	44201	Ozone	Maryland	Baltimore
8/30/2010	24-009-0011	0.098	ppm	156	24	100	44201	Ozone	Maryland	Calvert
8/30/2010	24-013-0001	0.069	ppm	80	24	100	44201	Ozone	Maryland	Carroll
8/30/2010	24-017-0010	0.087	ppm	129	24	100	44201	Ozone	Maryland	Charles
8/30/2010	24-021-0037	0.069	ppm	80	24	100	44201	Ozone	Maryland	Frederick
8/30/2010	24-025-1001	0.076	ppm	101	24	100	44201	Ozone	Maryland	Harford
8/30/2010	24-025-9001	0.063	ppm	61	24	100	44201	Ozone	Maryland	Harford
8/30/2010	24-031-3001	0.072	ppm	90	24	100	44201	Ozone	Maryland	Montgomery
8/30/2010	24-033-0030	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
8/30/2010	24-033-8003	0.084	ppm	122	24	100	44201	Ozone	Maryland	Prince George's
8/30/2010	24-510-0054	0.074	ppm	97	24	100	44201	Ozone	Maryland	Baltimore (City)
8/30/2010	51-013-0020	0.085	ppm	124	24	100	44201	Ozone	Virginia	Arlington
8/30/2010	51-059-0030	0.091	ppm	140	24	100	44201	Ozone	Virginia	Fairfax
8/30/2010	51-061-0002	0.071	ppm	87	24	100	44201	Ozone	Virginia	Fauquier
8/30/2010	51-153-0009	0.079	ppm	109	24	100	44201	Ozone	Virginia	Prince William
8/30/2010	51-179-0001	0.086	ppm	127	24	100	44201	Ozone	Virginia	Stafford
8/30/2010	51-510-0009	0.081	ppm	114	24	100	44201	Ozone	Virginia	Alexandria City
8/29/2010	51-107-1005	0.059	ppm	50	24	100	44201	Ozone	Virginia	Loudoun
8/31/2010	11-001-0025	0.077	ppm	104	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/31/2010	11-001-0041	0.085	ppm	124	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/31/2010	11-001-0043	0.088	ppm	132	24	100	44201	Ozone	District Of Columbia	District of Columbia
8/31/2010	24-003-0014	0.072	ppm	90	24	100	44201	Ozone	Maryland	Anne Arundel
8/31/2010	24-005-1007	0.069	ppm	80	24	100	44201	Ozone	Maryland	Baltimore
8/31/2010	24-005-3001	0.08	ppm	111	24	100	44201	Ozone	Maryland	Baltimore
8/31/2010	24-009-0011	0.064	ppm	64	24	100	44201	Ozone	Maryland	Calvert
8/31/2010	24-013-0001	0.069	ppm	80	24	100	44201	Ozone	Maryland	Carroll
8/31/2010	24-017-0010	0.073	ppm	93	24	100	44201	Ozone	Maryland	Charles
8/31/2010	24-021-0037	0.075	ppm	100	24	100	44201	Ozone	Maryland	Frederick
8/31/2010	24-025-1001	0.09	ppm	137	24	100	44201	Ozone	Maryland	Harford
8/31/2010	24-025-9001	0.065	ppm	67	24	100	44201	Ozone	Maryland	Harford
8/31/2010	24-031-3001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Montgomery
8/31/2010	24-033-0030	0.069	ppm	80	24	100	44201	Ozone	Maryland	Prince George's
8/31/2010	24-033-8003	0.067	ppm	74	24	100	44201	Ozone	Maryland	Prince George's
8/31/2010	24-510-0054	0.073	ppm	93	24	100	44201	Ozone	Maryland	Baltimore (City)
8/31/2010	51-013-0020	0.087	ppm	129	19	79	44201	Ozone	Virginia	Arlington
8/31/2010	51-059-0030	0.086	ppm	127	24	100	44201	Ozone	Virginia	Fairfax
8/31/2010	51-061-0002	0.065	ppm	67	24	100	44201	Ozone	Virginia	Fauquier
8/31/2010	51-153-0009	0.073	ppm	93	24	100	44201	Ozone	Virginia	Prince William

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
8/31/2010	51-179-0001	0.073	ppm	93	24	100	44201	Ozone	Virginia	Stafford
8/31/2010	51-510-0009	0.081	ppm	114	24	100	44201	Ozone	Virginia	Alexandria City
9/1/2010	11-001-0025	0.085	ppm	124	24	100	44201	Ozone	District Of Columbia	District of Columbia
9/1/2010	11-001-0041	0.080	ppm	111	24	100	44201	Ozone	District Of Columbia	District of Columbia
9/1/2010	11-001-0043	0.086	ppm	127	24	100	44201	Ozone	District Of Columbia	District of Columbia
9/1/2010	24-003-0014	0.07	ppm	84	24	100	44201	Ozone	Maryland	Anne Arundel
9/1/2010	24-005-1007	0.075	ppm	100	24	100	44201	Ozone	Maryland	Baltimore
9/1/2010	24-005-3001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Baltimore
9/1/2010	24-009-0011	0.072	ppm	90	24	100	44201	Ozone	Maryland	Calvert
9/1/2010	24-013-0001	0.075	ppm	100	24	100	44201	Ozone	Maryland	Carroll
9/1/2010	24-017-0010	0.066	ppm	71	24	100	44201	Ozone	Maryland	Charles
9/1/2010	24-021-0037	0.074	ppm	97	24	100	44201	Ozone	Maryland	Frederick
9/1/2010	24-025-1001	0.09	ppm	137	24	100	44201	Ozone	Maryland	Harford
9/1/2010	24-025-9001	0.078	ppm	106	24	100	44201	Ozone	Maryland	Harford
9/1/2010	24-031-3001	0.080	ppm	111	24	100	44201	Ozone	Maryland	Montgomery
9/1/2010	24-033-0030	0.085	ppm	124	24	100	44201	Ozone	Maryland	Prince George's
9/1/2010	24-033-8003	0.063	ppm	61	24	100	44201	Ozone	Maryland	Prince George's
9/1/2010	24-510-0054	0.077	ppm	104	24	100	44201	Ozone	Maryland	Baltimore (City)
9/1/2010	51-013-0020	0.073	ppm	93	24	100	44201	Ozone	Virginia	Arlington
9/1/2010	51-059-0030	0.073	ppm	93	24	100	44201	Ozone	Virginia	Fairfax
9/1/2010	51-061-0002	0.056	ppm	47	24	100	44201	Ozone	Virginia	Fauquier
9/1/2010	51-107-1005	0.075	ppm	100	24	100	44201	Ozone	Virginia	Loudoun
9/1/2010	51-153-0009	0.065	ppm	67	24	100	44201	Ozone	Virginia	Prince William
9/1/2010	51-179-0001	0.064	ppm	64	24	100	44201	Ozone	Virginia	Stafford
9/1/2010	51-510-0009	0.066	ppm	71	24	100	44201	Ozone	Virginia	Alexandria City
9/2/2010	11-001-0043	0.073	ppm	93	24	100	44201	Ozone	District Of Columbia	District of Columbia
9/2/2010	24-003-0014	0.064	ppm	64	24	100	44201	Ozone	Maryland	Anne Arundel
9/2/2010	24-005-1007	0.092	ppm	142	24	100	44201	Ozone	Maryland	Baltimore

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
9/2/2010	24-005-3001	0.071	ppm	87	24	100	44201	Ozone	Maryland	Baltimore
9/2/2010	24-009-0011	0.059	ppm	50	24	100	44201	Ozone	Maryland	Calvert
9/2/2010	24-013-0001	0.084	ppm	122	24	100	44201	Ozone	Maryland	Carroll
9/2/2010	24-017-0010	0.060	ppm	51	24	100	44201	Ozone	Maryland	Charles
9/2/2010	24-021-0037	0.083	ppm	119	24	100	44201	Ozone	Maryland	Frederick
9/2/2010	24-025-1001	0.082	ppm	116	24	100	44201	Ozone	Maryland	Harford
9/2/2010	24-025-9001	0.067	ppm	74	24	100	44201	Ozone	Maryland	Harford
9/2/2010	24-031-3001	0.081	ppm	114	24	100	44201	Ozone	Maryland	Montgomery
9/2/2010	24-033-0030	0.076	ppm	101	24	100	44201	Ozone	Maryland	Prince George's
9/2/2010	24-033-8003	0.065	ppm	67	24	100	44201	Ozone	Maryland	Prince George's
9/2/2010	24-510-0054	0.066	ppm	71	24	100	44201	Ozone	Maryland	Baltimore (City)
9/2/2010	51-013-0020	0.067	ppm	74	24	100	44201	Ozone	Virginia	Arlington
9/2/2010	51-059-0030	0.069	ppm	80	24	100	44201	Ozone	Virginia	Fairfax
9/2/2010	51-061-0002	0.061	ppm	54	24	100	44201	Ozone	Virginia	Fauquier
9/2/2010	51-153-0009	0.070	ppm	84	24	100	44201	Ozone	Virginia	Prince William
9/2/2010	51-179-0001	0.065	ppm	67	24	100	44201	Ozone	Virginia	Stafford
9/2/2010	51-510-0009	0.066	ppm	71	24	100	44201	Ozone	Virginia	Alexandria City
9/23/2010	11-001-0025	0.064	ppm	64	24	100	44201	Ozone	District Of Columbia	District of Columbia
9/23/2010	11-001-0041	0.072	ppm	90	24	100	44201	Ozone	District Of Columbia	District of Columbia
9/23/2010	11-001-0043	0.073	ppm	93	24	100	44201	Ozone	District Of Columbia	District of Columbia
9/23/2010	24-003-0014	0.061	ppm	54	24	100	44201	Ozone	Maryland	Anne Arundel
9/23/2010	24-005-1007	0.064	ppm	64	24	100	44201	Ozone	Maryland	Baltimore
9/23/2010	24-005-3001	0.061	ppm	54	24	100	44201	Ozone	Maryland	Baltimore
9/23/2010	24-009-0011	0.063	ppm	61	24	100	44201	Ozone	Maryland	Calvert
9/23/2010	24-013-0001	0.075	ppm	100	24	100	44201	Ozone	Maryland	Carroll
9/23/2010	24-017-0010	0.066	ppm	71	24	100	44201	Ozone	Maryland	Charles
9/23/2010	24-021-0037	0.076	ppm	101	24	100	44201	Ozone	Maryland	Frederick
9/23/2010	24-025-1001	0.062	ppm	58	24	100	44201	Ozone	Maryland	Harford
9/23/2010	24-025-9001	0.06	ppm	51	18	75	44201	Ozone	Maryland	Harford

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
9/23/2010	24-031-3001	0.059	ppm	50	24	100	44201	Ozone	Maryland	Montgomery
9/23/2010	24-033-0030	0.062	ppm	58	24	100	44201	Ozone	Maryland	Prince George's
9/23/2010	24-033-8003	0.060	ppm	51	24	100	44201	Ozone	Maryland	Prince George's
9/23/2010	51-013-0020	0.071	ppm	87	24	100	44201	Ozone	Virginia	Arlington
9/23/2010	51-059-0030	0.080	ppm	111	24	100	44201	Ozone	Virginia	Fairfax
9/23/2010	51-061-0002	0.066	ppm	71	24	100	44201	Ozone	Virginia	Fauquier
9/23/2010	51-107-1005	0.070	ppm	84	24	100	44201	Ozone	Virginia	Loudoun
9/23/2010	51-153-0009	0.065	ppm	67	24	100	44201	Ozone	Virginia	Prince William
9/23/2010	51-179-0001	0.069	ppm	80	24	100	44201	Ozone	Virginia	Stafford
9/23/2010	51-510-0009	0.069	ppm	80	24	100	44201	Ozone	Virginia	Alexandria City
9/24/2010	11-001-0025	0.069	ppm	80	24	100	44201	Ozone	District Of Columbia	District of Columbia
9/24/2010	11-001-0041	0.069	ppm	80	24	100	44201	Ozone	District Of Columbia	District of Columbia
9/24/2010	11-001-0043	0.067	ppm	74	24	100	44201	Ozone	District Of Columbia	District of Columbia
9/24/2010	24-003-0014	0.074	ppm	97	24	100	44201	Ozone	Maryland	Anne Arundel
9/24/2010	24-005-1007	0.073	ppm	93	24	100	44201	Ozone	Maryland	Baltimore
9/24/2010	24-005-3001	0.075	ppm	100	24	100	44201	Ozone	Maryland	Baltimore
9/24/2010	24-009-0011	0.071	ppm	87	24	100	44201	Ozone	Maryland	Calvert
9/24/2010	24-013-0001	0.072	ppm	90	24	100	44201	Ozone	Maryland	Carroll
9/24/2010	24-017-0010	0.069	ppm	80	24	100	44201	Ozone	Maryland	Charles
9/24/2010	24-021-0037	0.064	ppm	64	24	100	44201	Ozone	Maryland	Frederick
9/24/2010	24-025-1001	0.077	ppm	104	18	75	44201	Ozone	Maryland	Harford
9/24/2010	24-025-9001	0.077	ppm	104	24	100	44201	Ozone	Maryland	Harford
9/24/2010	24-031-3001	0.071	ppm	87	24	100	44201	Ozone	Maryland	Montgomery
9/24/2010	24-033-0030	0.073	ppm	93	24	100	44201	Ozone	Maryland	Prince George's
9/24/2010	24-033-8003	0.067	ppm	74	24	100	44201	Ozone	Maryland	Prince George's
9/24/2010	24-510-0054	0.065	ppm	67	19	79	44201	Ozone	Maryland	Baltimore (City)
9/24/2010	51-013-0020	0.070	ppm	84	24	100	44201	Ozone	Virginia	Arlington
9/24/2010	51-059-0030	0.069	ppm	80	24	100	44201	Ozone	Virginia	Fairfax
9/24/2010	51-061-0002	0.064	ppm	64	24	100	44201	Ozone	Virginia	Fauquier
9/24/2010	51-107-1005	0.065	ppm	67	24	100	44201	Ozone	Virginia	Loudoun

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TABLE A2-2: Air Quality Data – Monitor Exceedance days By Episode for 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	AQS PARAMETER CODE	AQS PARAMETER DESC	STATE	COUNTY
9/24/2010	51-153-0009	0.063	ppm	61	24	100	44201	Ozone	Virginia	Prince William
9/24/2010	51-179-0001	0.065	ppm	67	24	100	44201	Ozone	Virginia	Stafford
9/24/2010	51-510-0009	0.069	ppm	80	18	75	44201	Ozone	Virginia	Alexandria City

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TABLE A2-4: Air Quality Data – Monitor Exceedance days for Edegewood 2006 through 2010

Date	AQS SITE ID	Daily Max 8-hour Ozone Concentration	UNITS	DAILY AQI VALUE	DAILY OBS COUNT	PERCENT COMPLETE	STATE	COUNTY
7/9/2007	24-025-1001	**0.113**	ppm	195	24	100	Maryland	Harford
8/10/2010	24-025-1001	**0.110**	ppm	187	24	100	Maryland	Harford
6/25/2009	24-025-1001	**0.109**	ppm	185	24	100	Maryland	Harford
5/30/2006	24-025-1001	**0.103**	ppm	169	24	100	Maryland	Harford
7/18/2008	24-025-1001	**0.102**	ppm	166	24	100	Maryland	Harford
7/23/2010	24-025-1001	**0.101**	ppm	164	24	100	Maryland	Harford
7/18/2006	24-025-1001	**0.100**	ppm	161	24	100	Maryland	Harford
7/11/2008	24-025-1001	**0.100**	ppm	161	24	100	Maryland	Harford
6/8/2007	24-025-1001	**0.099**	ppm	159	24	100	Maryland	Harford
7/5/2010	24-025-1001	**0.097**	ppm	154	24	100	Maryland	Harford
8/29/2010	24-025-1001	**0.096**	ppm	151	24	100	Maryland	Harford
6/21/2006	24-025-1001	**0.095**	ppm	150	24	100	Maryland	Harford
7/17/2006	24-025-1001	**0.095**	ppm	150	24	100	Maryland	Harford
6/22/2006	24-025-1001	**0.094**	ppm	147	24	100	Maryland	Harford
6/14/2008	24-025-1001	**0.093**	ppm	145	24	100	Maryland	Harford
8/19/2010	24-025-1001	**0.093**	ppm	145	24	100	Maryland	Harford
7/6/2010	24-025-1001	**0.092**	ppm	142	24	100	Maryland	Harford
6/26/2009	24-025-1001	**0.091**	ppm	140	24	100	Maryland	Harford
7/8/2007	24-025-1001	**0.091**	ppm	140	24	100	Maryland	Harford
8/15/2007	24-025-1001	**0.090**	ppm	137	24	100	Maryland	Harford
7/4/2010	24-025-1001	**0.090**	ppm	137	24	100	Maryland	Harford
8/31/2010	24-025-1001	**0.090**	ppm	137	24	100	Maryland	Harford
9/1/2010	24-025-1001	**0.090**	ppm	137	24	100	Maryland	Harford
7/3/2008	24-025-1001	**0.089**	ppm	135	24	100	Maryland	Harford
5/30/2007	24-025-1001	**0.089**	ppm	135	24	100	Maryland	Harford
6/18/2006	24-025-1001	**0.089**	ppm	135	24	100	Maryland	Harford
8/7/2006	24-025-1001	**0.089**	ppm	135	24	100	Maryland	Harford
5/27/2010	24-025-1001	**0.089**	ppm	135	24	100	Maryland	Harford
6/7/2008	24-025-1001	**0.088**	ppm	132	24	100	Maryland	Harford
6/18/2007	24-025-1001	**0.088**	ppm	132	24	100	Maryland	Harford
7/17/2008	24-025-1001	**0.088**	ppm	132	24	100	Maryland	Harford
7/7/2010	24-025-1001	**0.088**	ppm	132	24	100	Maryland	Harford
8/4/2007	24-025-1001	**0.087**	ppm	129	24	100	Maryland	Harford
7/11/2006	24-025-1001	**0.087**	ppm	129	24	100	Maryland	Harford
8/12/2007	24-025-1001	**0.087**	ppm	129	24	100	Maryland	Harford
8/22/2006	24-025-1001	**0.087**	ppm	129	24	100	Maryland	Harford
6/2/2010	24-025-1001	**0.087**	ppm	129	24	100	Maryland	Harford
6/22/2010	24-025-1001	**0.087**	ppm	129	24	100	Maryland	Harford
6/25/2010	24-025-1001	**0.087**	ppm	129	24	100	Maryland	Harford
6/26/2010	24-025-1001	**0.087**	ppm	129	24	100	Maryland	Harford
4/18/2008	24-025-1001	**0.086**	ppm	127	24	100	Maryland	Harford

5/31/2007	24-025-1001	**0.086**	ppm	127	24	100	Maryland	Harford
8/30/2007	24-025-1001	**0.086**	ppm	127	24	100	Maryland	Harford
7/16/2010	24-025-1001	**0.086**	ppm	127	18	75	Maryland	Harford
7/17/2010	24-025-1001	**0.086**	ppm	127	24	100	Maryland	Harford
8/16/2009	24-025-1001	**0.085**	ppm	124	24	100	Maryland	Harford
6/13/2008	24-025-1001	**0.085**	ppm	124	24	100	Maryland	Harford
7/29/2008	24-025-1001	**0.085**	ppm	124	24	100	Maryland	Harford
8/25/2006	24-025-1001	**0.085**	ppm	124	24	100	Maryland	Harford
8/6/2007	24-025-1001	**0.085**	ppm	124	24	100	Maryland	Harford
8/1/2006	24-025-1001	**0.084**	ppm	122	24	100	Maryland	Harford
8/17/2007	24-025-1001	**0.084**	ppm	122	24	100	Maryland	Harford
9/26/2007	24-025-1001	**0.084**	ppm	122	24	100	Maryland	Harford
8/18/2009	24-025-1001	**0.083**	ppm	119	24	100	Maryland	Harford
7/3/2006	24-025-1001	**0.083**	ppm	119	24	100	Maryland	Harford
6/19/2007	24-025-1001	**0.083**	ppm	119	24	100	Maryland	Harford
7/15/2009	24-025-1001	**0.082**	ppm	116	24	100	Maryland	Harford
4/19/2008	24-025-1001	**0.082**	ppm	116	24	100	Maryland	Harford
8/7/2007	24-025-1001	**0.082**	ppm	116	24	100	Maryland	Harford
6/23/2010	24-025-1001	**0.082**	ppm	116	24	100	Maryland	Harford
9/2/2010	24-025-1001	**0.082**	ppm	116	24	100	Maryland	Harford
7/16/2009	24-025-1001	**0.081**	ppm	114	24	100	Maryland	Harford
7/16/2008	24-025-1001	**0.081**	ppm	114	24	100	Maryland	Harford
7/28/2008	24-025-1001	**0.081**	ppm	114	24	100	Maryland	Harford
7/21/2006	24-025-1001	**0.081**	ppm	114	24	100	Maryland	Harford
7/27/2006	24-025-1001	**0.081**	ppm	114	24	100	Maryland	Harford
8/2/2007	24-025-1001	**0.081**	ppm	114	24	100	Maryland	Harford
8/25/2007	24-025-1001	**0.081**	ppm	114	24	100	Maryland	Harford
9/4/2008	24-025-1001	**0.08**	ppm	111	24	100	Maryland	Harford
8/24/2006	24-025-1001	**0.08**	ppm	111	24	100	Maryland	Harford
6/1/2007	24-025-1001	**0.08**	ppm	111	24	100	Maryland	Harford
7/3/2010	24-025-1001	**0.08**	ppm	111	24	100	Maryland	Harford
6/12/2008	24-025-1001	**0.079**	ppm	109	24	100	Maryland	Harford
7/12/2008	24-025-1001	**0.079**	ppm	109	24	100	Maryland	Harford
6/1/2006	24-025-1001	**0.079**	ppm	109	24	100	Maryland	Harford
6/29/2006	24-025-1001	**0.079**	ppm	109	24	100	Maryland	Harford
6/27/2010	24-025-1001	**0.079**	ppm	109	24	100	Maryland	Harford
4/26/2009	24-025-1001	**0.078**	ppm	106	24	100	Maryland	Harford
6/27/2007	24-025-1001	**0.078**	ppm	106	24	100	Maryland	Harford
7/14/2007	24-025-1001	**0.078**	ppm	106	24	100	Maryland	Harford
8/3/2007	24-025-1001	**0.078**	ppm	106	24	100	Maryland	Harford
7/31/2010	24-025-1001	**0.078**	ppm	106	24	100	Maryland	Harford
7/13/2009	24-025-1001	**0.077**	ppm	104	24	100	Maryland	Harford
5/29/2006	24-025-1001	**0.077**	ppm	104	24	100	Maryland	Harford
7/19/2006	24-025-1001	**0.077**	ppm	104	24	100	Maryland	Harford
7/24/2006	24-025-1001	**0.077**	ppm	104	24	100	Maryland	Harford
5/27/2007	24-025-1001	**0.077**	ppm	104	24	100	Maryland	Harford

9/5/2007	24-025-1001	**0.077**	ppm	104	24	100	Maryland	Harford
5/5/2010	24-025-1001	**0.077**	ppm	104	16	67	Maryland	Harford
9/24/2010	24-025-1001	**0.077**	ppm	104	18	75	Maryland	Harford
8/27/2009	24-025-1001	**0.076**	ppm	101	24	100	Maryland	Harford
7/29/2006	24-025-1001	**0.076**	ppm	101	24	100	Maryland	Harford
7/28/2007	24-025-1001	**0.076**	ppm	101	24	100	Maryland	Harford
5/21/2010	24-025-1001	**0.076**	ppm	101	24	100	Maryland	Harford
8/9/2010	24-025-1001	**0.076**	ppm	101	24	100	Maryland	Harford
8/30/2010	24-025-1001	**0.076**	ppm	101	24	100	Maryland	Harford
	Mean	0.085802083						
	Standard Deviatio	0.00806633						
	Mode	0.087						
	Median	0.085						

Color Key:		
Group Number	**Ozone concentration range**	**Number of values in Group**
1. Bottom Quintile	**0.076-0.078 ppm**	**19**
2. Lower Quintile	**0.079 to 0.082 ppm**	**16**
3. Middle Quintile	**0.082 to 0.087 ppm**	**21.000**
4. Upper Quintile	**0.087 to 0.090 ppm**	**21.000**
5. Top Quintile	0.091 ppm or more	19

APPENDIX 3 to Technical Support Document -- Area Designations for the Washin

TABLE A3-1 Highway Vehicle Mobile Source Emissions by County - 2008

fips	stfips	ctyfips	state_abbr	county_name	TIER1	TIER1NAME	pollutant_code
11001	11	1	DC	District of Columbia	11	HIGHWAY VEHICLES	VOC
Baltimore Area							
24003	24	3	MD	Anne Arundel	11	HIGHWAY VEHICLES	VOC
24005	24	5	MD	Baltimore	11	HIGHWAY VEHICLES	VOC
24013	24	13	MD	Carroll	11	HIGHWAY VEHICLES	VOC
24025	24	25	MD	Harford	11	HIGHWAY VEHICLES	VOC
24027	24	27	MD	Howard	11	HIGHWAY VEHICLES	VOC
24510	24	510	MD	Baltimore city	11	HIGHWAY VEHICLES	VOC
Maryland Portion of Washington							
24009	24	9	MD	Calvert	11	HIGHWAY VEHICLES	VOC
24017	24	17	MD	Charles	11	HIGHWAY VEHICLES	VOC
24021	24	21	MD	Frederick	11	HIGHWAY VEHICLES	VOC
24031	24	31	MD	Montgomery	11	HIGHWAY VEHICLES	VOC
24033	24	33	MD	Prince George's	11	HIGHWAY VEHICLES	VOC
Other Maryland CSA Counties							
24035	24	35	MD	Queen Anne's	11	HIGHWAY VEHICLES	VOC
24037	24	37	MD	St. Mary's	11	HIGHWAY VEHICLES	VOC
Virginia Portion of Washington							
51013	51	13	VA	Arlington	11	HIGHWAY VEHICLES	VOC
51059	51	59	VA	Fairfax	11	HIGHWAY VEHICLES	VOC
51107	51	107	VA	Loudoun	11	HIGHWAY VEHICLES	VOC
51153	51	153	VA	Prince William	11	HIGHWAY VEHICLES	VOC
51510	51	510	VA	Alexandria city	11	HIGHWAY VEHICLES	VOC
51600	51	600	VA	Fairfax city	11	HIGHWAY VEHICLES	VOC
51610	51	610	VA	Falls Church city	11	HIGHWAY VEHICLES	VOC
51683	51	683	VA	Manassas city	11	HIGHWAY VEHICLES	VOC
51685	51	685	VA	Manassas Park city	11	HIGHWAY VEHICLES	VOC
Fredericksburg, VA Area							
51177	51	177	VA	Spotsylvania	11	HIGHWAY VEHICLES	VOC
51179	51	179	VA	Stafford	11	HIGHWAY VEHICLES	VOC
51630	51	630	VA	Fredericksburg city	11	HIGHWAY VEHICLES	VOC
Frederick Co. VA Area							
51069	51	69	VA	Frederick	11	HIGHWAY VEHICLES	VOC
51840	51	840	VA	Winchester city	11	HIGHWAY VEHICLES	VOC

Other Virginia CSA Counties

51043	51	43	VA	Clarke	11	HIGHWAY VEHICLES	VOC
51047	51	47	VA	Culpeper	11	HIGHWAY VEHICLES	VOC
51061	51	61	VA	Fauquier	11	HIGHWAY VEHICLES	VOC
51187	51	187	VA	Warren	11	HIGHWAY VEHICLES	VOC

Other West Virginia CSA Counties

54037	54	37	WV	Jefferson	11	HIGHWAY VEHICLES	VOC
54027	54	27	WV	Hampshire	11	HIGHWAY VEHICLES	VOC

Washington Area (1997 ozone nonatta
Baltimore Area (1997 ozone nonattain
Baltimore + Washington Areas
CSA Totals

Other Adjacent Virginia Counties

51033	51	33	VA	Caroline	11	HIGHWAY VEHICLES	VOC
51057	51	57	VA	Essex	11	HIGHWAY VEHICLES	VOC
51097	51	97	VA	King and Queen	11	HIGHWAY VEHICLES	VOC
51099	51	99	VA	King George	11	HIGHWAY VEHICLES	VOC
51101	51	101	VA	King William	11	HIGHWAY VEHICLES	VOC
51133	51	133	VA	Northumberland	11	HIGHWAY VEHICLES	VOC
51137	51	137	VA	Orange	11	HIGHWAY VEHICLES	VOC
51139	51	139	VA	Page	11	HIGHWAY VEHICLES	VOC
51157	51	157	VA	Rappahannock	11	HIGHWAY VEHICLES	VOC
51159	51	159	VA	Richmond	11	HIGHWAY VEHICLES	VOC
51171	51	171	VA	Shenandoah	11	HIGHWAY VEHICLES	VOC
51193	51	193	VA	Westmoreland	11	HIGHWAY VEHICLES	VOC

Other Adjacent Maryland Counties

24011	24	11	MD	Caroline	11	HIGHWAY VEHICLES	VOC
24041	24	41	MD	Talbot	11	HIGHWAY VEHICLES	VOC
24019	24	19	MD	Dorchester	11	HIGHWAY VEHICLES	VOC
24043	24	43	MD	Washington	11	HIGHWAY VEHICLES	VOC
24029	24	29	MD	Kent	11	HIGHWAY VEHICLES	VOC

Other Adjacent West Virginia County

54003	54	3	WV	Berkeley	11	HIGHWAY VEHICLES	VOC

11001	11	1	DC	District of Columbia	11	HIGHWAY VEHICLES	NOX

Baltimore Area

24003	24	3	MD	Anne Arundel	11	HIGHWAY VEHICLES	NOX
24005	24	5	MD	Baltimore	11	HIGHWAY VEHICLES	NOX
24013	24	13	MD	Carroll	11	HIGHWAY VEHICLES	NOX
24025	24	25	MD	Harford	11	HIGHWAY VEHICLES	NOX
24027	24	27	MD	Howard	11	HIGHWAY VEHICLES	NOX
24510	24	510	MD	Baltimore city	11	HIGHWAY VEHICLES	NOX
24009	24	9	MD	Calvert	11	HIGHWAY VEHICLES	NOX
24017	24	17	MD	Charles	11	HIGHWAY VEHICLES	NOX
24021	24	21	MD	Frederick	11	HIGHWAY VEHICLES	NOX
24031	24	31	MD	Montgomery	11	HIGHWAY VEHICLES	NOX
24033	24	33	MD	Prince George's	11	HIGHWAY VEHICLES	NOX

Other Maryland CSA Counties

24037	24	37	MD	St. Mary's	11	HIGHWAY VEHICLES	NOX
24035	24	35	MD	Queen Anne's	11	HIGHWAY VEHICLES	NOX

Maryland C

51013	51	13	VA	Arlington	11	HIGHWAY VEHICLES	NOX
51059	51	59	VA	Fairfax	11	HIGHWAY VEHICLES	NOX
51107	51	107	VA	Loudoun	11	HIGHWAY VEHICLES	NOX
51153	51	153	VA	Prince William	11	HIGHWAY VEHICLES	NOX
51510	51	510	VA	Alexandria city	11	HIGHWAY VEHICLES	NOX
51600	51	600	VA	Fairfax city	11	HIGHWAY VEHICLES	NOX
51610	51	610	VA	Falls Church city	11	HIGHWAY VEHICLES	NOX
51683	51	683	VA	Manassas city	11	HIGHWAY VEHICLES	NOX
51685	51	685	VA	Manassas Park city	11	HIGHWAY VEHICLES	NOX

Fredericksburg, VA Area

51177	51	177	VA	Spotsylvania	11	HIGHWAY VEHICLES	NOX
51179	51	179	VA	Stafford	11	HIGHWAY VEHICLES	NOX
51630	51	630	VA	Fredericksburg city	11	HIGHWAY VEHICLES	NOX

Frederick Co. VA Area

51069	51	69	VA	Frederick	11	HIGHWAY VEHICLES	NOX
51840	51	840	VA	Winchester city	11	HIGHWAY VEHICLES	NOX

Other Virginia CSA Counties

51061	51	61	VA	Fauquier	11	HIGHWAY VEHICLES	NOX
51043	51	43	VA	Clarke	11	HIGHWAY VEHICLES	NOX
51047	51	47	VA	Culpeper	11	HIGHWAY VEHICLES	NOX
51187	51	187	VA	Warren	11	HIGHWAY VEHICLES	NOX

Virginia CS

Other West Virginia CSA Counties

54037	54	37	WV	Jefferson	11	HIGHWAY VEHICLES	NOX
54027	54	27	WV	Hampshire	11	HIGHWAY VEHICLES	NOX

West Virgir

Washington Area (1997 ozone nonatta
Baltimore Area (1997 ozone nonattain
Baltimore + Washington Areas
CSA Totals

Other Adjacent Virginia Counties

51033	51	33	VA	Caroline	11	HIGHWAY VEHICLES	NOX
51057	51	57	VA	Essex	11	HIGHWAY VEHICLES	NOX
51097	51	97	VA	King and Queen	11	HIGHWAY VEHICLES	NOX
51099	51	99	VA	King George	11	HIGHWAY VEHICLES	NOX
51101	51	101	VA	King William	11	HIGHWAY VEHICLES	NOX
51133	51	133	VA	Northumberland	11	HIGHWAY VEHICLES	NOX
51137	51	137	VA	Orange	11	HIGHWAY VEHICLES	NOX
51139	51	139	VA	Page	11	HIGHWAY VEHICLES	NOX
51157	51	157	VA	Rappahannock	11	HIGHWAY VEHICLES	NOX
51159	51	159	VA	Richmond	11	HIGHWAY VEHICLES	NOX
51171	51	171	VA	Shenandoah	11	HIGHWAY VEHICLES	NOX
51193	51	193	VA	Westmoreland	11	HIGHWAY VEHICLES	NOX

Other Adjacent Maryland Counties

24029	24	29	MD	Kent	11	HIGHWAY VEHICLES	NOX
24043	24	43	MD	Washington	11	HIGHWAY VEHICLES	NOX
24011	24	11	MD	Caroline	11	HIGHWAY VEHICLES	NOX
24041	24	41	MD	Talbot	11	HIGHWAY VEHICLES	NOX
24019	24	19	MD	Dorchester	11	HIGHWAY VEHICLES	NOX

Other Adjacent West Virginia County

54003	54	3	WV	Berkeley	11	HIGHWAY VEHICLES	NOX

Data sources:
final(2).xls, and, DC 2008 VOC NEI ver 1.5 final(2).xls
final(2).xls, and, DC 2008 NOx NEI ver 1.5 final(3).xls
These files were obtained from: http://www.epa.gov/ttn/chief/net/2008inventory.html
Source: http://www.epa.gov/ttn/chief/net/2008inventory.html
Tier 1 Summaries - Criteria Air Pollutants only by 13 majors tiers
State/County - County slected
Geographic Aggregation
Region 3 - Maryland, Virginia, District of Columbia or West Virginia selected as needed.

Pollutant: CAP - Volatile Organic Compounds or CAP - Nitrogen Oxides selected.
Tier 1 category - all selected.
Downloaded: April 9, 2012.

gton-Baltimore-Northern

description	emissions	Percent of CSA Total
Volatile Organic Compounds	4,041.3	6.0%
Volatile Organic Compounds	4,829.9	
Volatile Organic Compounds	6,851.1	
Volatile Organic Compounds	1,088.1	
Volatile Organic Compounds	1,892.6	
Volatile Organic Compounds	3,082.2	
Volatile Organic Compounds	3,092.7	
Subtotal	20,836.7	30.9%
Volatile Organic Compounds	617.1	
Volatile Organic Compounds	1,068.4	
Volatile Organic Compounds	2,505.1	
Volatile Organic Compounds	6,700.1	
Volatile Organic Compounds	7,527.5	
Subtotal	18,418.2	27.3%
Volatile Organic Compounds	762.0	
Volatile Organic Compounds	966.7	
Subtotal	1,728.8	2.6%
Maryland CSA Total	40,983.6	
Volatile Organic Compounds	1,287.5	
Volatile Organic Compounds	8,229.3	
Volatile Organic Compounds	1,249.0	
Volatile Organic Compounds	2,605.5	
Volatile Organic Compounds	551.7	
Volatile Organic Compounds	147.2	
Volatile Organic Compounds	57.2	
Volatile Organic Compounds	309.7	
Volatile Organic Compounds	27.6	
Subtotal	14,464.6	21.5%
Volatile Organic Compounds	1,519.8	2.3%
Volatile Organic Compounds	1,413.1	2.1%
Volatile Organic Compounds	454.0	0.7%
Subtotal	3,387.0	5.0%
Volatile Organic Compounds	684.1	1.0%
Volatile Organic Compounds	237.1	0.4%
Subtotal	921.1	1.4%

Volatile Organic Compounds	398.1	0.6%
Volatile Organic Compounds	702.1	1.0%
Volatile Organic Compounds	1,227.9	1.8%
Volatile Organic Compounds	590.2	0.9%
Subtotal	2,918.4	4.3%
Virginia CSA Subtotal	21,691.1	
Volatile Organic Compounds	452.8	0.7%
Volatile Organic Compounds	261.5	0.4%
West Virginia CSA Subtotal	714.3	1.1%
ıinment area) Subtotal	36,924.2	54.8%
ıment area) Subtotal	20,836.7	30.9%
	57,760.8	85.7%
	67,430.4	100.0%

Volatile Organic Compounds	1,106.9
Volatile Organic Compounds	250.3
Volatile Organic Compounds	172.5
Volatile Organic Compounds	378.6
Volatile Organic Compounds	207.3
Volatile Organic Compounds	172.2
Volatile Organic Compounds	395.6
Volatile Organic Compounds	331.4
Volatile Organic Compounds	146.6
Volatile Organic Compounds	188.6
Volatile Organic Compounds	1,109.2
Volatile Organic Compounds	259.1
Subtotal	4,718.2
Volatile Organic Compounds	426.3
Volatile Organic Compounds	708.0
Volatile Organic Compounds	456.9
Volatile Organic Compounds	1,997.5
Volatile Organic Compounds	236.3
Subtotal	3,825.1
Volatile Organic Compounds	1,096.8
Nitrogen Oxides	6,333.2

Nitrogen Oxides	6,333.2	5.6%

Nitrogen Oxides	8,465.7	
Nitrogen Oxides	12,695.6	
Nitrogen Oxides	1,648.7	
Nitrogen Oxides	3,572.4	
Nitrogen Oxides	5,962.1	
Nitrogen Oxides	4,847.5	
Subtotal	37,192.1	32.9%
Nitrogen Oxides	1,009.0	
Nitrogen Oxides	1,609.0	
Nitrogen Oxides	4,688.4	
Nitrogen Oxides	10,269.5	
Nitrogen Oxides	12,383.6	
Subtotal	29,959.6	26.5%
Nitrogen Oxides	1,368.9	1.2%
Nitrogen Oxides	1,731.9	1.5%
Subtotal	3,100.8	2.7%
SA Total	70,252.5	
Nitrogen Oxides	2,314.6	
Nitrogen Oxides	13,635.6	
Nitrogen Oxides	1,763.3	
Nitrogen Oxides	4,178.8	
Nitrogen Oxides	922.6	
Nitrogen Oxides	208.3	
Nitrogen Oxides	79.5	
Nitrogen Oxides	336.2	
Nitrogen Oxides	36.7	
Subtotal	23,475.6	20.8%
Nitrogen Oxides	2,497.3	2.2%
Nitrogen Oxides	2,214.5	2.0%
Nitrogen Oxides	718.8	0.6%
Subtotal	5,430.6	4.8%
Nitrogen Oxides	1,460.7	1.3%
Nitrogen Oxides	214.8	0.2%
Subtotal	1,675.5	1.5%
Nitrogen Oxides	2,169.3	1.9%
Nitrogen Oxides	666.5	0.6%
Nitrogen Oxides	1,071.0	0.9%
Nitrogen Oxides	1,071.5	0.9%
Subtotal	4,978.3	4.4%
A Subtotal	35,559.9	

Nitrogen Oxides	604.1	0.5%
Nitrogen Oxides	313.8	0.3%
ıia CSA Subtotal	917.8	0.8%
ıinment area) Subtotal	59,768.3	52.9%
ıment area) Subtotal	37,192.1	32.9%
	96,960.4	85.8%
	113,063.4	100.0%

Nitrogen Oxides	2,300.4
Nitrogen Oxides	355.0
Nitrogen Oxides	253.6
Nitrogen Oxides	587.2
Nitrogen Oxides	314.1
Nitrogen Oxides	237.9
Nitrogen Oxides	577.1
Nitrogen Oxides	472.6
Nitrogen Oxides	224.5
Nitrogen Oxides	269.0
Nitrogen Oxides	2,035.7
Nitrogen Oxides	375.2
Subtotal	8,002.3

Nitrogen Oxides	457.8
Nitrogen Oxides	5,505.2
Nitrogen Oxides	647.9
Nitrogen Oxides	1,042.8
Nitrogen Oxides	666.3

Nitrogen Oxides	1,986.4

Appendix 3 to Technical Support Document—

Area Designations for the Washington-Baltimore-Northern Virginia, DC-MD-VA-WV Combined Statistical Area (CSA) 2008 Ozone National Ambient Air Quality Standards

Population growth rates

From 2000 to 2010, Loudoun County VA grew at a rate of 84.1%, the 5th highest growth rate in the US[126]. There were no Maryland counties in the top 10 US growth rates for counties of 10,000 or more. Virginia statewide population increases were also higher than Maryland's increases from 1980 to 2010[127]. The Virginia County data are located in the footnoted web page[128]. Maryland county data are from MDP's *Maryland Statistical Handbook*[129].

State	% chg 1980-1990	% chg 1990-2000	% chg 2000-2010
Maryland	13.4	10.8	9.0
Virginia	15.8	14.4	13.0
Northern VA			16.3 (2000-2007)

County (Baltimore, DC and Ex-urban)	Growth Rate in Percent	Growth in absolute pop. change	Data Years
Virginia counties			
Washington DC region			
Loudoun	84.1	142,712	2000-2010
Loudoun	62.5	105,997	2000-2007
Fairfax	11.5[130]	42,763	2000-2007
Prince William	32.5	91,126	2000-2007
Fauquier[131]	18.3	65,460	2010
Fredericksburg area			
Spotsylvania	32.6	29,512	2000-2007
Stafford	30.2	27,941	2000-2007
King George[132]	40.4		2000-2010
Winchester area			
Frederick	32.3[133]	13,740	2000-2007
Maryland counties	GR > 15% in **bold**		
Baltimore region			
Anne Arundel	6.4	31,545	2000-2009
Baltimore County	4.7	35,506	2000-2009
Baltimore City	-2.1	-13,736	2000-2009
Carroll	12.7	19,192	2000-2009
Harford	10.9	23,924	2000-2009
Howard	13.7	34,035	2000-2009

[126] US Census link to a PDF for Population Distribution and Change: 2000 to 2010 (page 9), http://2010.census.gov/2010census/

[127] http://www.census.gov/compendia/statab/cats/population.html--#14: State Population--Rank, Percent Change, And Population Density (link to a PDF document)

[128] http://vaperforms.virginia.gov/extras/profileSummary.php--links to a PDF report

[129] MD Statistical Handbook linked from the following web page: http://planning.maryland.gov/msdc/S2_Estimate.shtml

[130] http://quickfacts.census.gov/qfd/states/51/51059.html

[131] http://www.fauquiercounty.gov/government/departments/commdev/index.cfm?action=demographics

[132] http://quickfacts.census.gov/qfd/states/51/51099.html

[133] http://quickfacts.census.gov/qfd/states/51/51069.html

Washington DC region			
Montgomery	11.3	98,254	2000-2009
Prince George's	4.1	33,044	2000-2009
Frederick	**16.7**	32,704	2000-2009
Calvert	**19.6**	14,649	2000-2009
Charles	**18.0**	21,680	2000-2009
Washington County EAC			
Washington	10.6	13,987	2000-2009
Attainment/exurban			
St. Mary's	**19.4**	16,767	2000-2009
Kent/Queen Anne's Maintenance Area			
Queen Anne's	**18.2**	7,398	2000-2009
Kent	5.5	1,047	2000-2009
Philadelphia region			
Cecil	**17.3**	14,845	2000-2009

Appendix 5: HYSPLIT Trajectories for Edgewood by Group and Exceedance Days Over 0.100 ppm

Figure 5A-1 Edgewood Group 1 2008-2010 Days (<= 0.078 ppm)

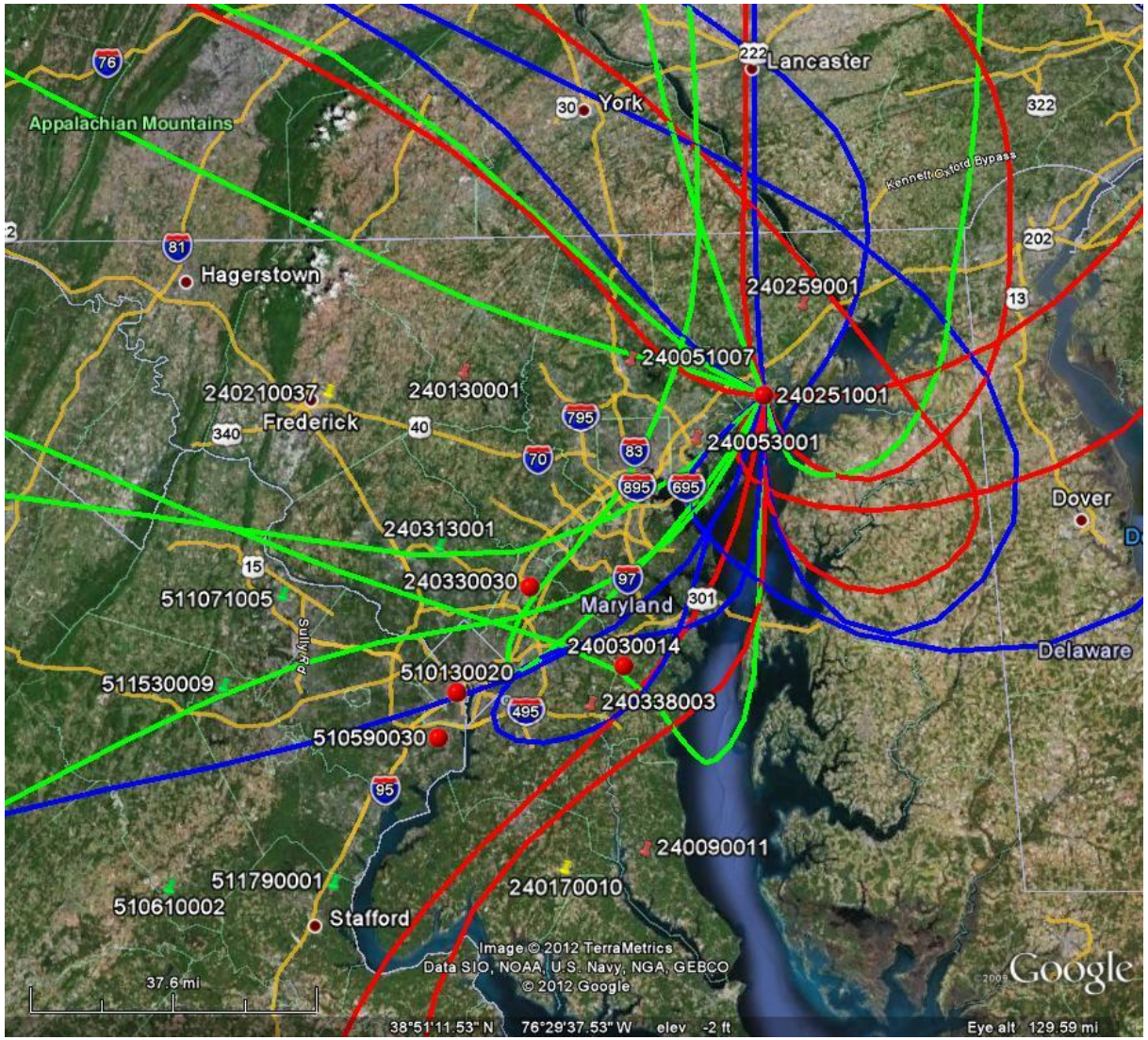


Figure 5A-2 Edgewood Group 2 2008-2010 Days (>=0.079 & <= 0.081 ppm)

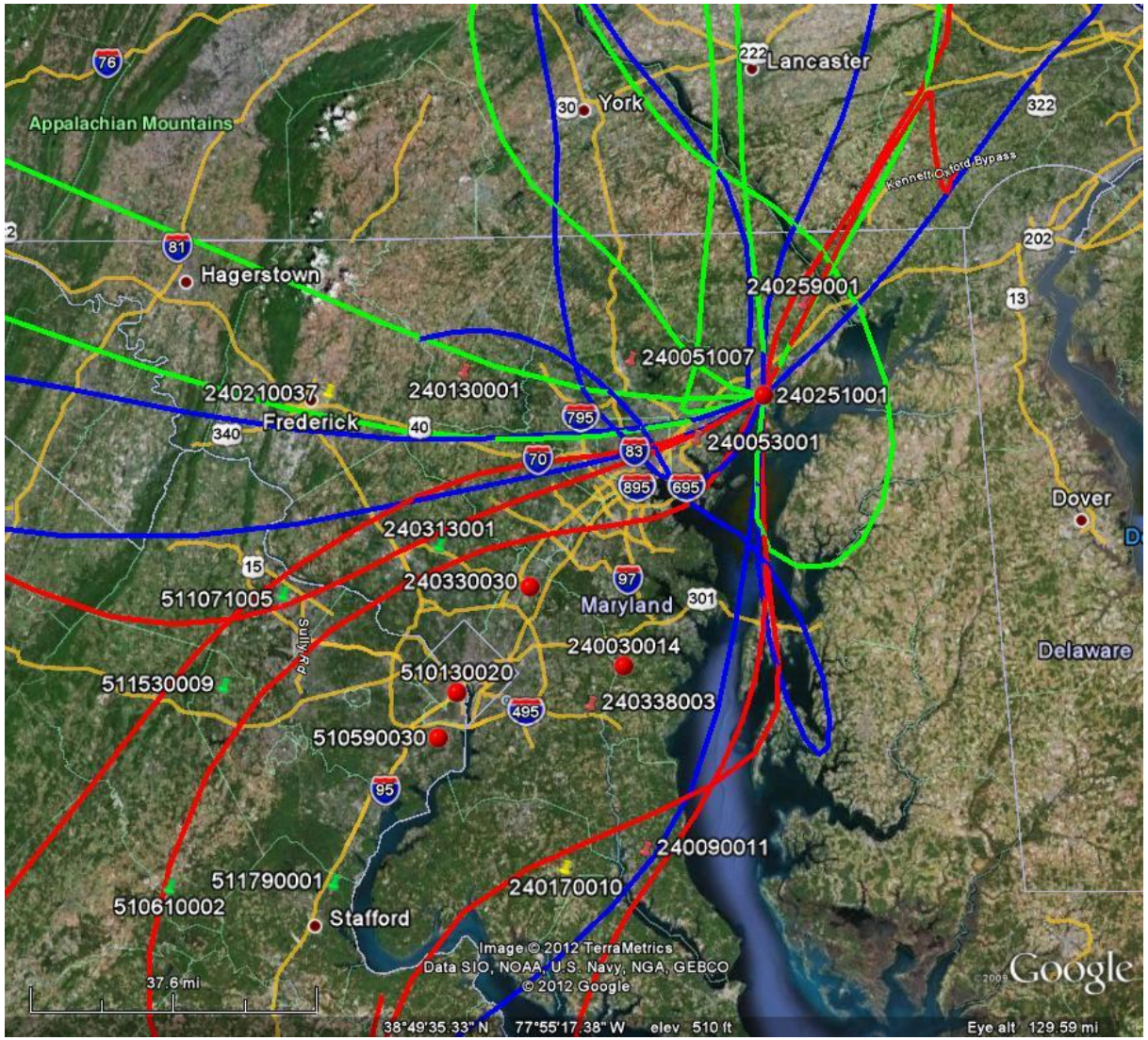


Figure 5A-3 Edgewood Group 3 2008-2010 Days (>=0.082 & <= 0.086 ppm)

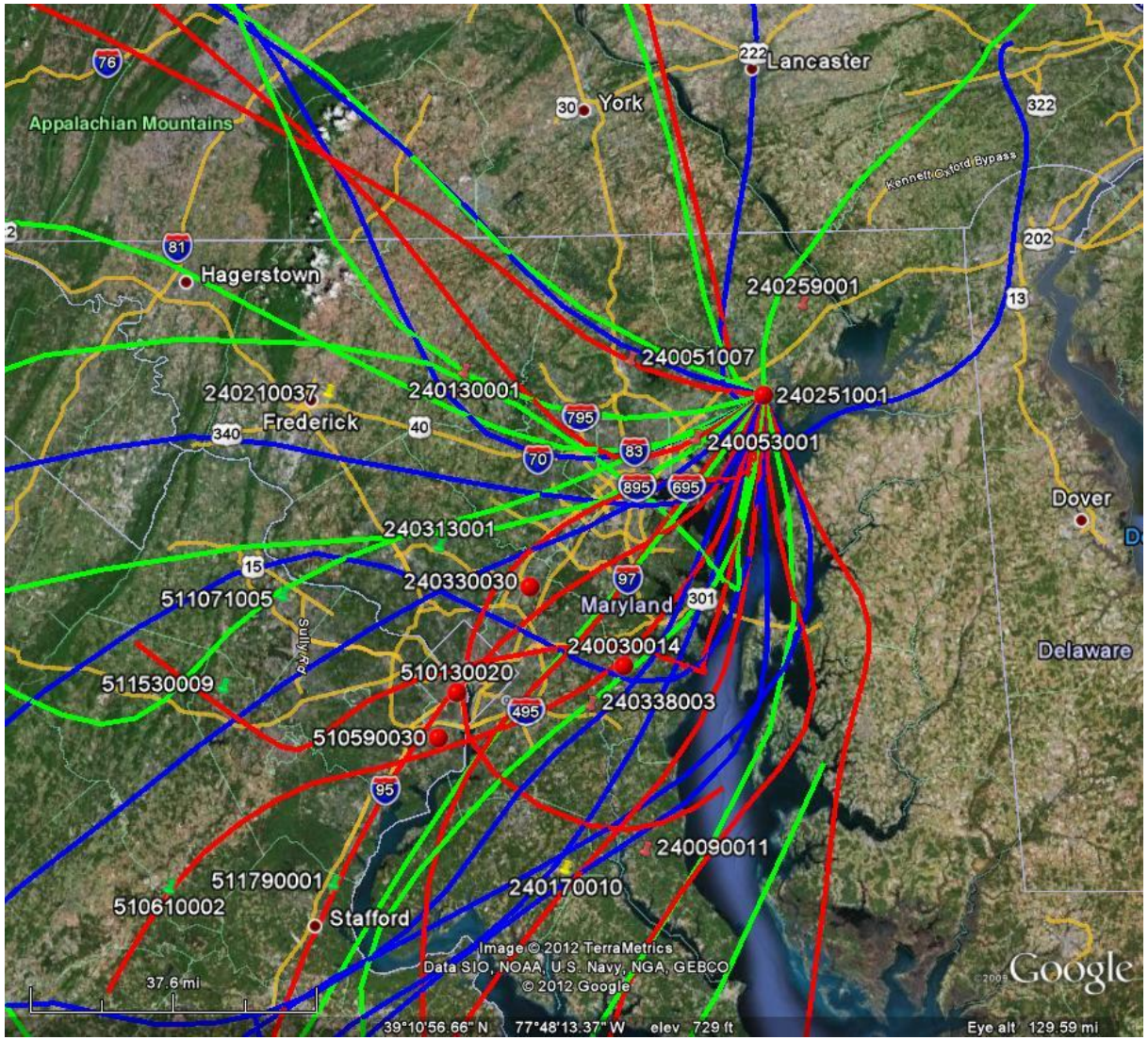


Figure 5A-4 Edgewood Group 4 2008-2010 Days (>=0.087 & <= 0.091 ppm)

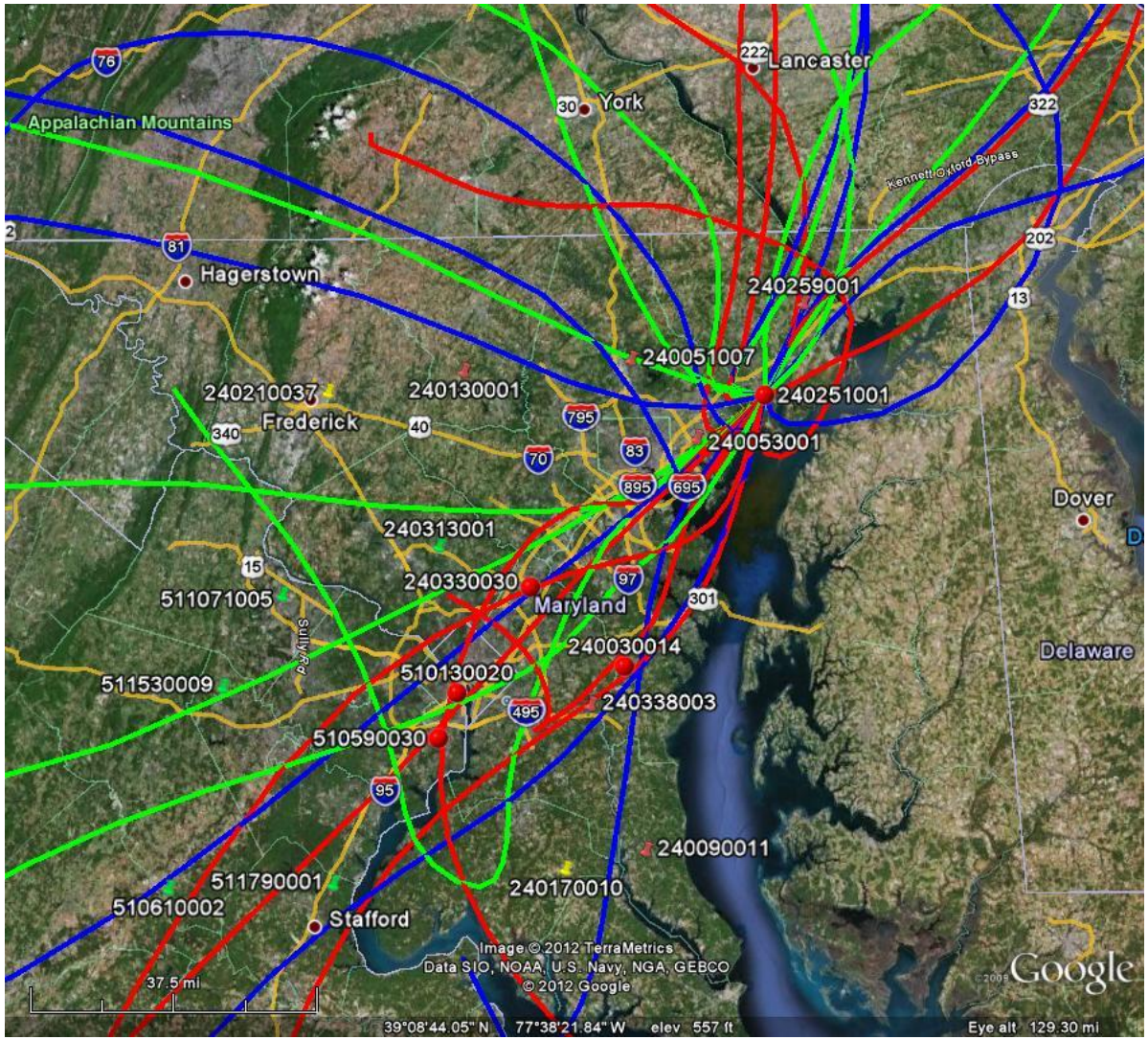


Figure 5A-5 Edgewood Group 5 2008-2010 Days (>= 0.091 ppm)

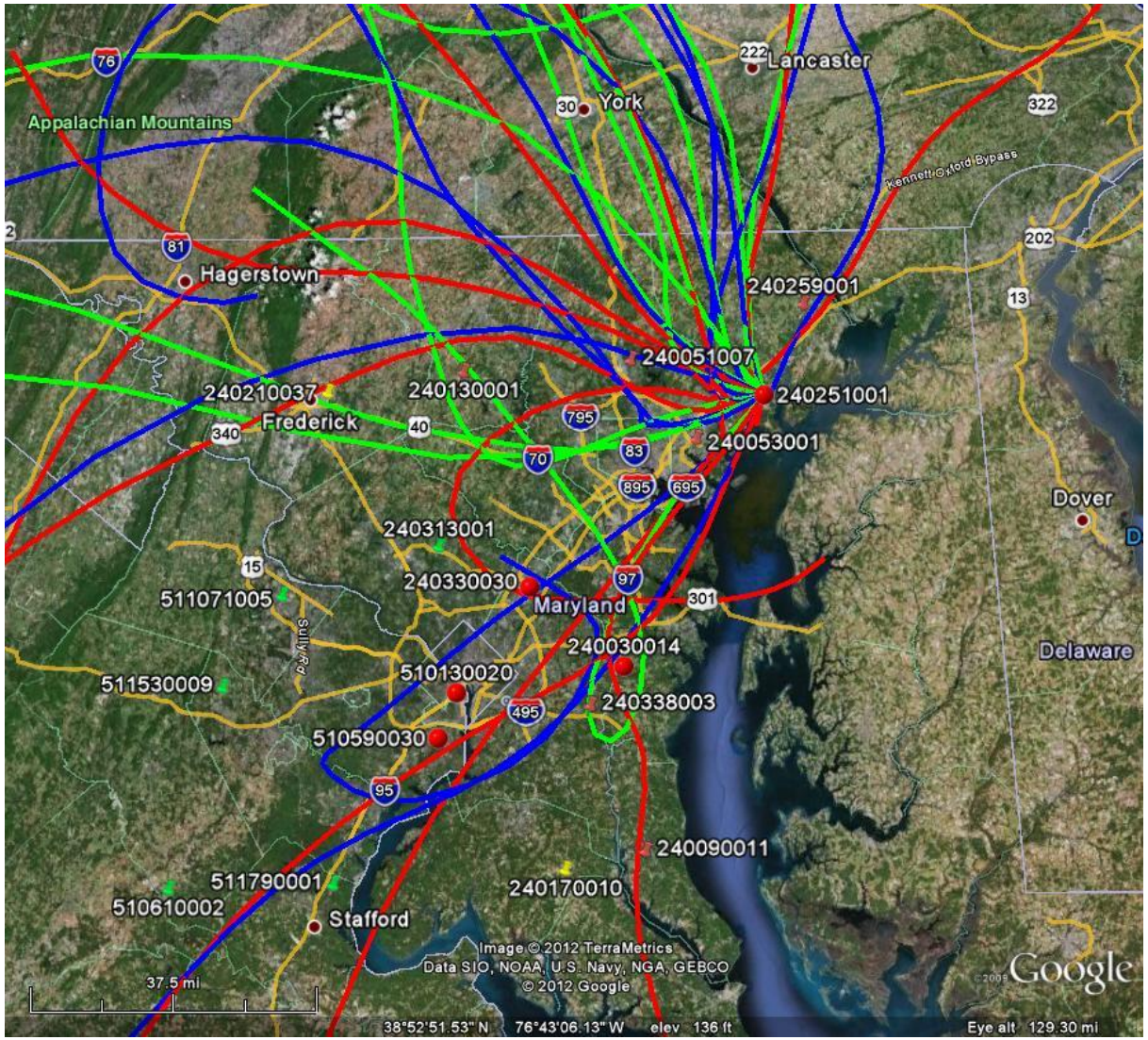


Figure 5A-6 Edgewood Group 1 2006-2007 Days (>=0.076 & <= 0.078 ppm)

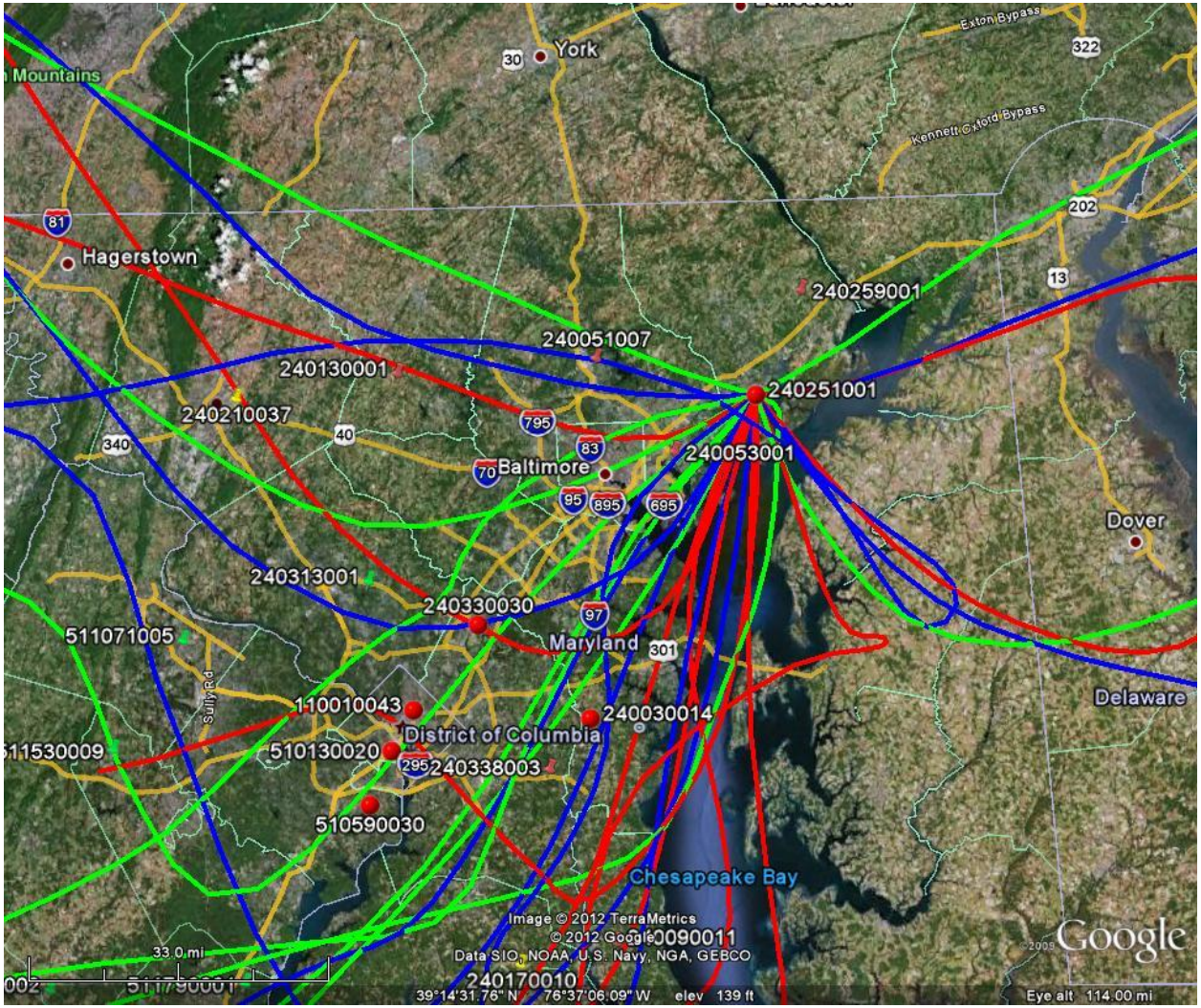


Figure 5A-7 Edgewood Group 2 Days 2006-2007 (>=0.079 & <= 0.081 ppm)

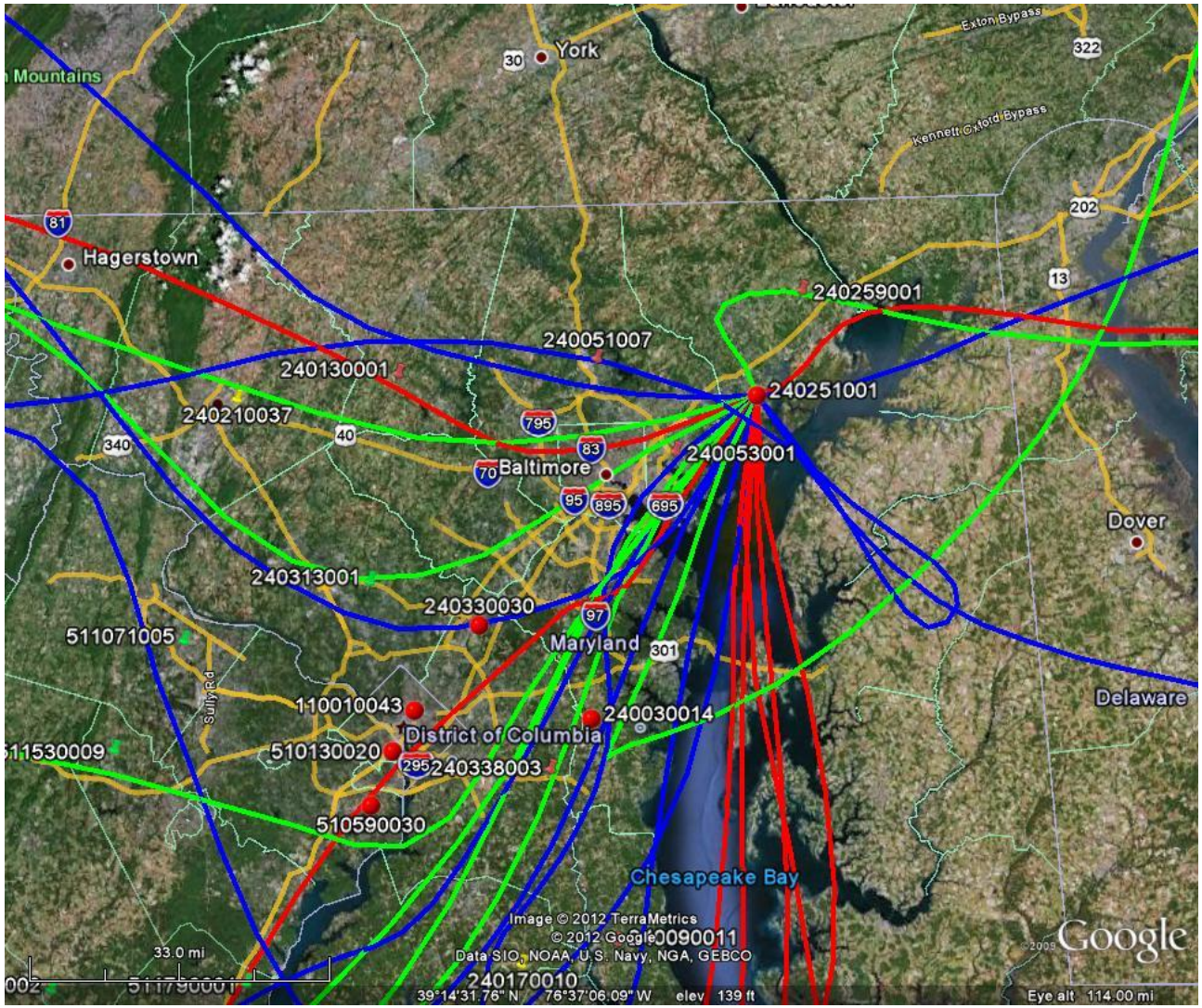


Figure 5A-8 Edgewood Group 3 Days 2006-2007 (>=0.082 & <= 0.086 ppm)

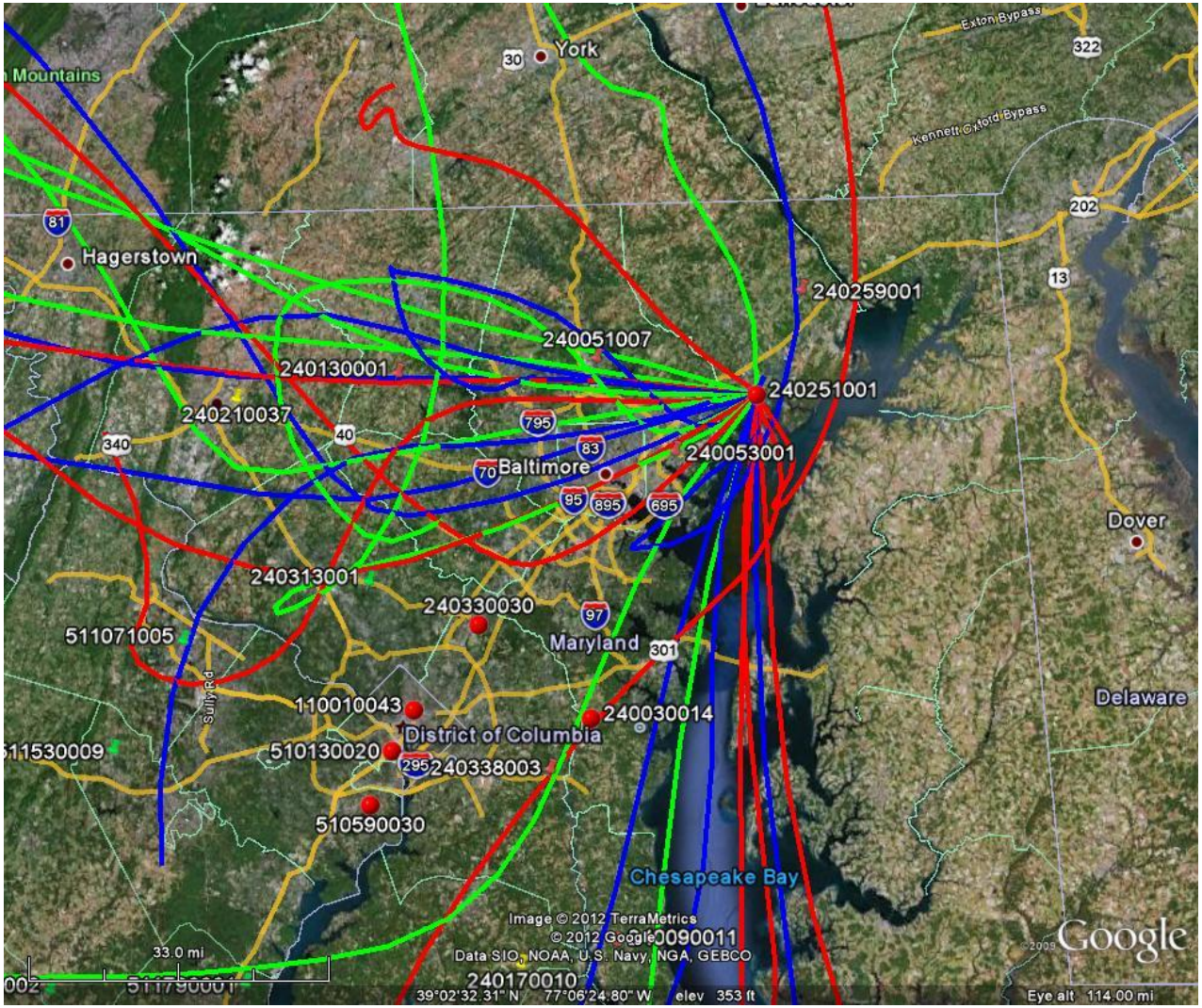


Figure 5A-9 Edgewood Group 4 Days 2006-2007 (>=0.087 & <= 0.090 ppm)

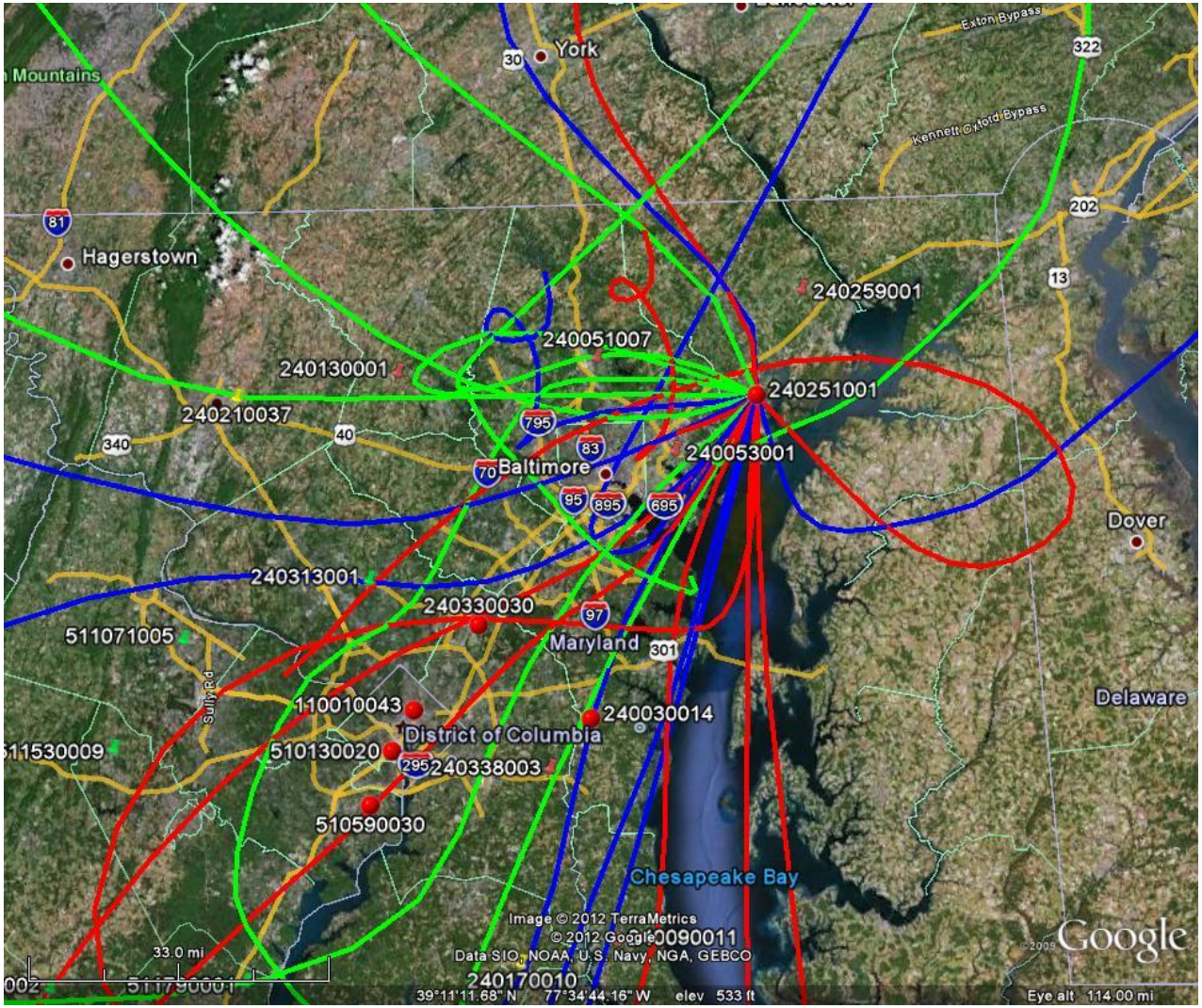


Figure 5A-10 Edgewood Group 5 Days 2006-2007 (>=0.091 ppm)

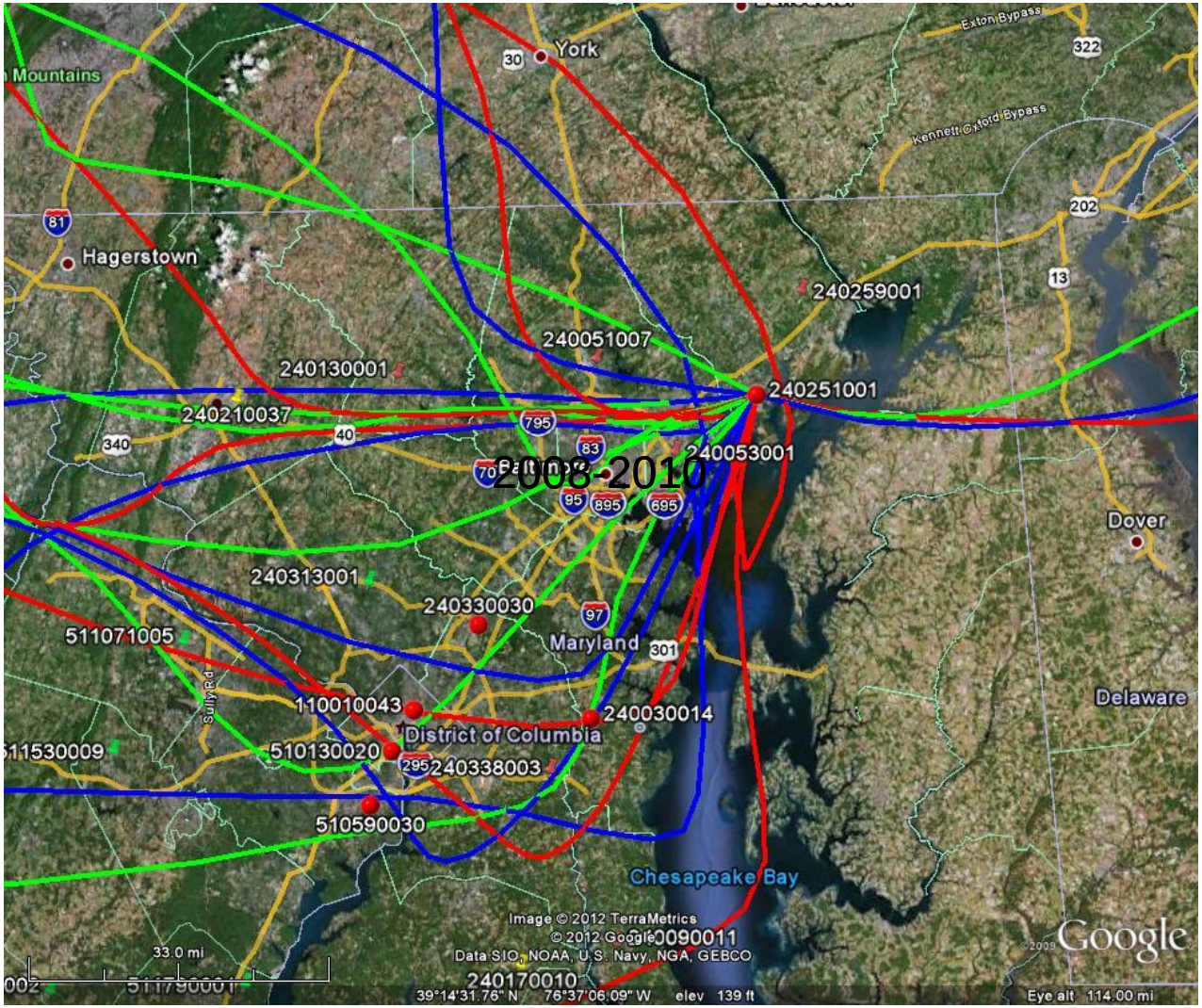


Figure5A-11 Edgewood Days 2006-2010 (>0.0100 ppm)

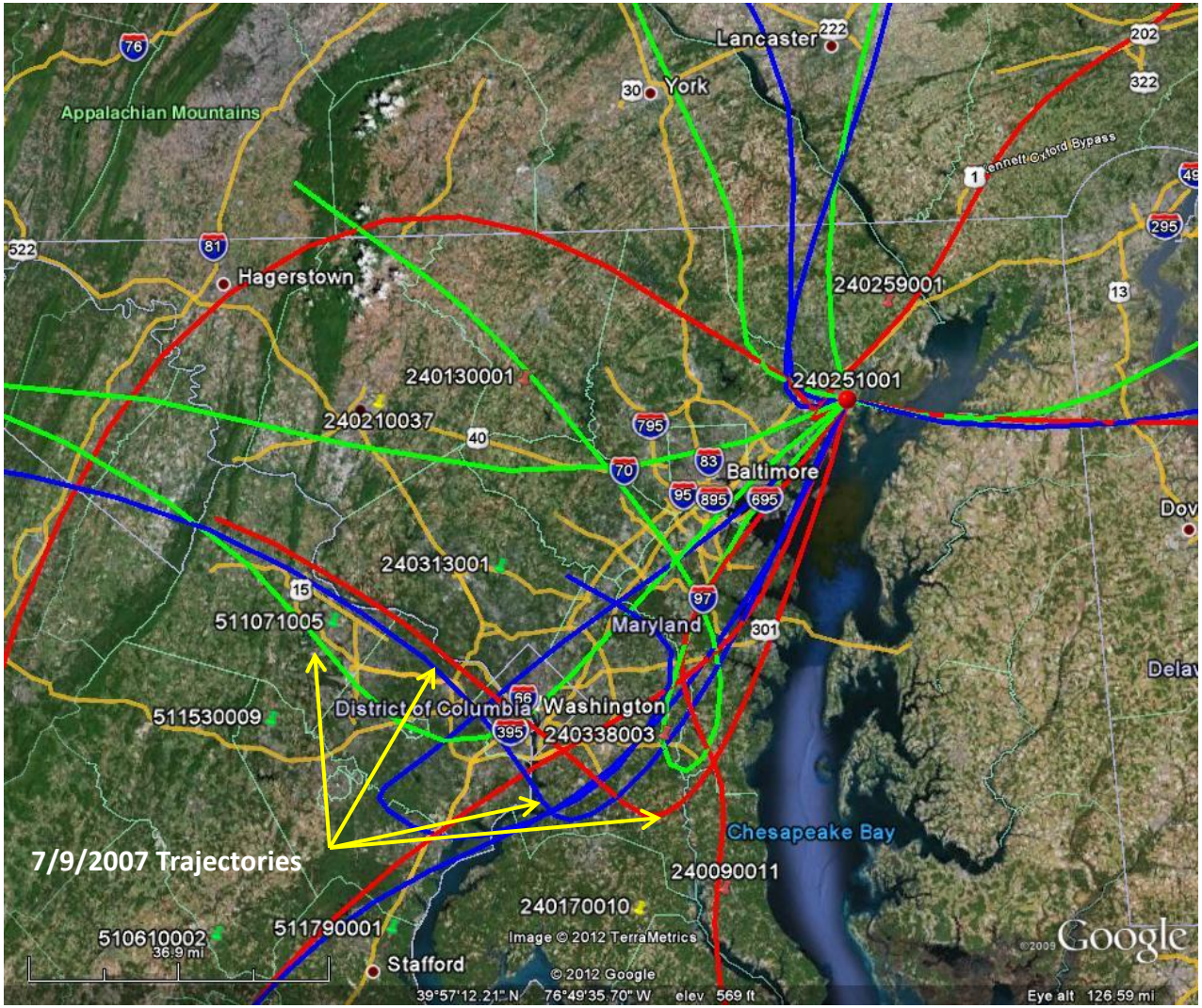
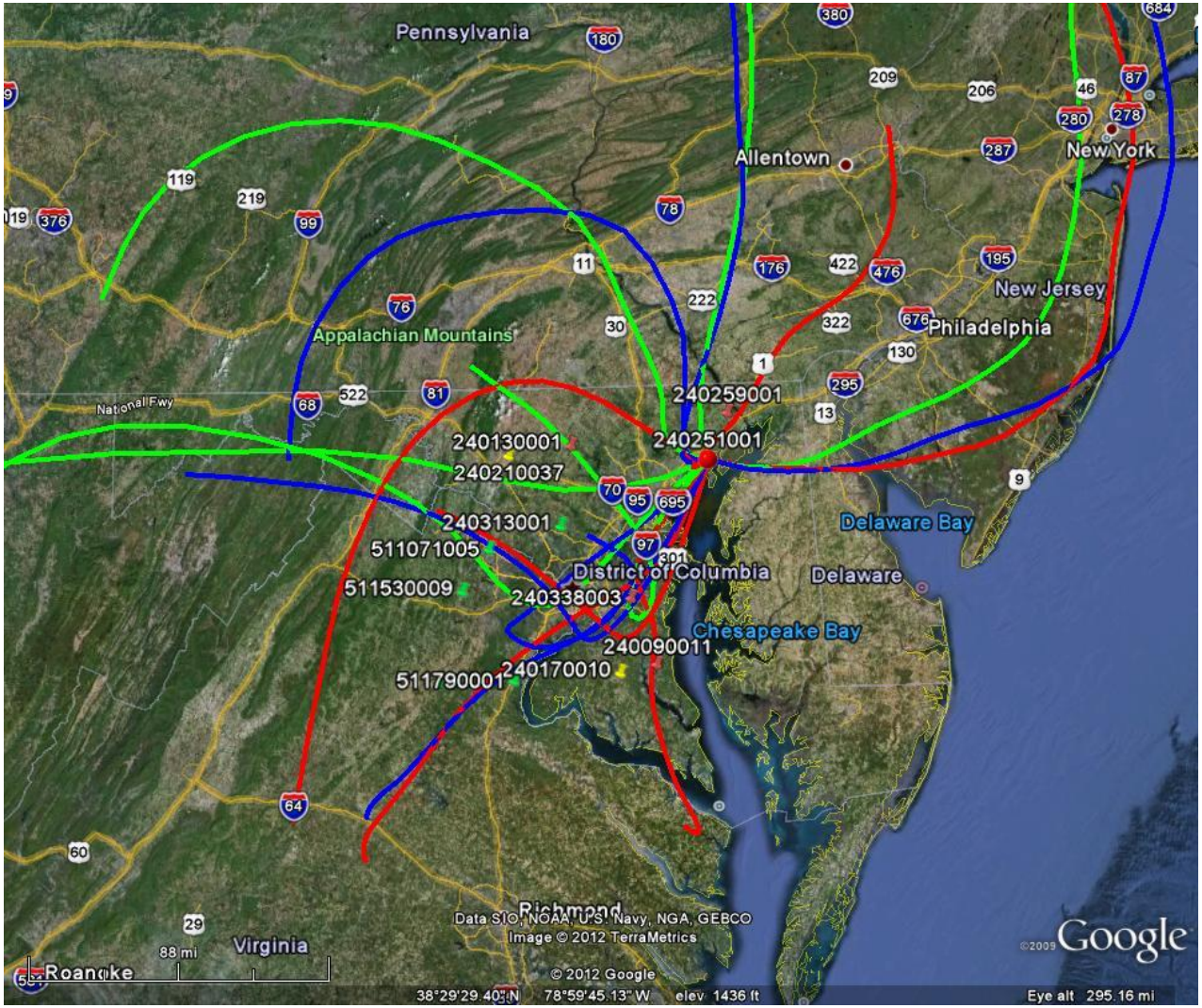
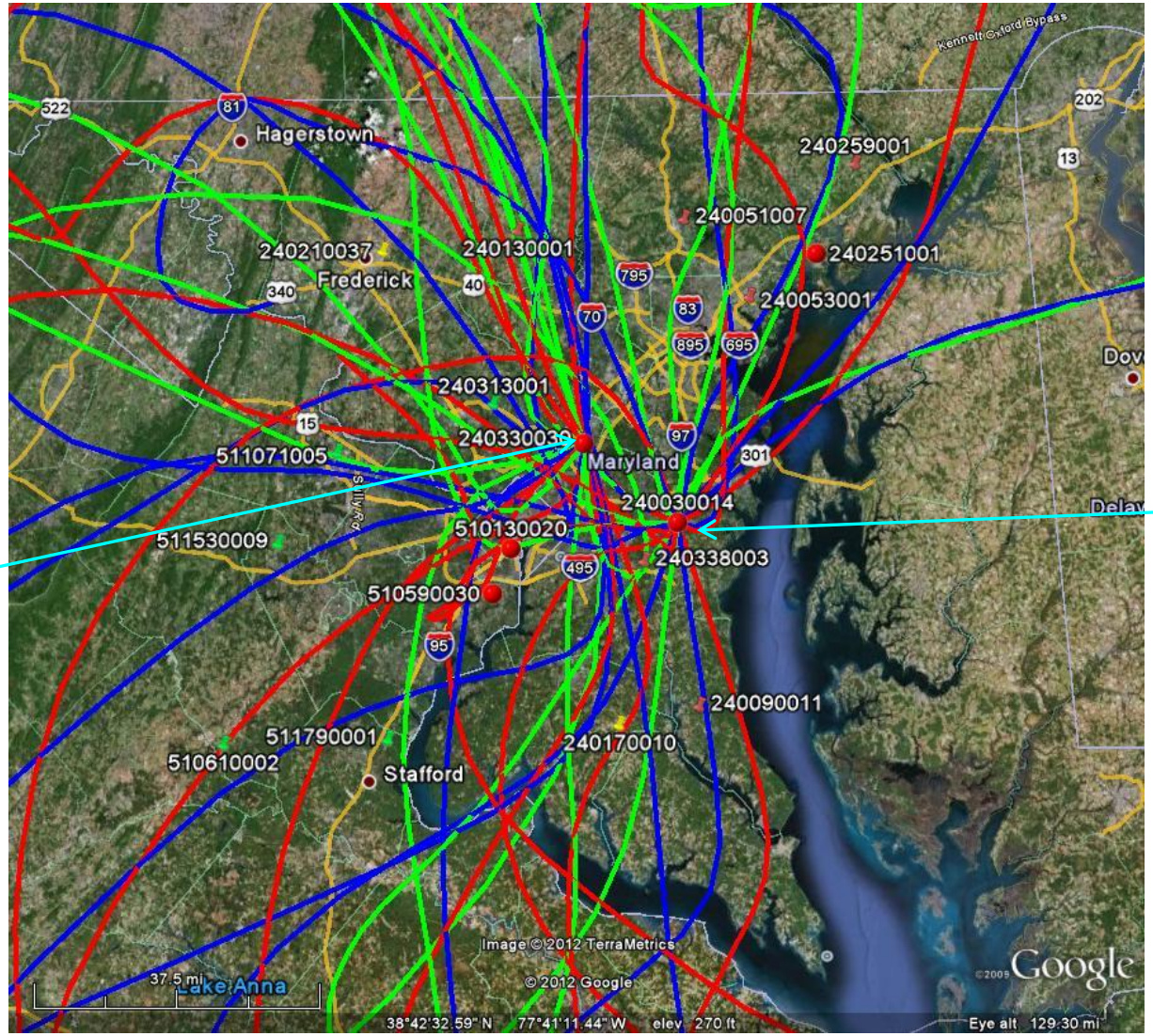


Figure 5A-12 Edgewood Days 2006-2010 (>0.0100 ppm)



Appendix 6: HYSPLIT Trajectories for the Davidsonville, Prince George's Equestrian Center and Howard University—Beltsville by Group

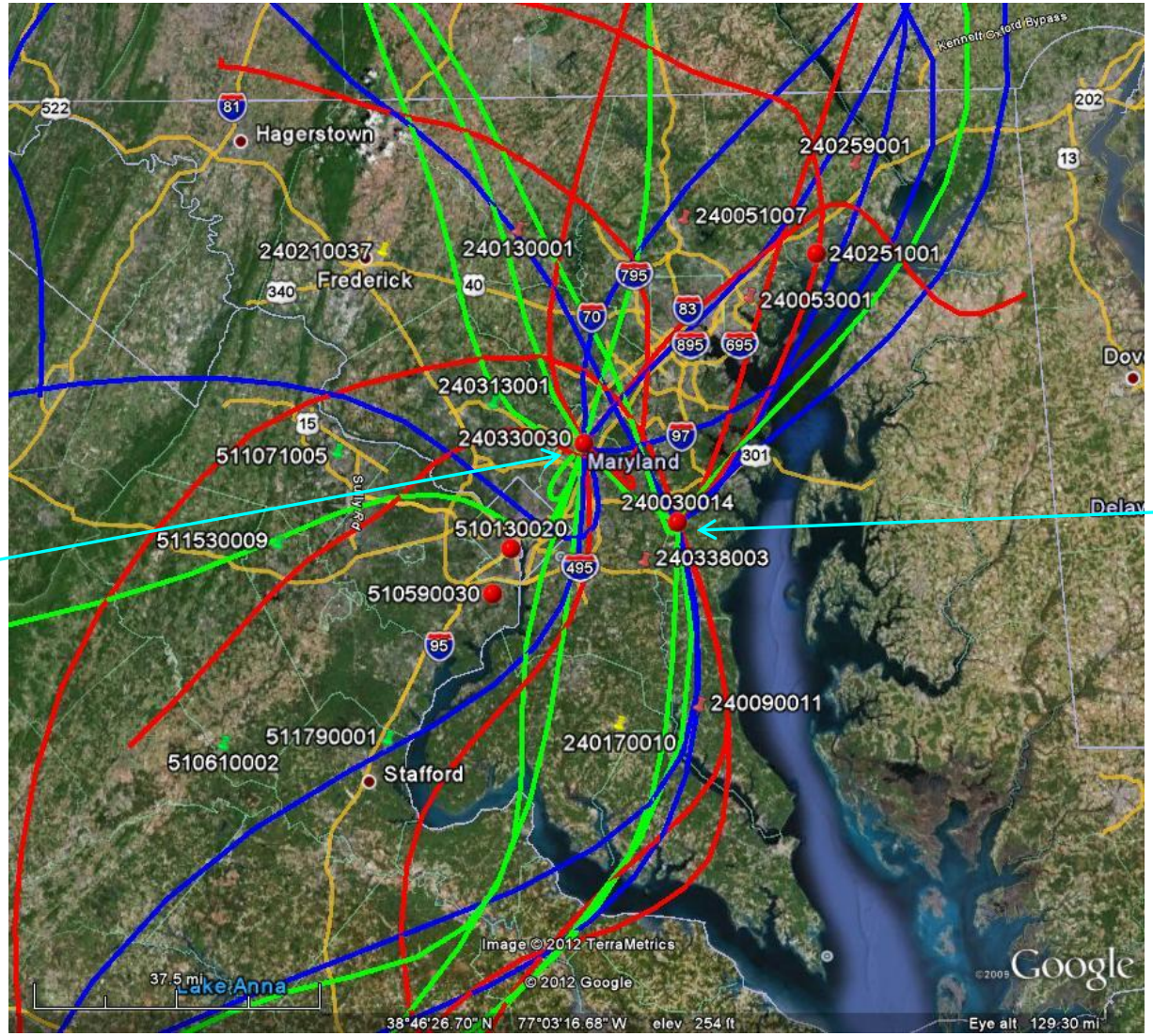
Figure 6A-1 Davidsonville & Howard U-Beltsville 2008-2010 Group 1 Days (<= 0.078 ppm)



Howard Uni--Beltsville (Prince George's Co., MD) (240330030)

Davidsonville (Anne Arundel Co., MD) (240030014)

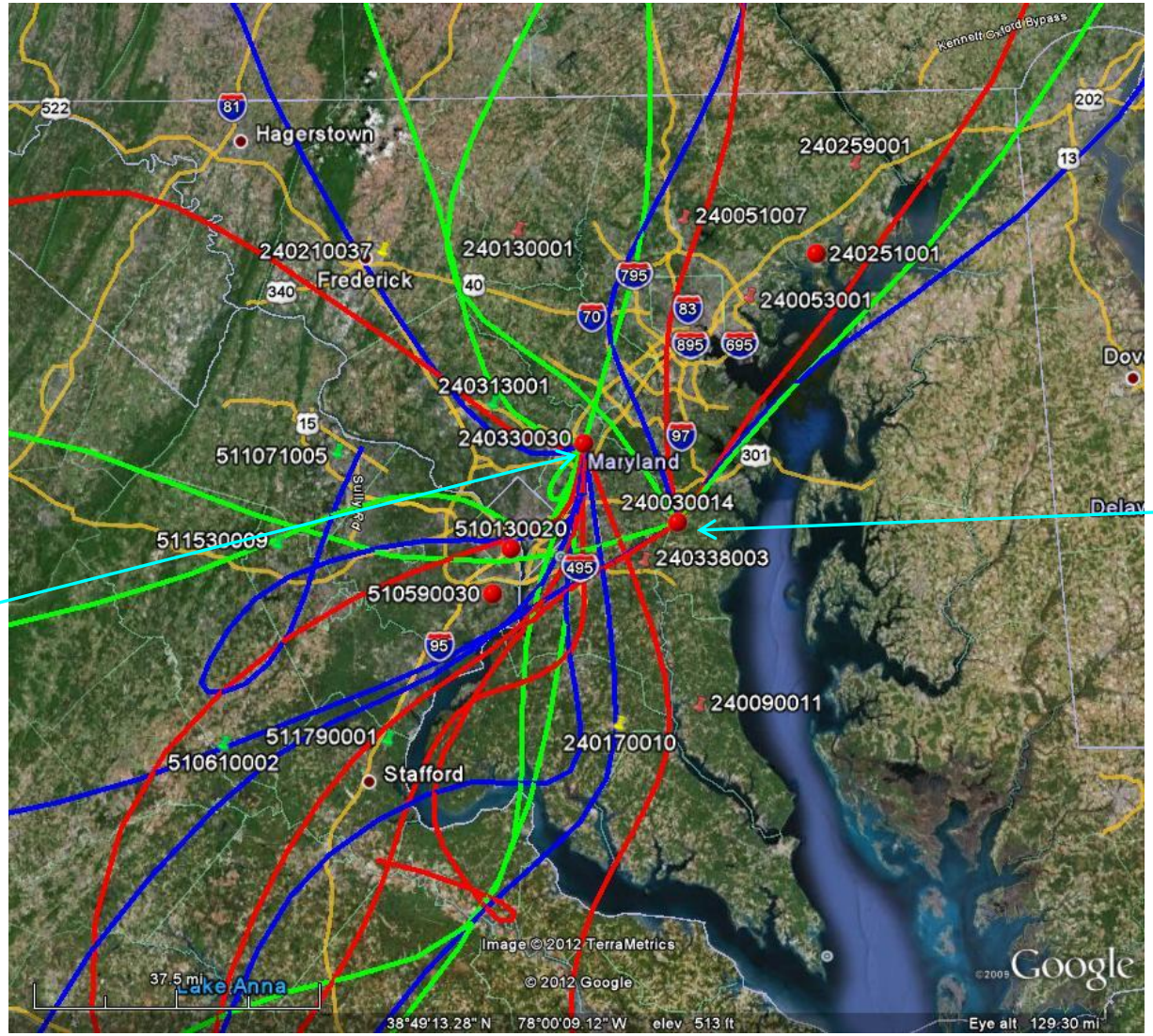
Figure 6A-2 Davidsonville & Howard U-Beltsville 2008-2010 Group 2 Days (>=0.079 & <= 0.081 ppm)



Howard Uni--Beltsville (Prince George's Co., MD) (240330030)

Davidsonville (Anne Arundel Co., MD) (240030014)

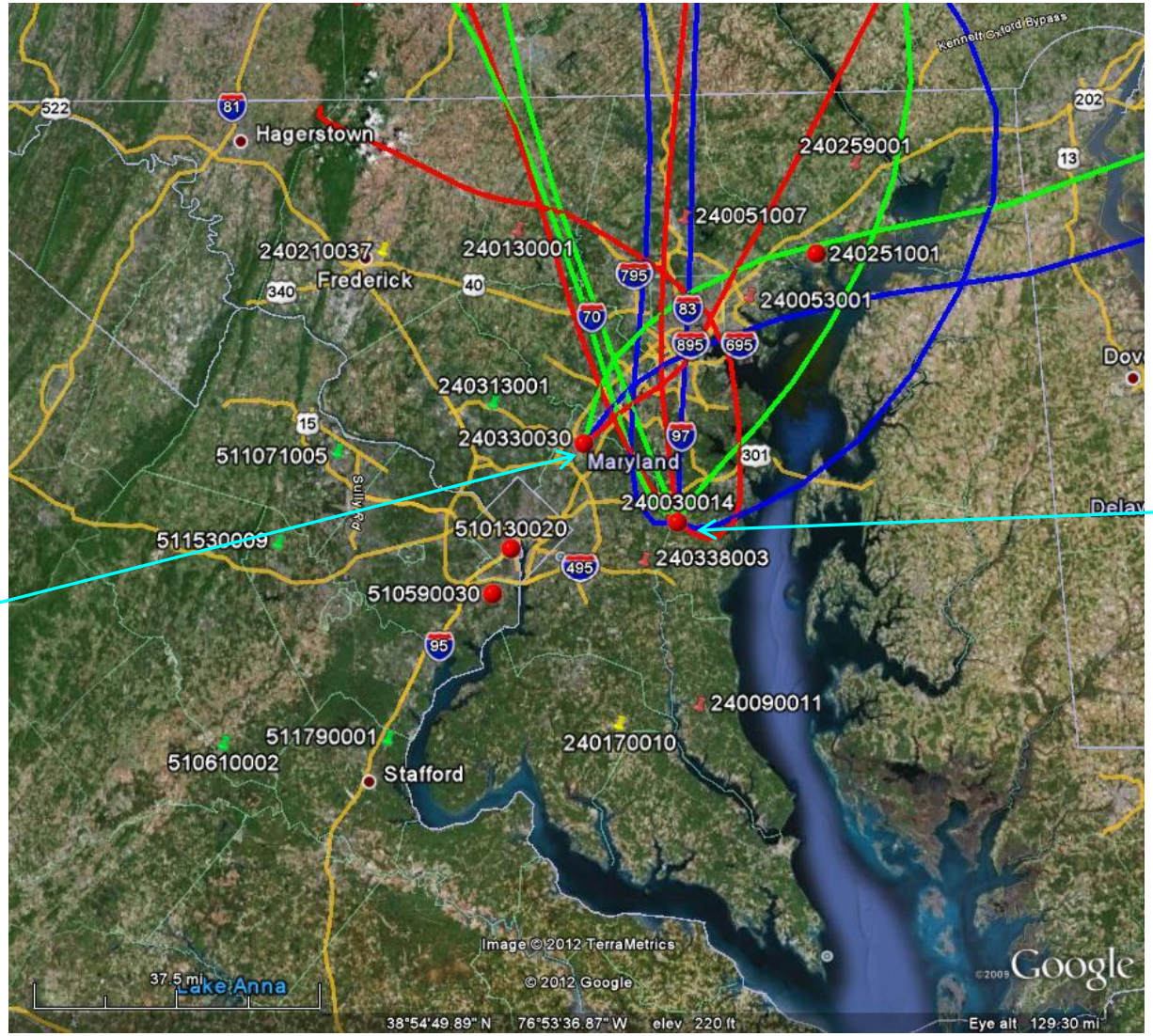
Figure 6A-3 Davidsonville & Howard U-Beltsville 2008-2010 Group 3 Days (>=0.082 & <= 0.086 ppm)



Howard Uni--Beltsville (Prince George's Co., MD) (240330030)

Davidsonville (Anne Arundel Co., MD) (240030014)

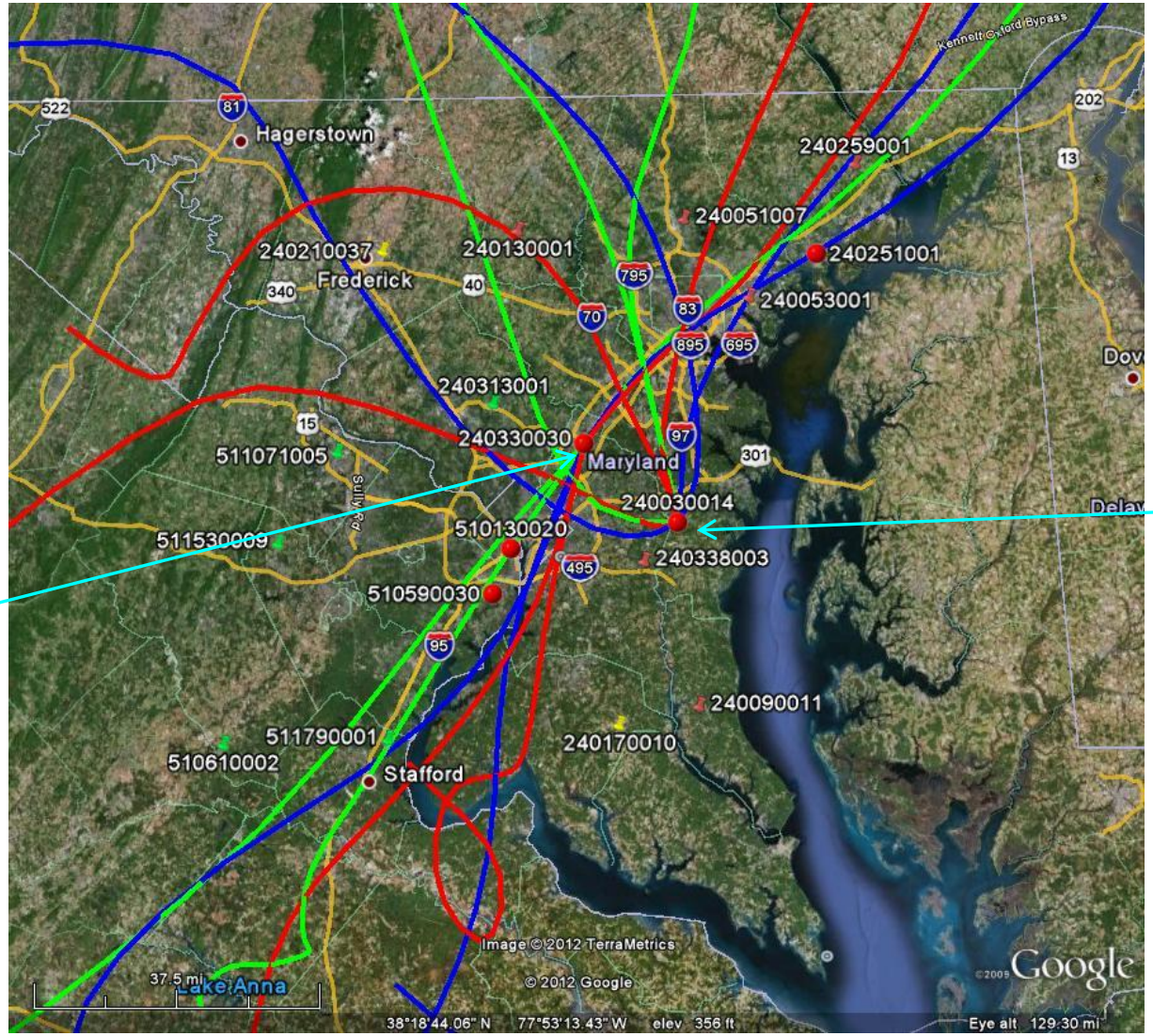
Figure 6A-4 Davidsonville & Howard U-Beltsville 2008-2010 Group 4 Days (>=0.087 & <= 0.090 ppm)



Howard Uni--Beltsville (Prince George's Co., MD) (240330030)

Davidsonville (Anne Arundel Co., MD) (240030014)

Figure 6A-5 Davidsonville & Howard U-Beltsville 2008-2010 Group 5 Days (>= 0.091 ppm)



Howard Uni--Beltsville (Prince George's Co., MD) (240330030)

Davidsonville (Anne Arundel Co., MD) (240030014)

Figure 6A-6 Davidsonville & Howard U-Beltsville 2006-2007 Group 1 Days (>=0.076 & <= 0.078 ppm)

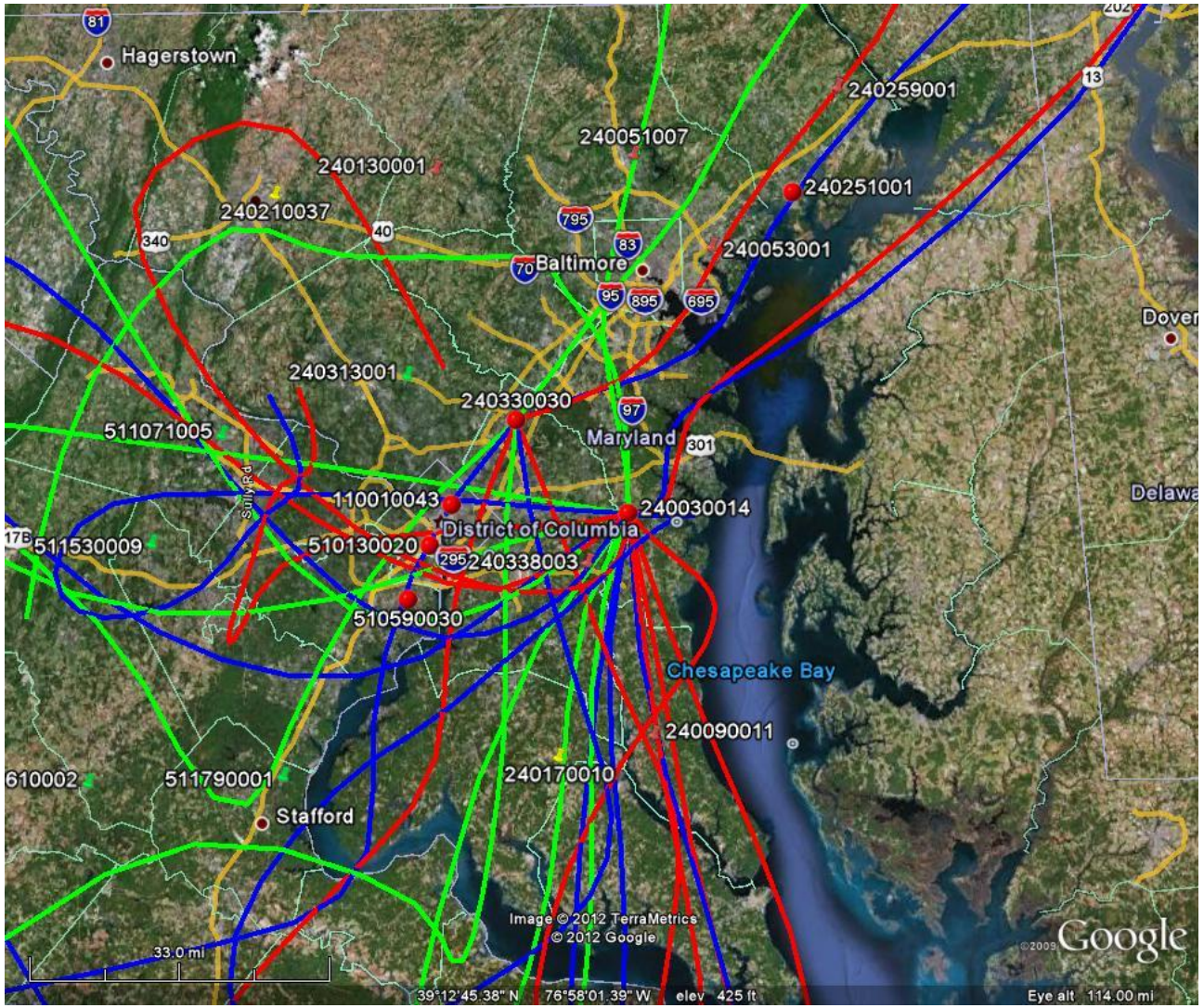


Figure 6A-7 Davidsonville & Howard U-Beltsville 2006-2007 Group 2 Days (>=0.079 & <= 0.081 ppm)

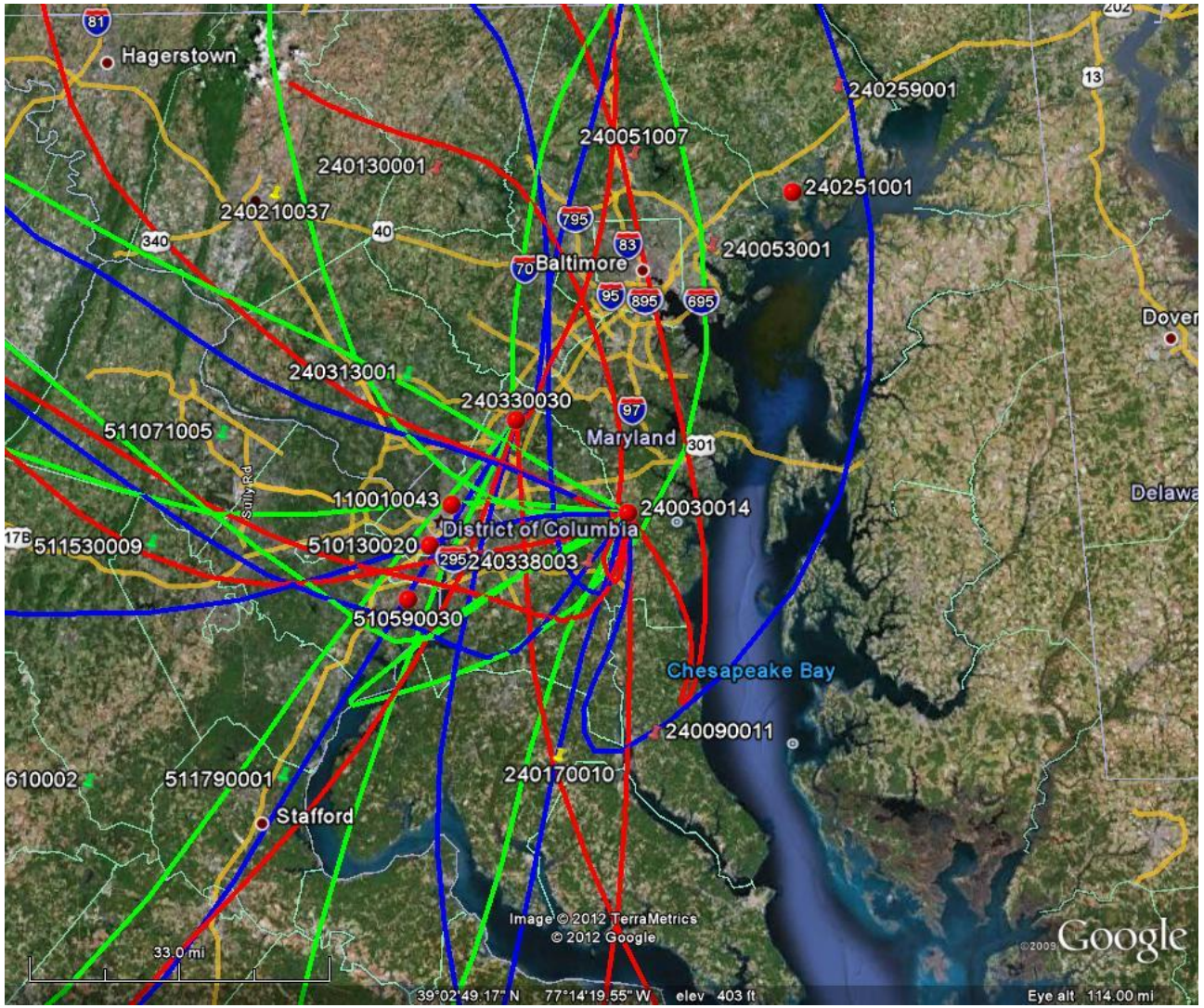


Figure 6A-8 Davidsonville & Howard U-Beltsville 2006-2007 Group 3 Days (>=0.082 & <= 0.086 ppm)

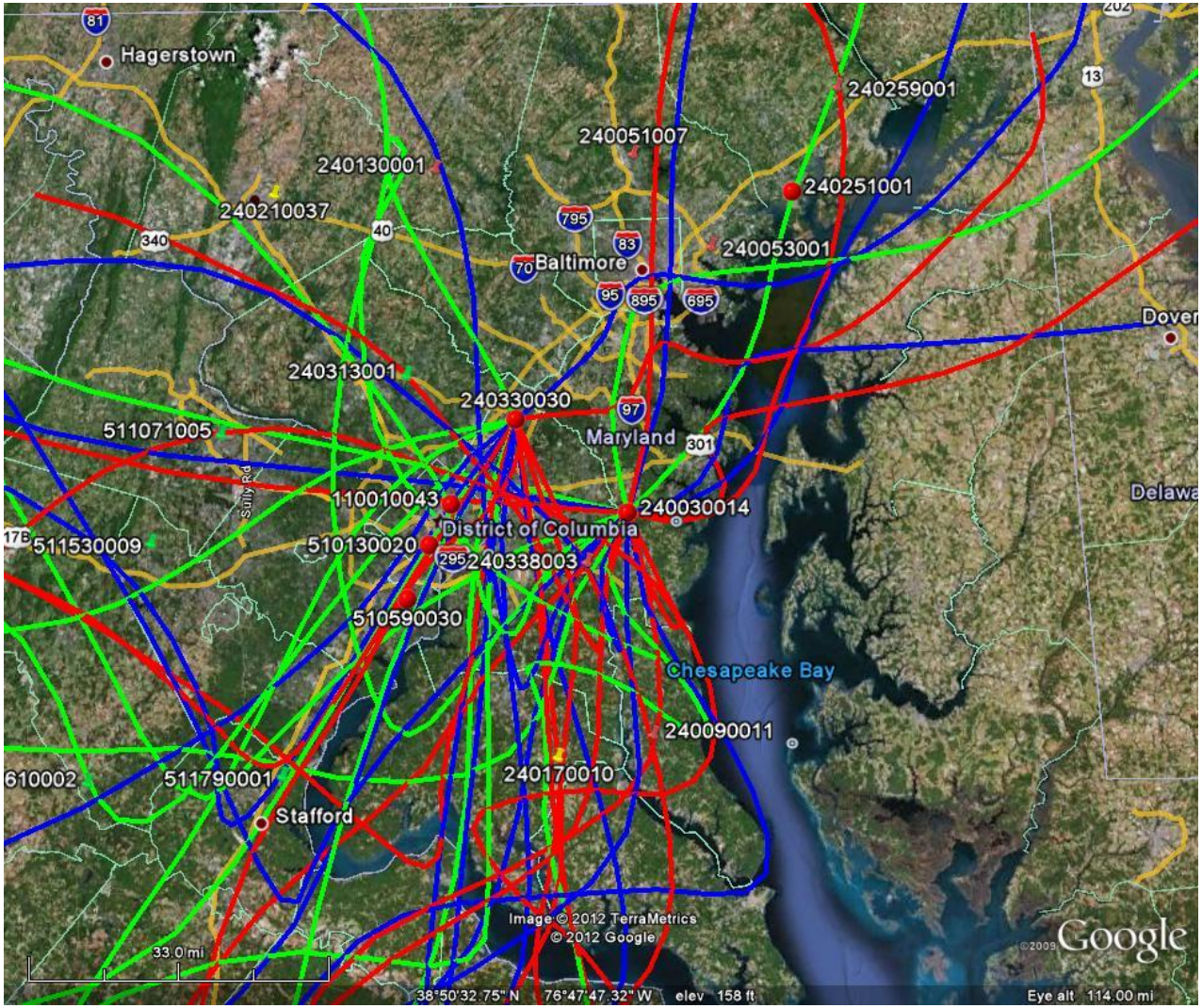


Figure 6A-9 Davidsonville & Howard U-Beltsville 2006-2007 Group 4 Days (>=0.087 & <= 0.090 ppm)

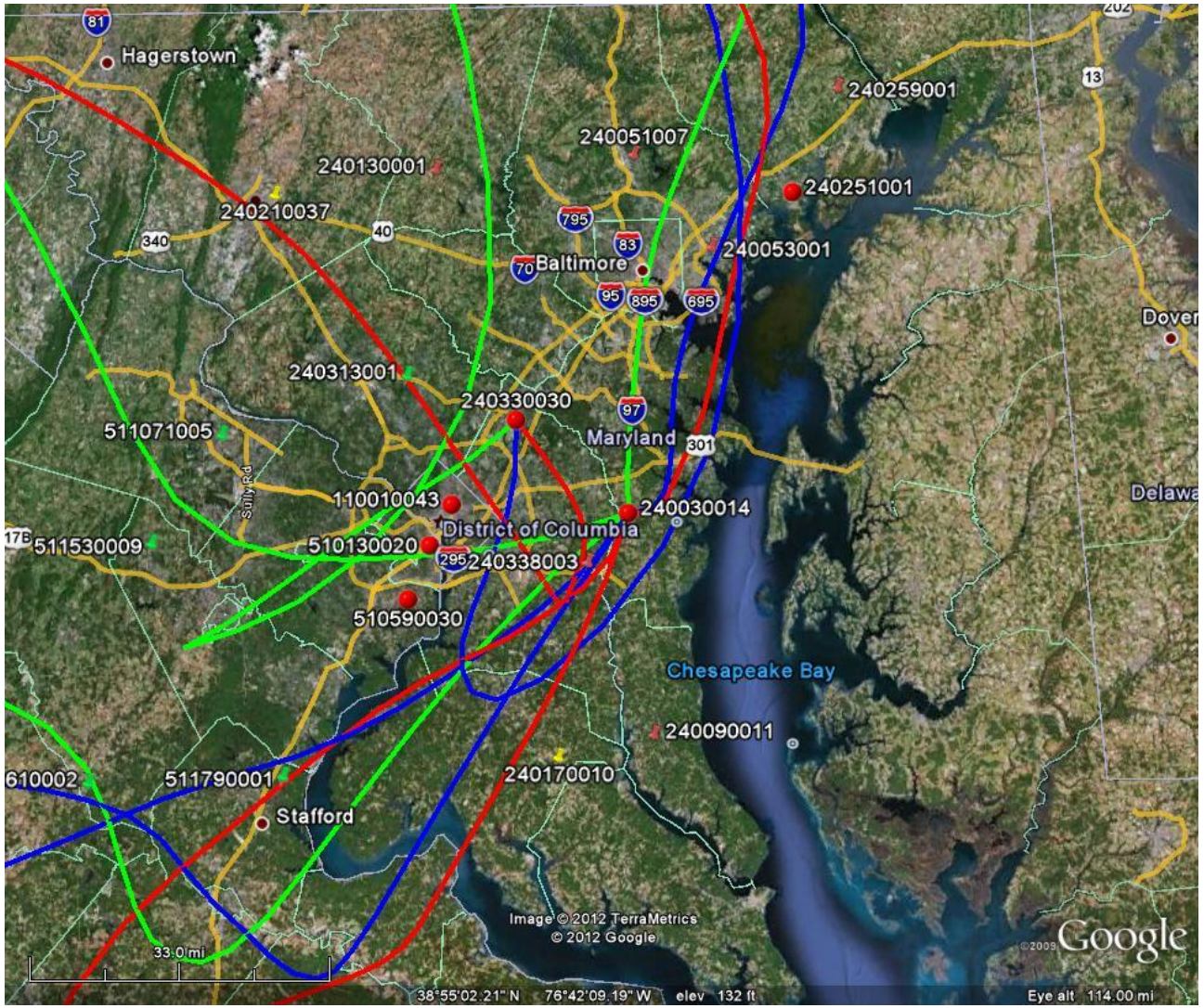


Figure 6A-10 Davidsonville & Howard U-Beltsville 2006-2007 Group 5 Days (>=0.091 ppm)

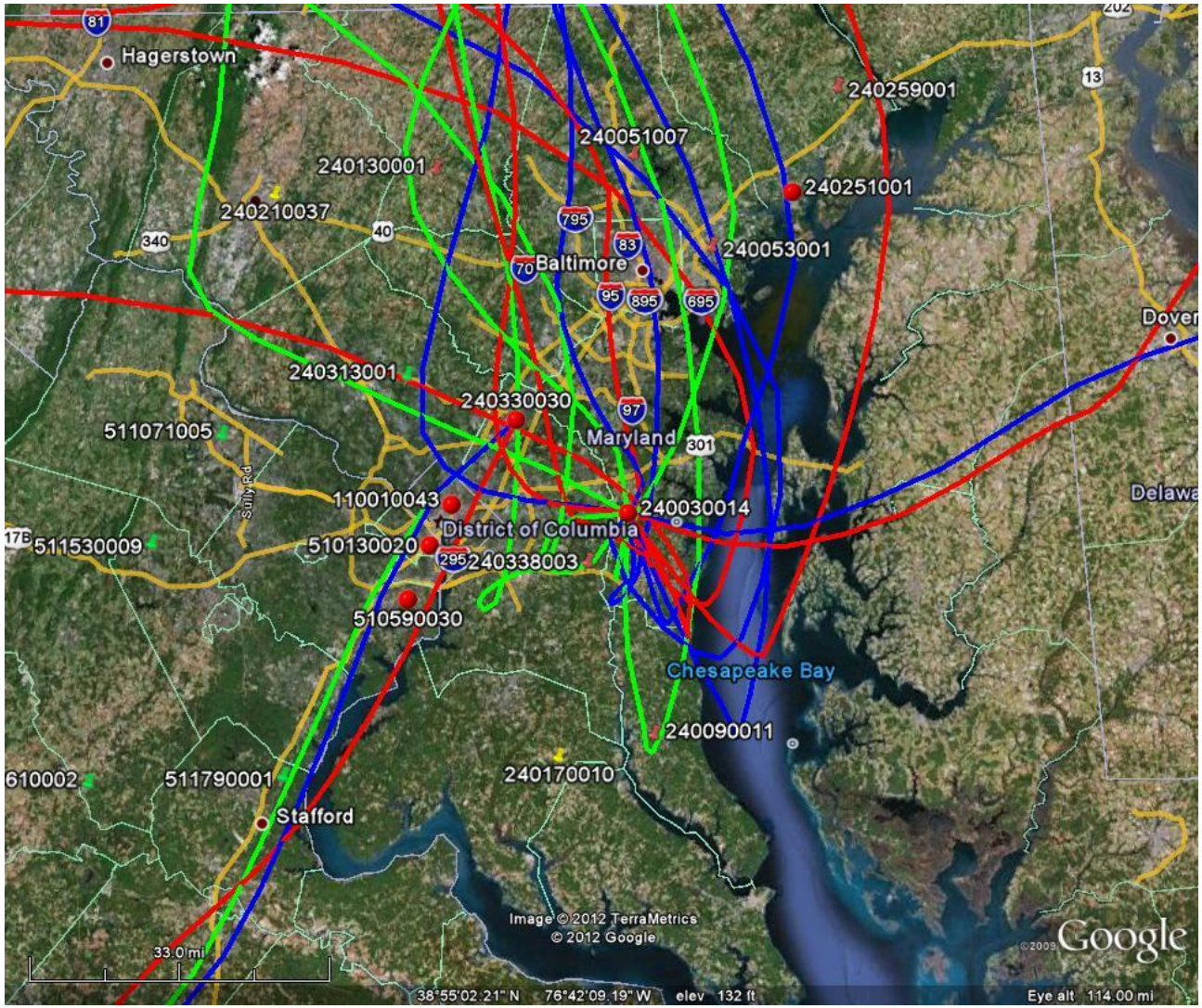


Figure 6A-11 Prince George's Equestrian Center (AQS ID No. 240338003 Group 1 (0.076 to 0.078 ppm) – Select days 2006 to 2007

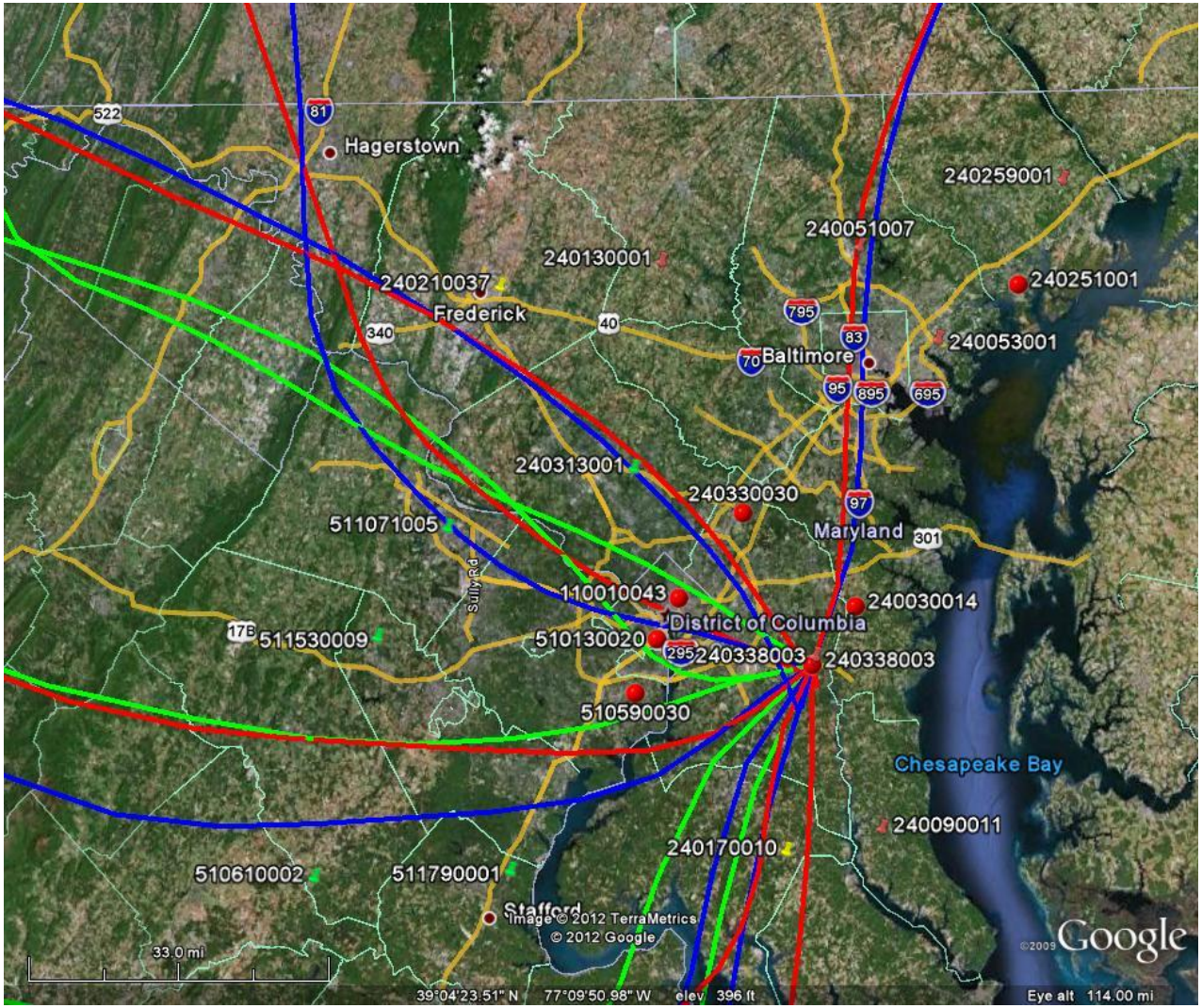


Figure 6A-12 Prince George's Equestrian Center (AQS ID No. 240338003 Group 2 (0.079 to 0.081 ppm) – Select days 2006 to 2007

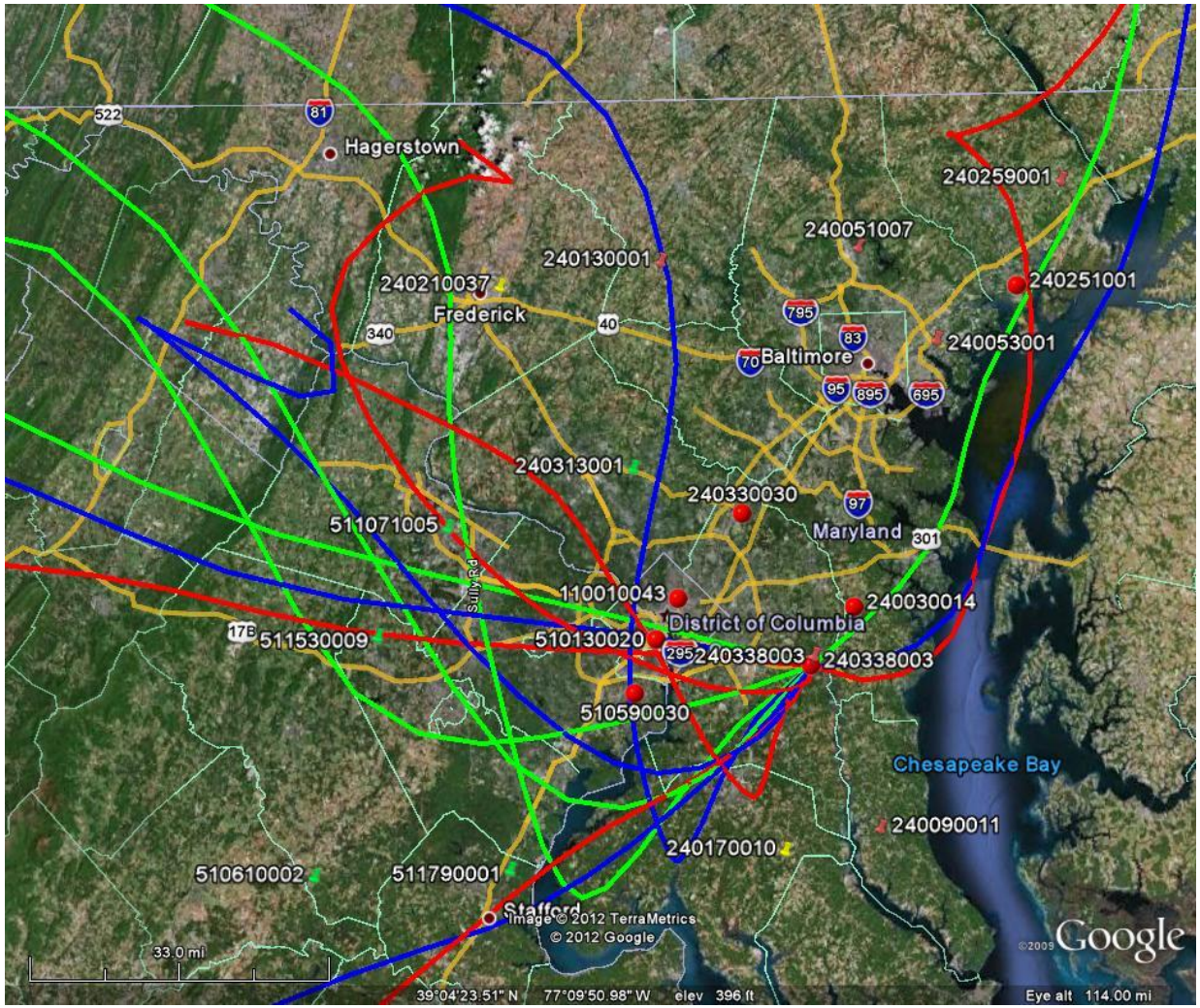


Figure 6A-13 Prince George's Equestrian Center (AQS ID No. 240338003 Group 3 (0.082 to 0.086 ppm) – Select days 2006 to 2007

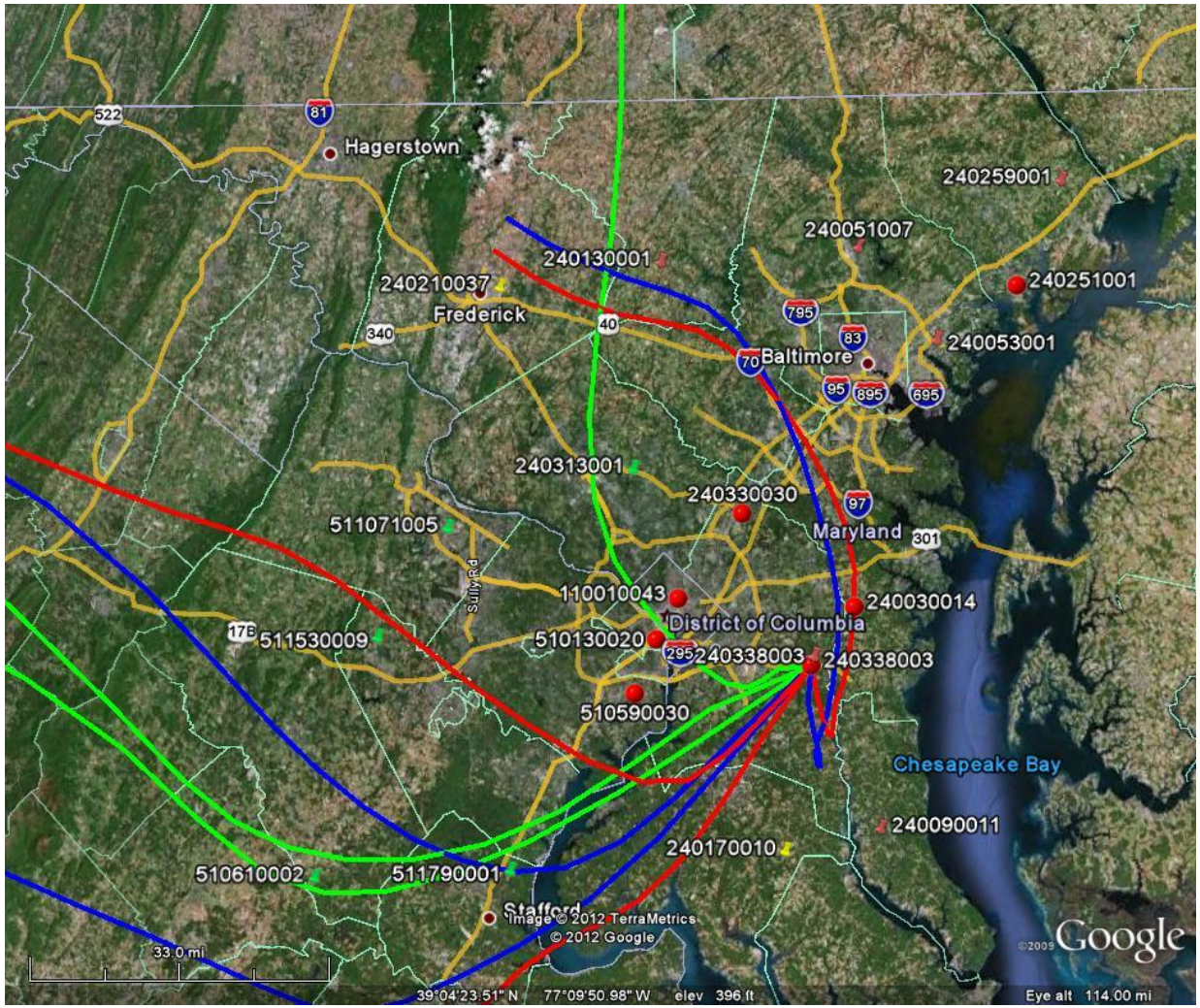
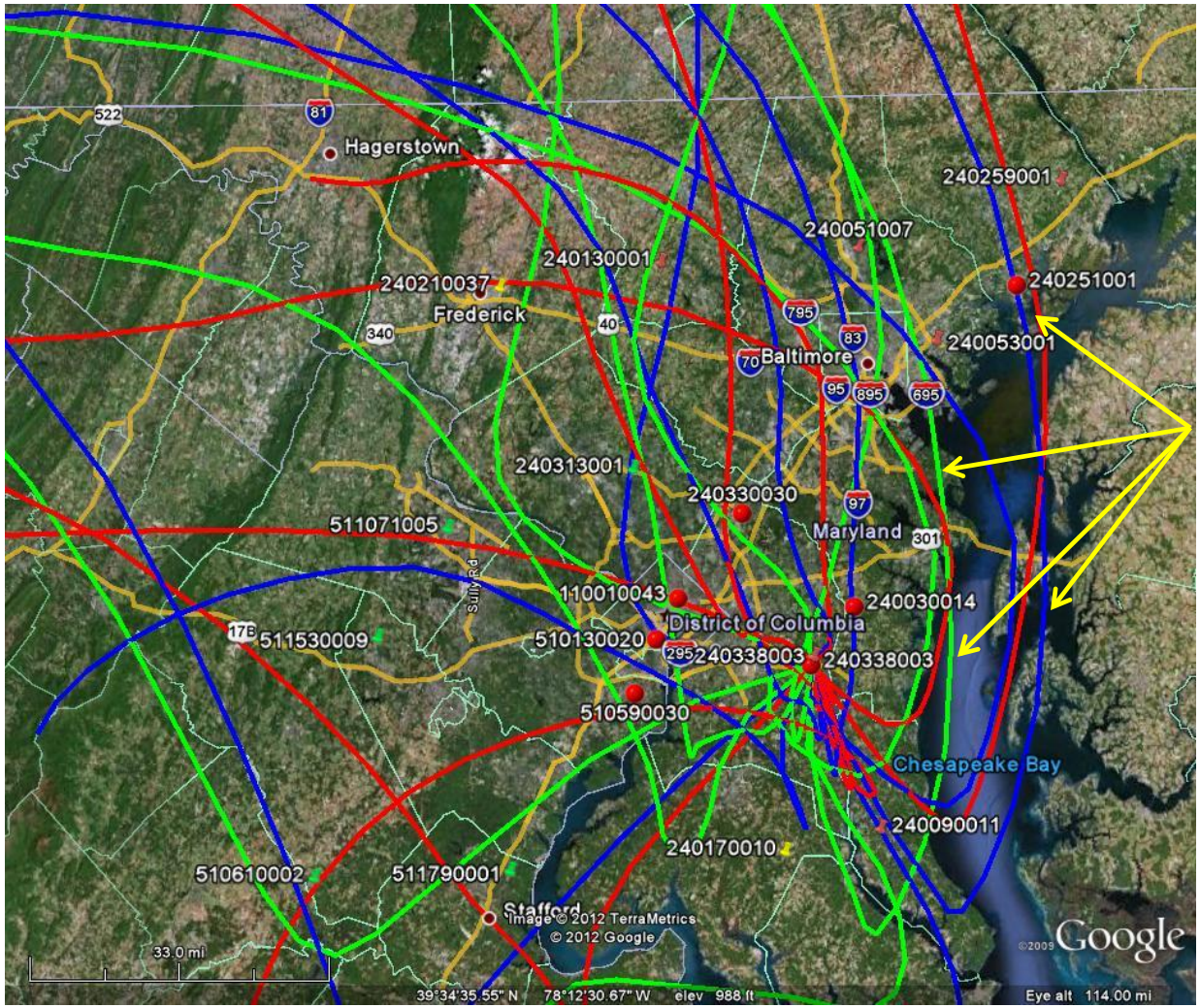


Figure 6A-14 Prince George's Equestrian Center (AQS ID No. 240338003 Groups 4 and 5 (0.087 to 0.090 and >= 0.091 ppm) – Select days 2006 to 2007



Group 4 Day

This monitor only had one Group 4 Day.

Appendix 7: HYSPLIT Trajectories for Arlington, Franconia & McMillan Res. Monitors by Group

Figure 7A-1 1 McMillan, Franconia & Arlington Group 1 Days (<= 0.078 ppm)

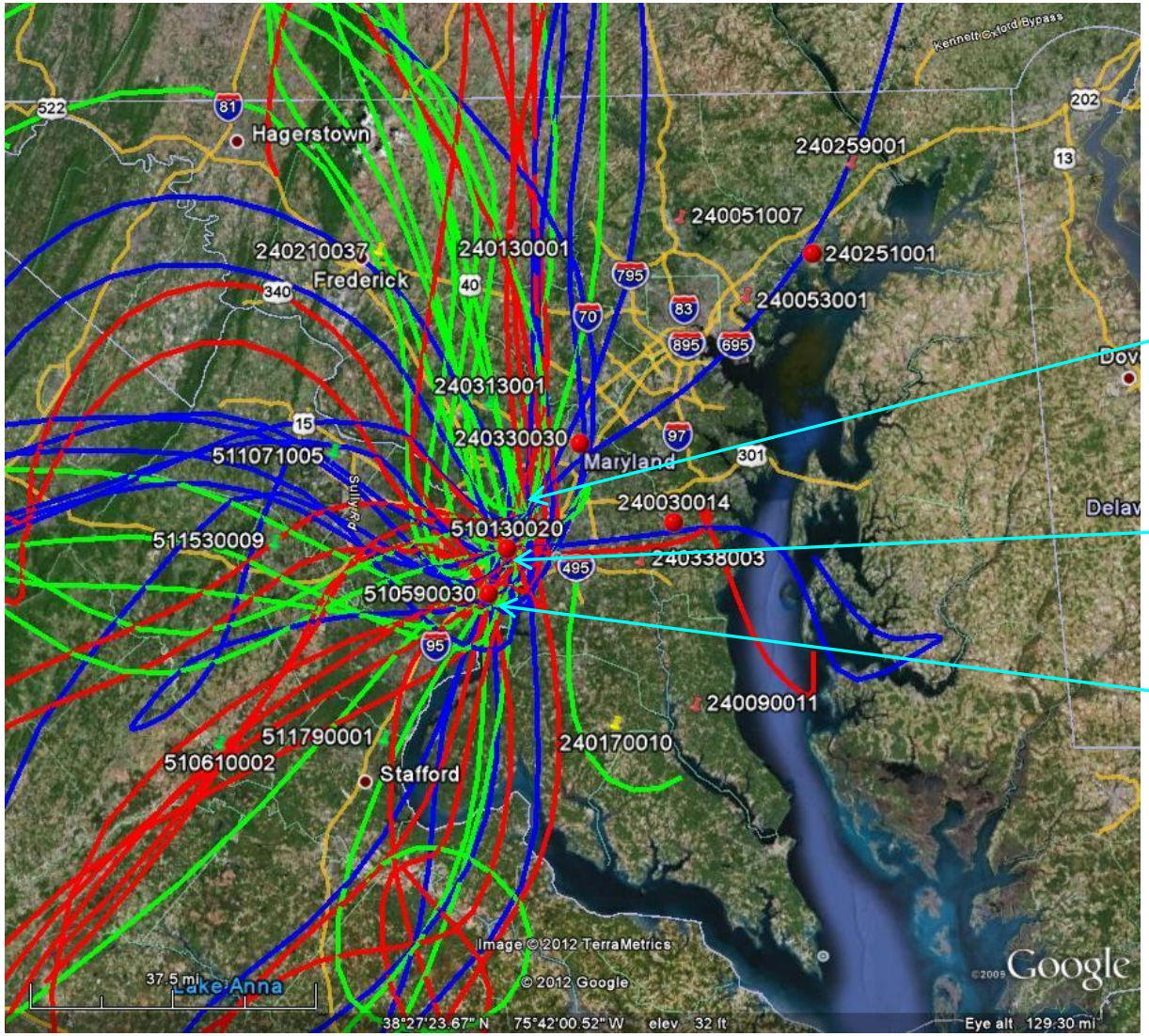


Figure 7A-2 McMillan, Franconia & Arlington Group 2 Days (>=0.079 & <= 0.081 ppm)

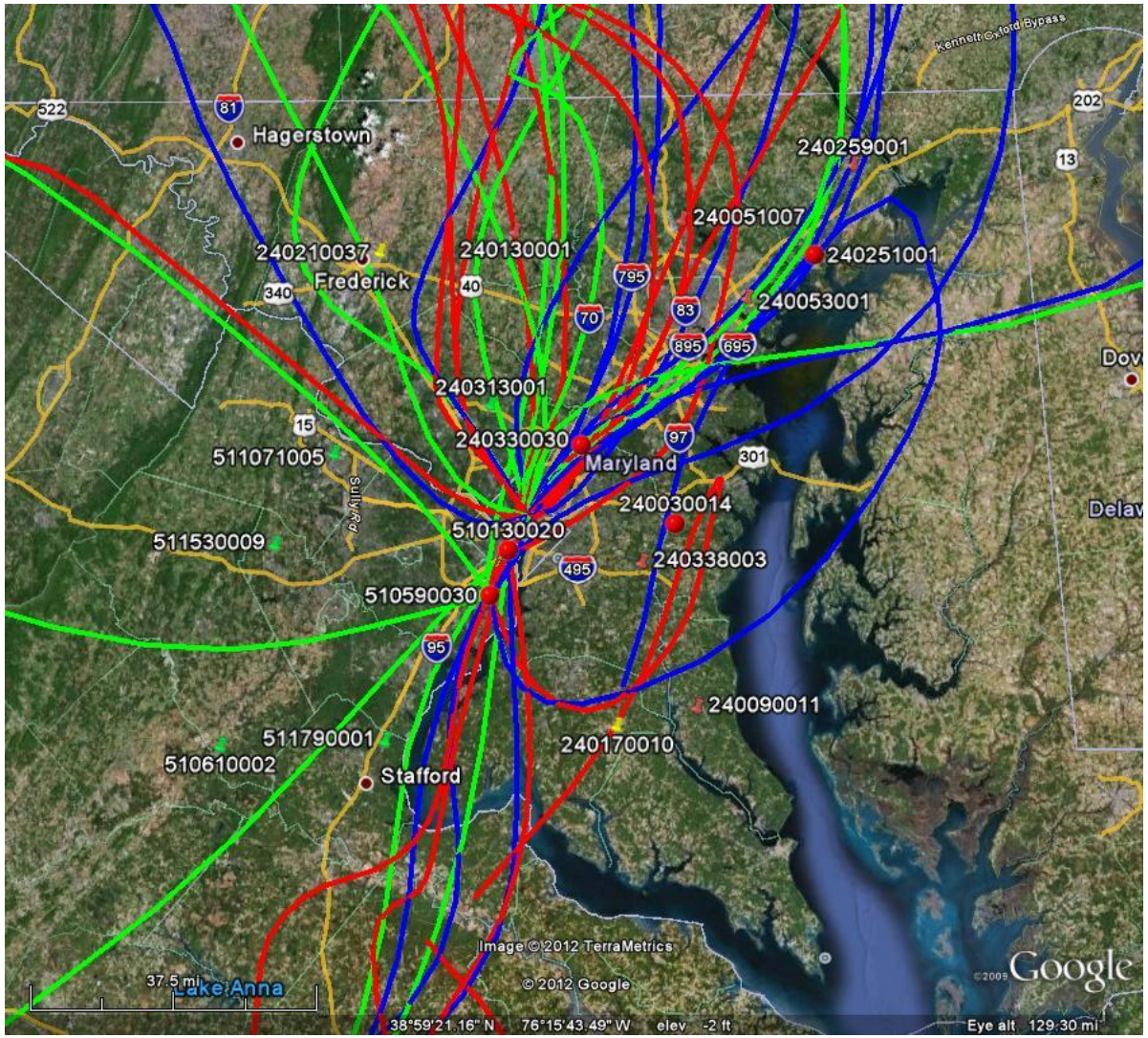


Figure 7A-3 McMillan, Franconia & Arlington Group 3 Days (>=0.082 & <= 0.086 ppm)

Franconia 8/10/2010 – 0.082 ppm

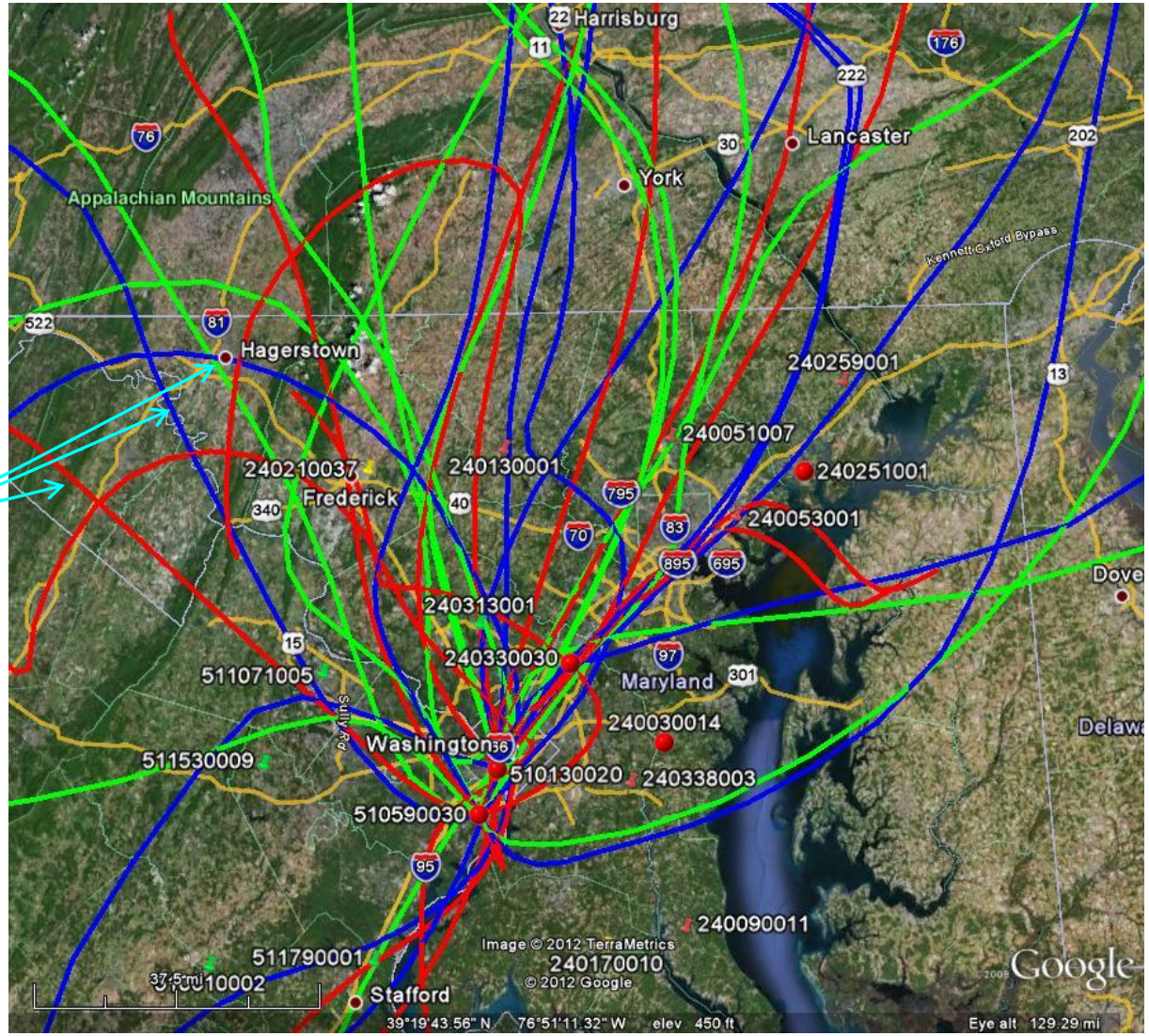


Figure 7A-4 McMillan, Franconia & Arlington Group 4 Days (>=0.087 & <= 0.090 ppm)

Arlington 8/10/2010 – 0.088 ppm

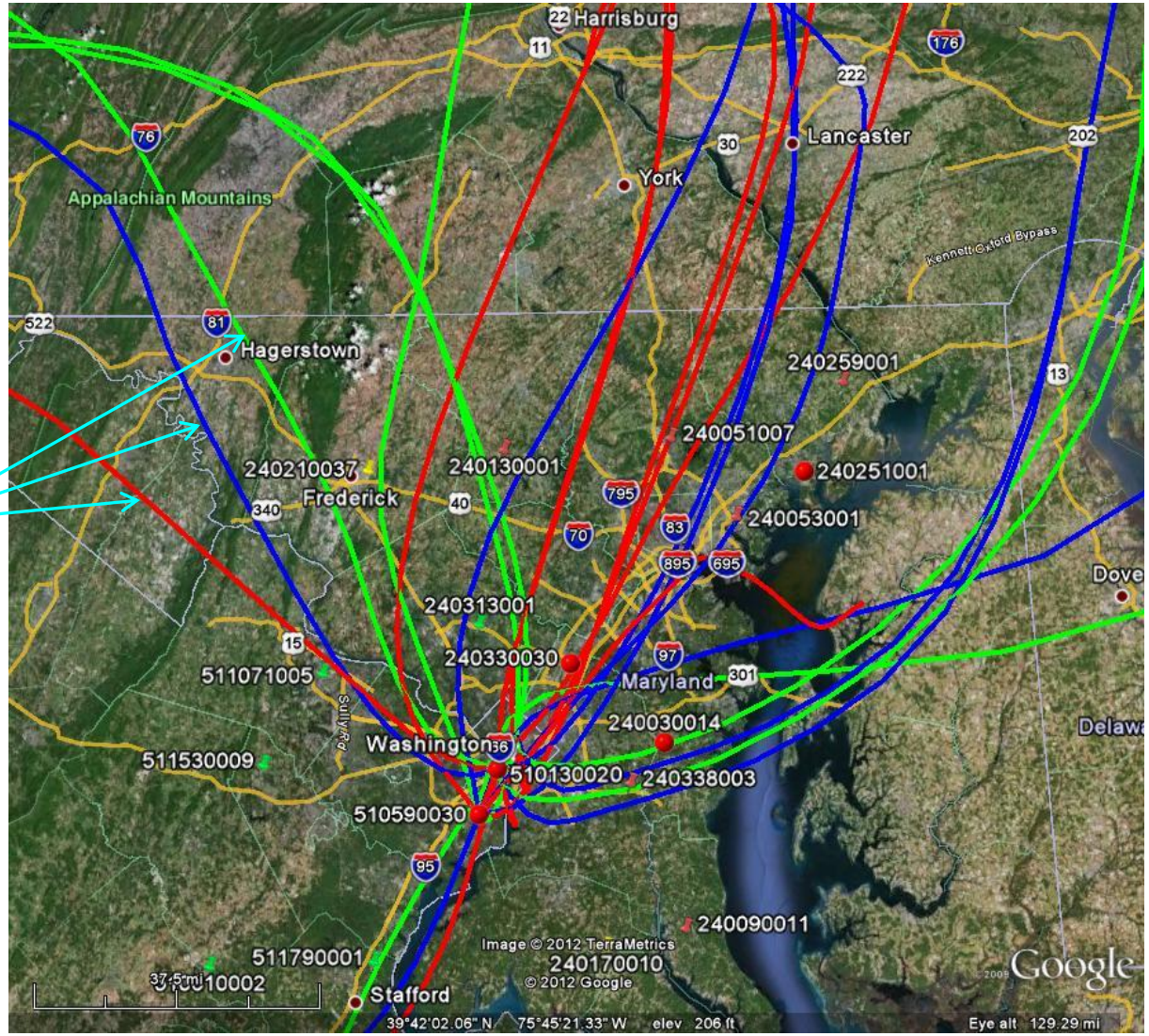


Figure 7A-5 McMillan, Franconia & Arlington Group 5 Days (>= 0.091 ppm)

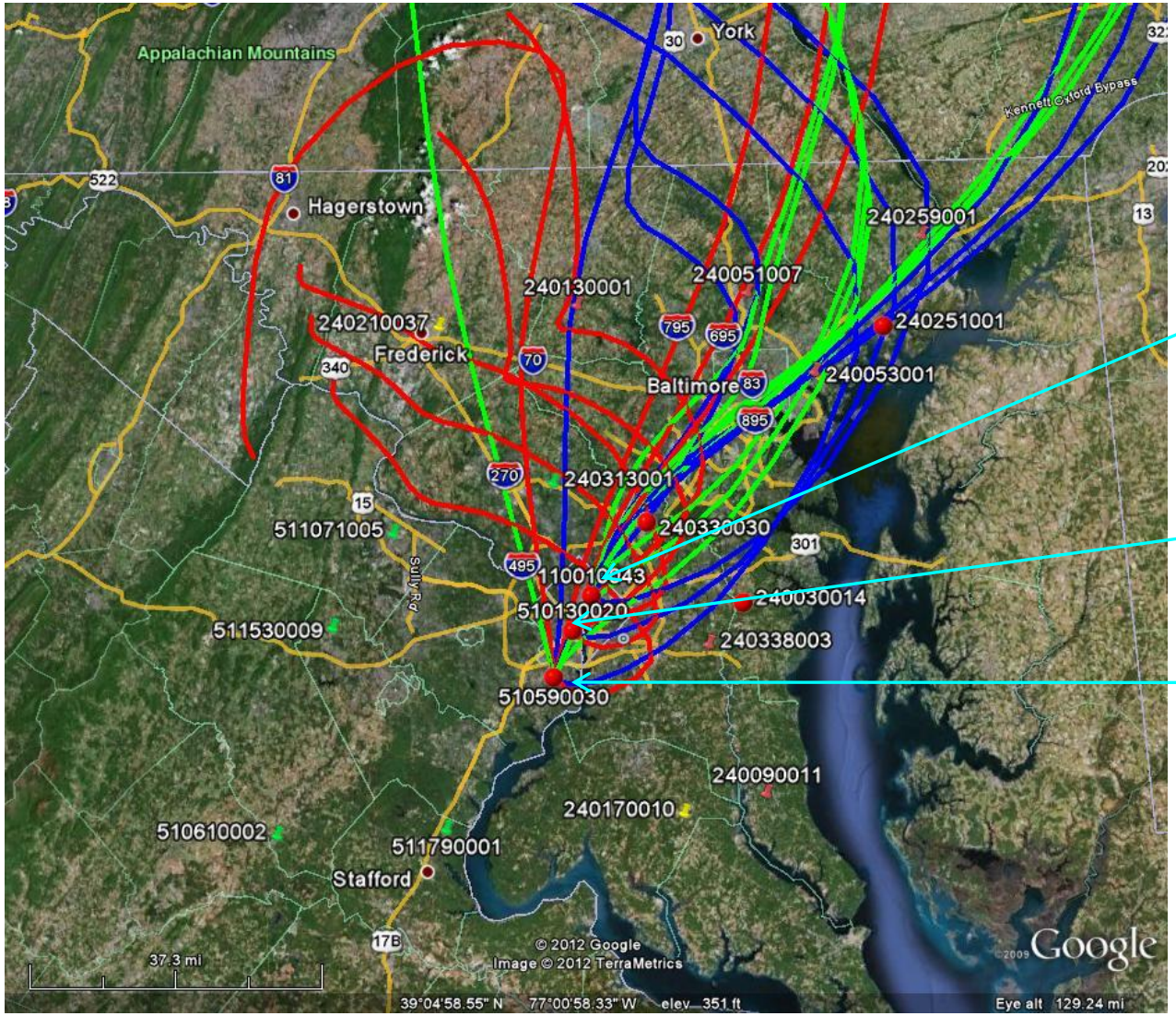


Figure 7A-6 McMillan, Franconia & Arlington 2006-2007 Group 1 Days (>=0.076 & <= 0.078)

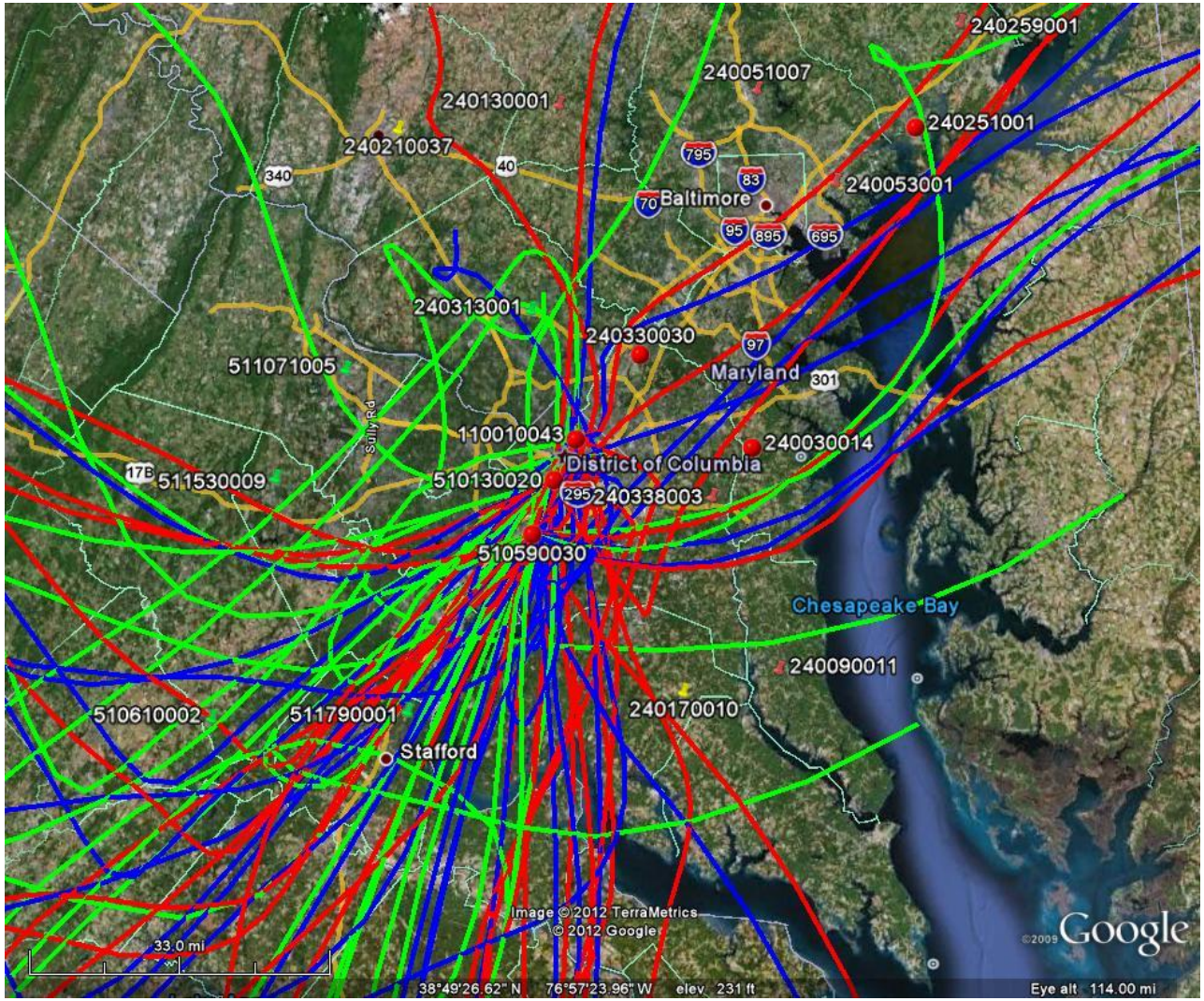


Figure 7A-7 McMillan, Franconia & Arlington 2006-2007 Group 2 Days (>=0.079 & <= 0.081)

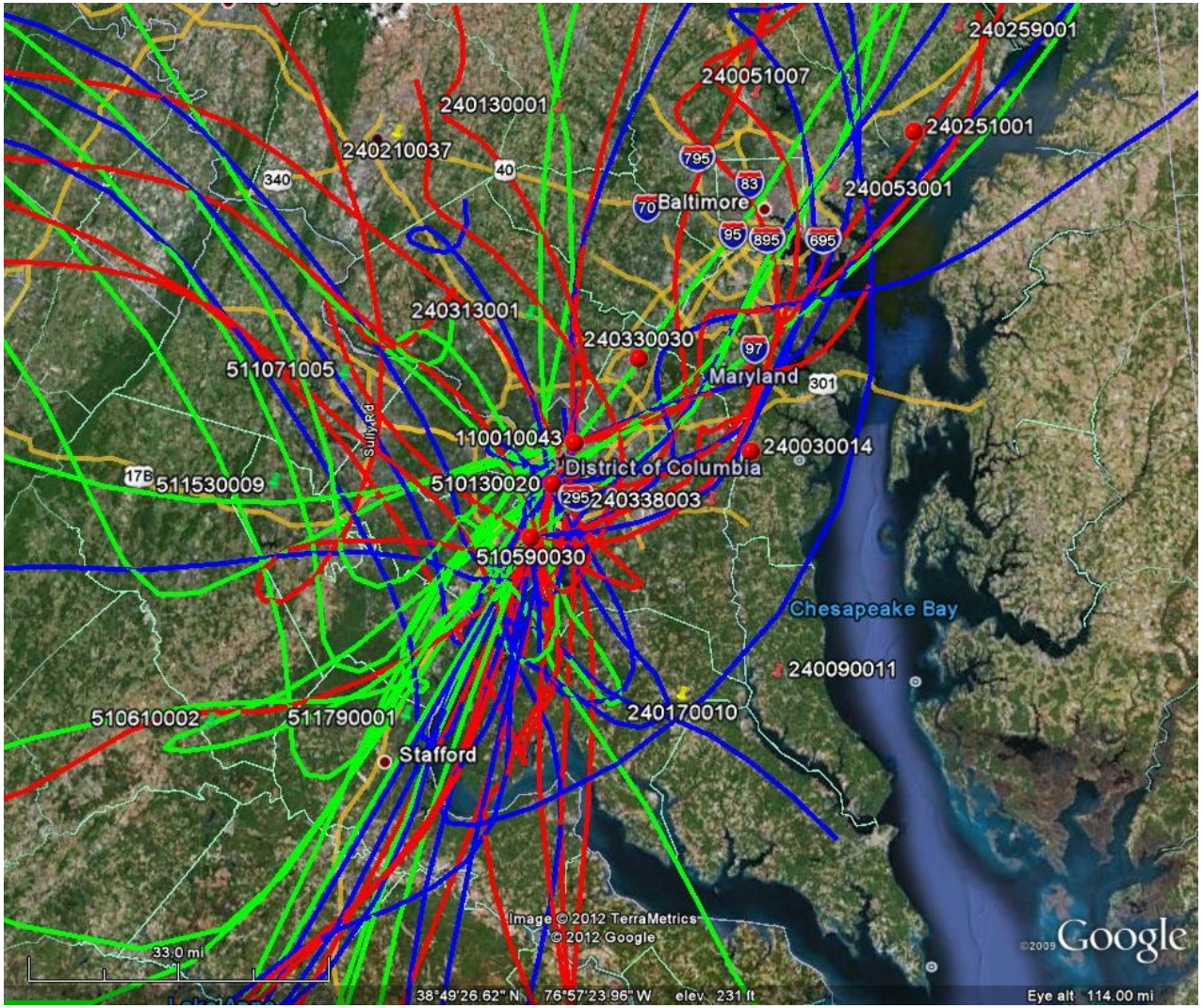


Figure 7A-8 McMillan, Franconia & Arlington 2006-2007 Group 3 Days (>=0.082 & <= 0.086)

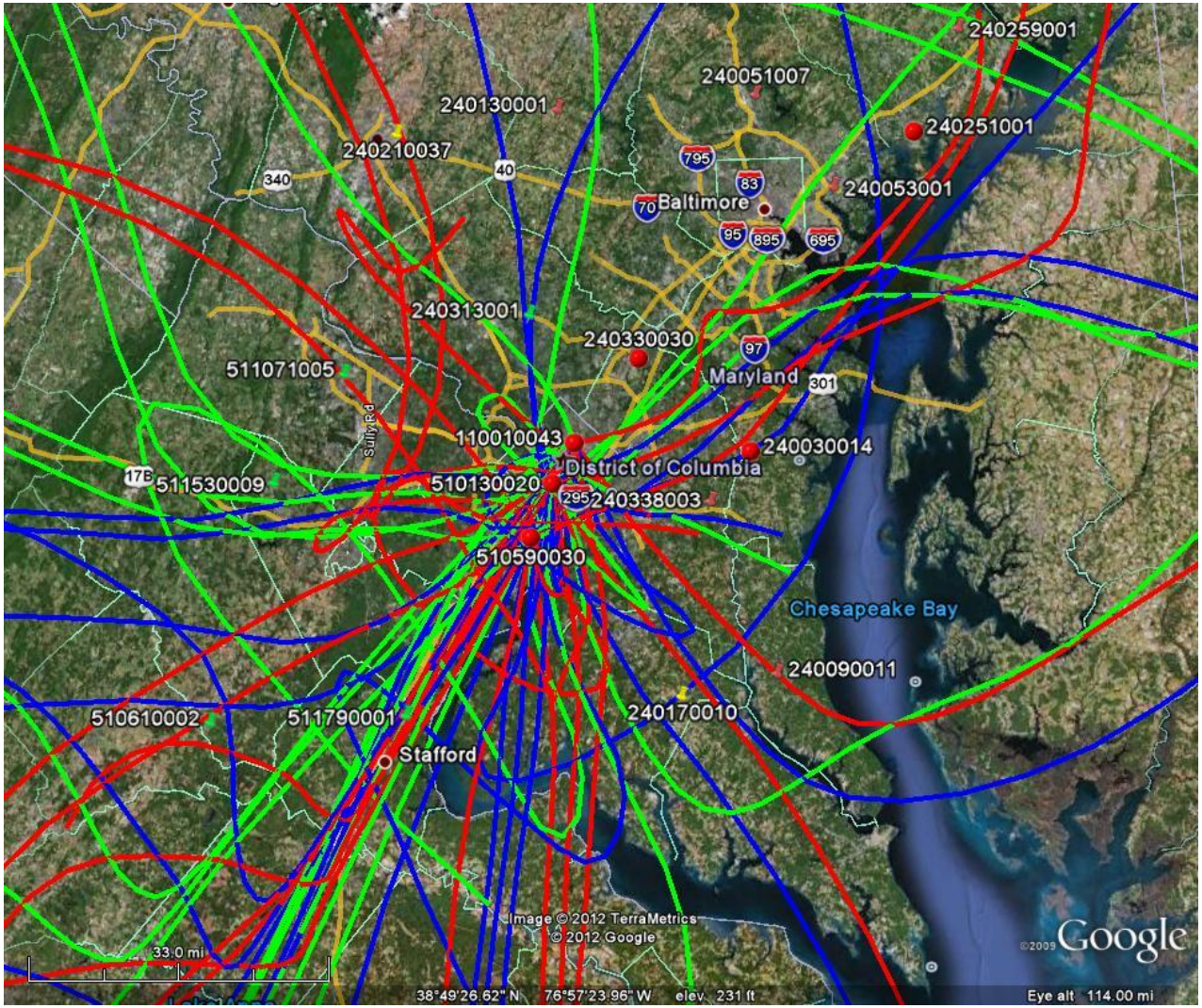


Figure 7A-9 McMillan, Franconia & Arlington 2006-2007 Group 4 Days (>=0.087 & <= 0.090)

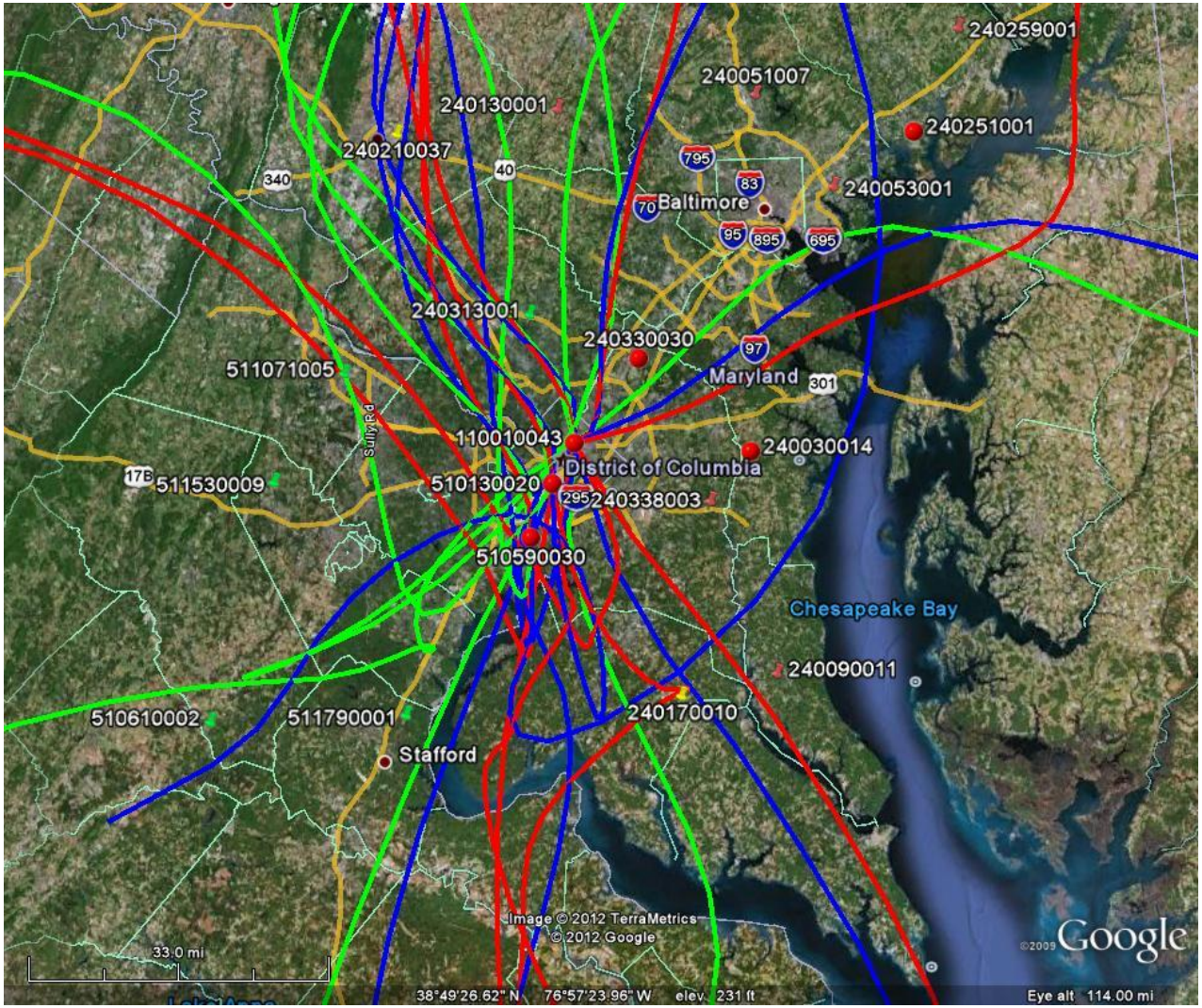
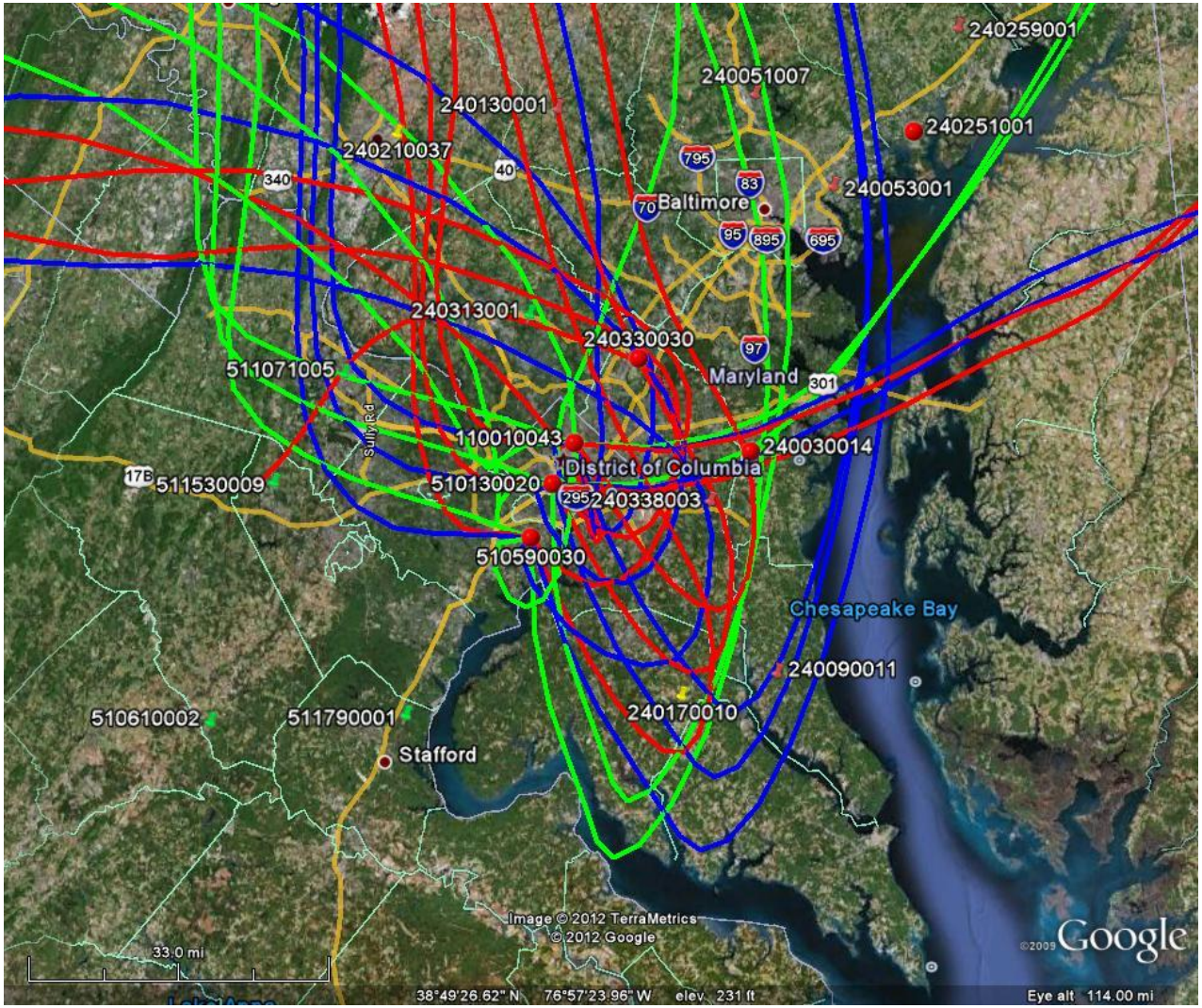


Figure 7A-10 McMillan, Franconia & Arlington 2006-2007 Group 5 Days (>=0.091)



Appendix 8 to Technical Support Document—

Area Designations for the Washington-Baltimore-Northern Virginia, DC-MD-VA-WV Combined Statistical Area (CSA)

2008 Ozone National Ambient Air Quality Standards

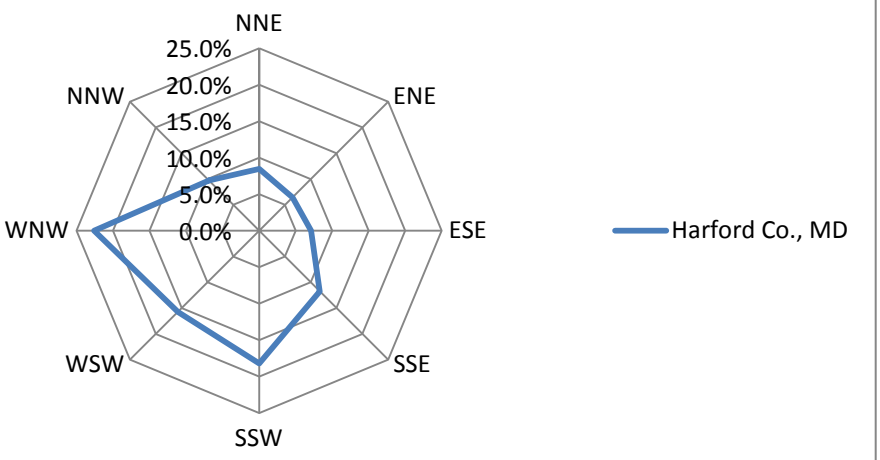
30 Year Average Wind Rose Data

This is reprinted from "Technical Analysis for the Washington, DC-MD-VA and Baltimore Areas" in Docket item numbers EPA-HQ-OAR-2008-0476-0235, EPA-HQ-OAR-2008-0476-0405 and EPA-HQ-OAR-2008-0476-0456.
The analysis in "Factor 3: Meteorology (weather/transport patterns)" elsewhere in this document supplements and to great extent supersedes this data.

The 30-year average summer surface-level wind directions for the design value county in each of the areas is shown in Figures 3a through 3 d.

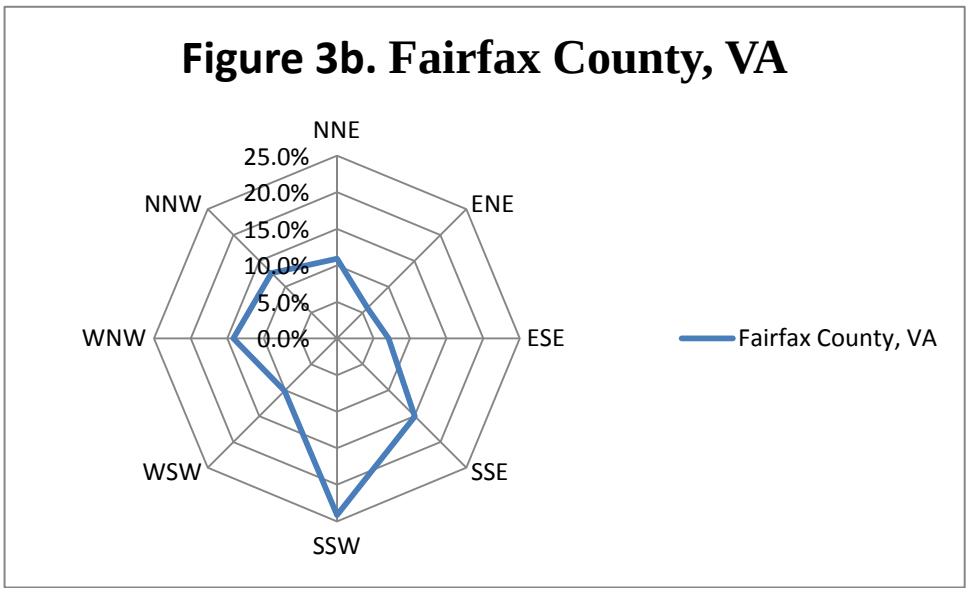
For Harford County (Figure 3a), MD in the in the Baltimore nonattainment area the winds are from the west-northwest through the south-southeast about 62 percent of the time.

Figure 3a. Harford Co., MD

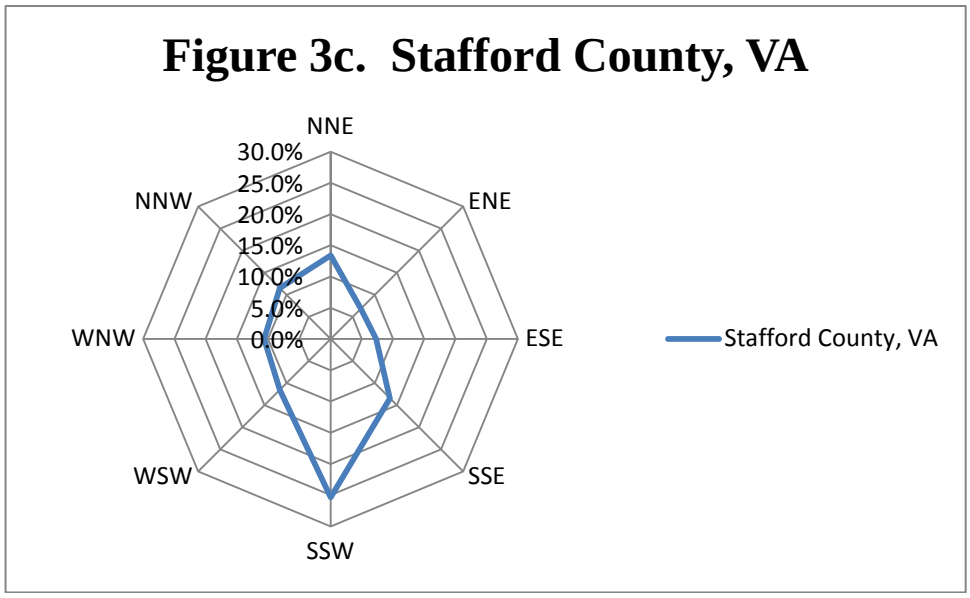


Map Legend: WNW means from the west-northwest; NNW means from the north-northwest; NNE means from the north-northeast; ENE means from the east-northeast; ESE means from the east-southeast; SSE means from the south-southeast; SSW means from the south-southwest; and, WSW means from the west-southwest.

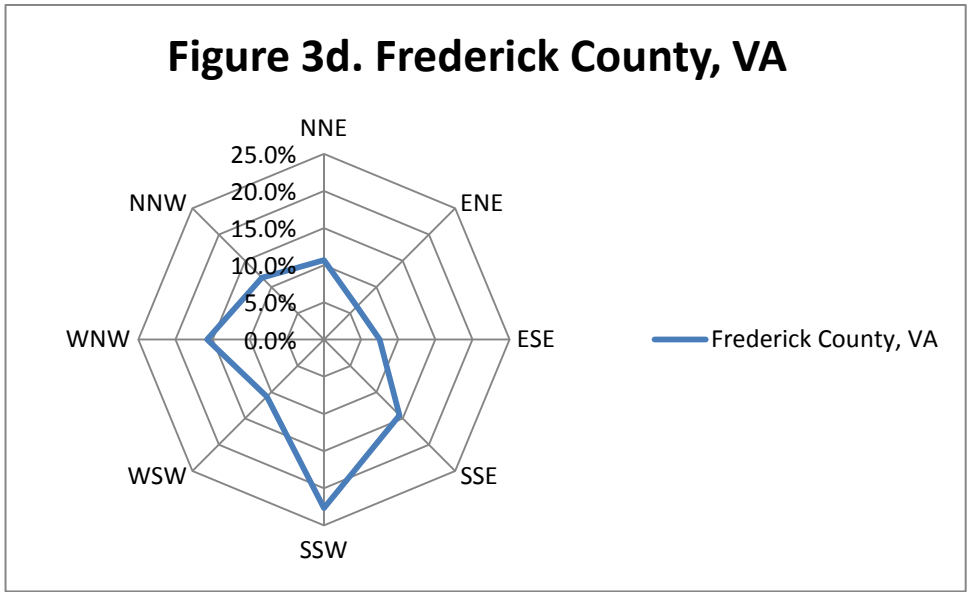
For Fairfax County (Figure 3b), VA in the Washington DC-MD-VA nonattainment area the winds are from the west-northwest through the southeast about 64 percent of the time.



For Stafford County (Figure 3c) in the Fredericksburg, VA Area the winds are from the south-southwest through the south-southeast about 39 percent of the time and from other directions more or less equally.



For Frederick County (Figure 3d) in the Frederick County, VA Area the winds are from the south-southwest through the south-southeast about 37 percent of the time and from other directions more or less equally with the exception of west-northwest which occurs a little over 15 percent of the time.



Figures 3e and f show the data for all the counties in the Baltimore and Washington DC-MD-VA nonattainment areas, respectively. The patterns are essentially the same for all counties and cities in the Washington DC-MD-VA nonattainment area and the same for all counties and cities in the current Baltimore nonattainment area.

Figure 3e. Baltimore Nonattainment Area

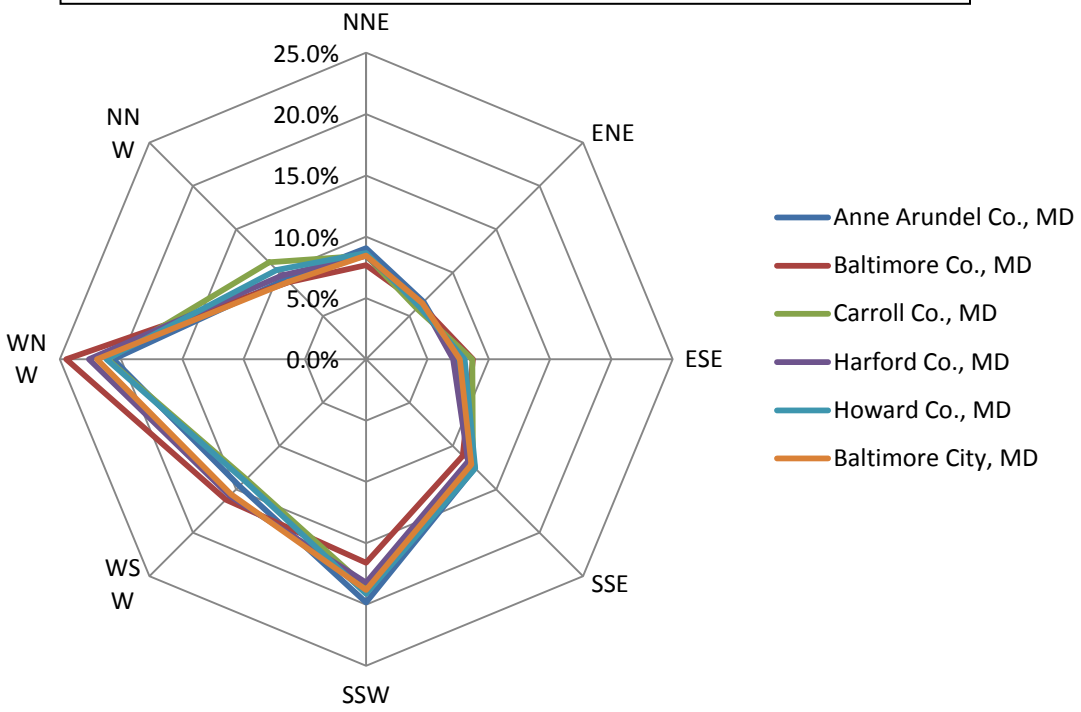
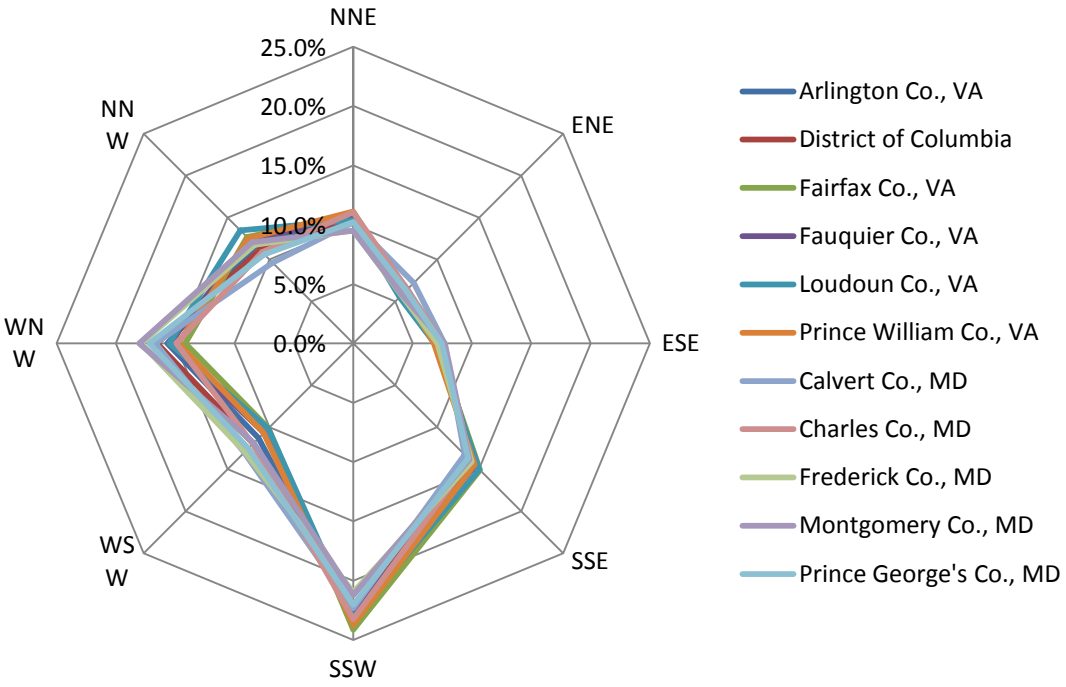


Figure 3f. Washington DC-MD-VA NA Area



Appendix 9: HYSPLIT Trajectories for Miscellaneous Monitors and Counties

Figure 9A-1 South Carroll (AQS ID No. 240130001)
all Days 2006 to 2007

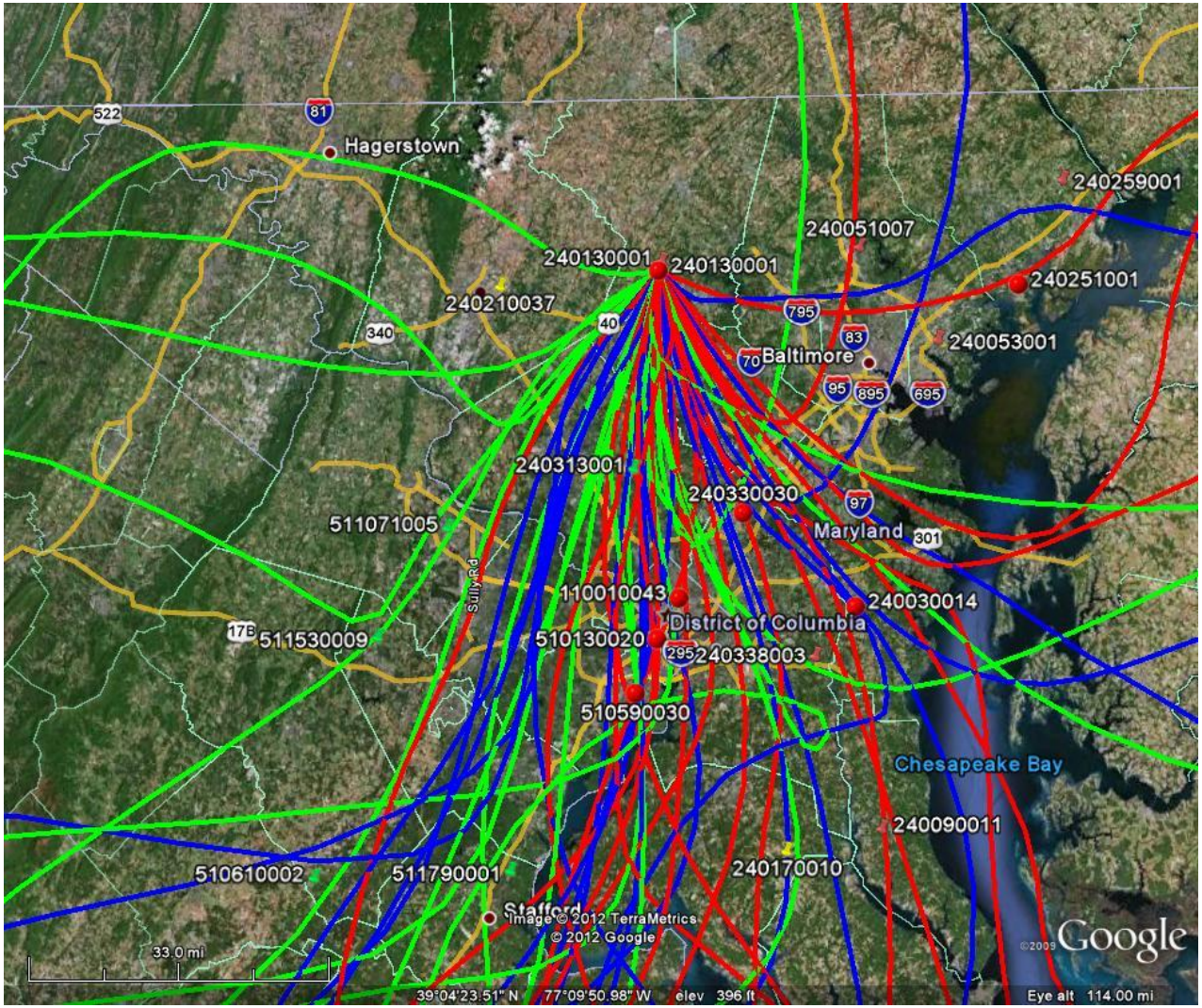


Figure 9A-2 Southern Maryland (AQS ID No. 240170010)
Select Days 2006 to 2007 and Calvert Co. (2400900011) Select Days 2006 to 2010

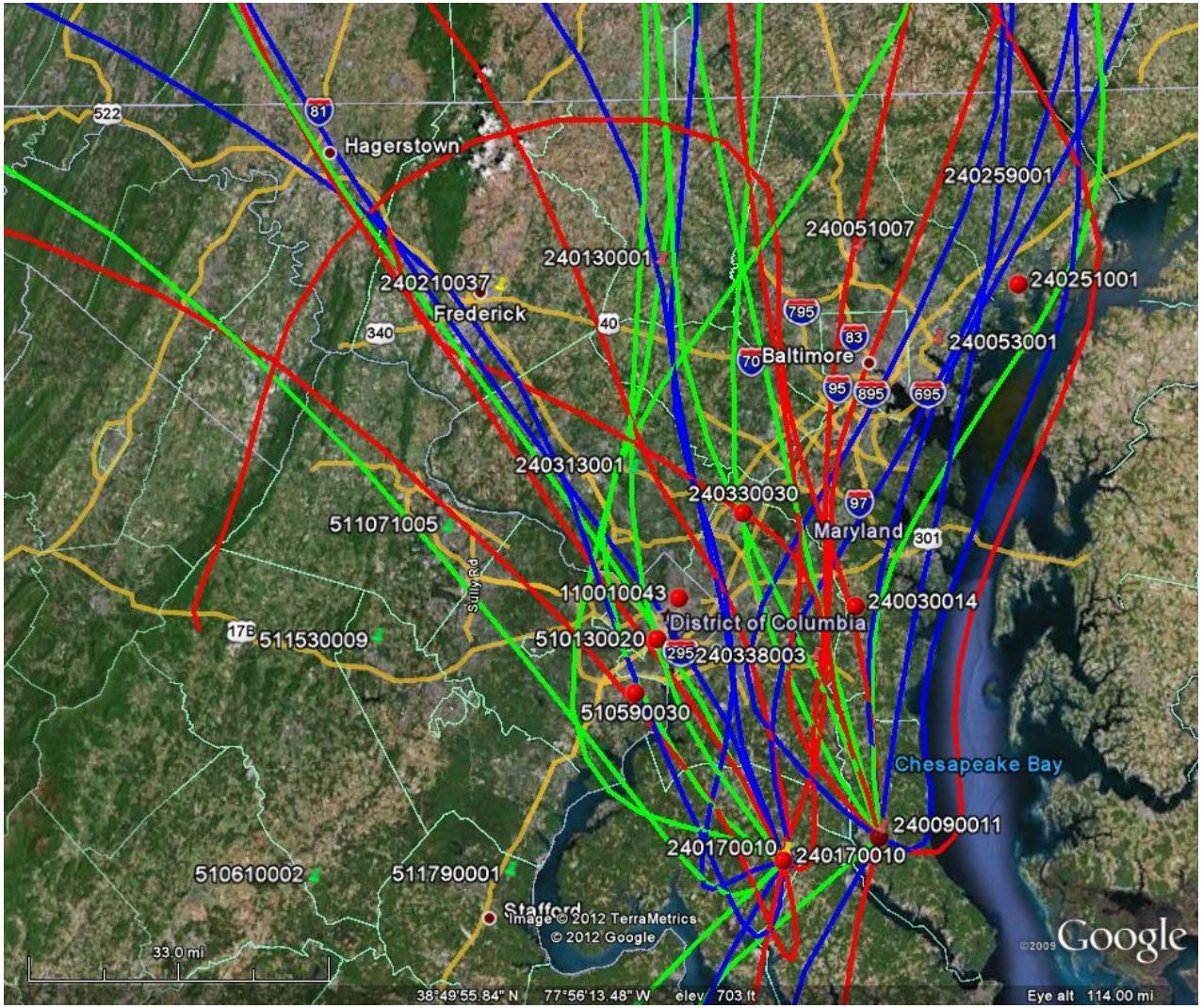


Figure 9A-3. Back-Trajectories from Certain Violating Monitors in the Washington CBSA Crossing Clarke, Culpeper, Fauquier, Warren in Virginia, of Jefferson and Hampshire in West Virginia, and the Frederick County Area DC area

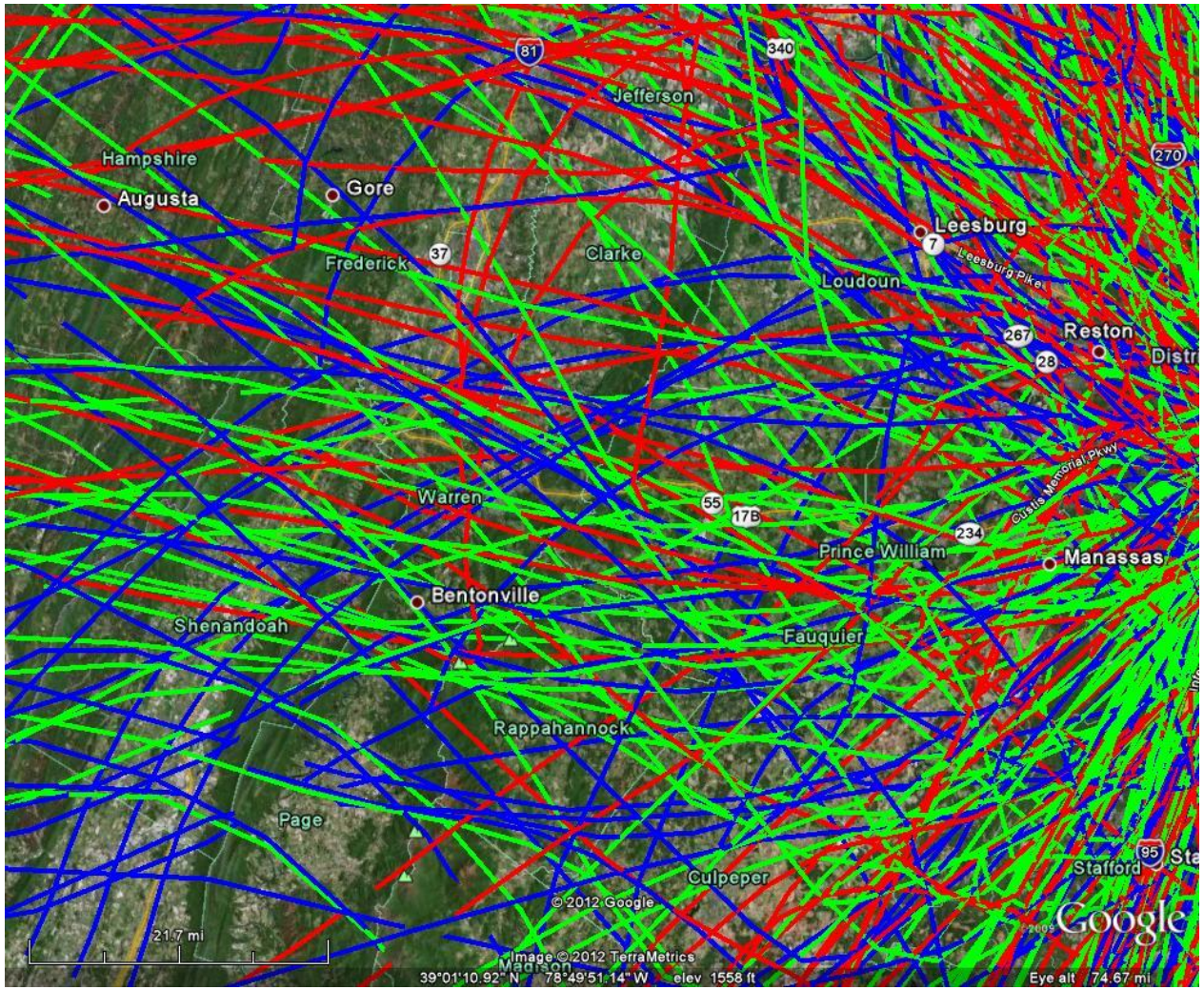


Figure 9A-4. Back-Trajectories from Certain Violating Monitors in the Baltimore CBSA Crossing Clarke, Culpeper, Fauquier, Warren in Virginia, of Jefferson and Hampshire in West Virginia, and the Frederick County Area DC area

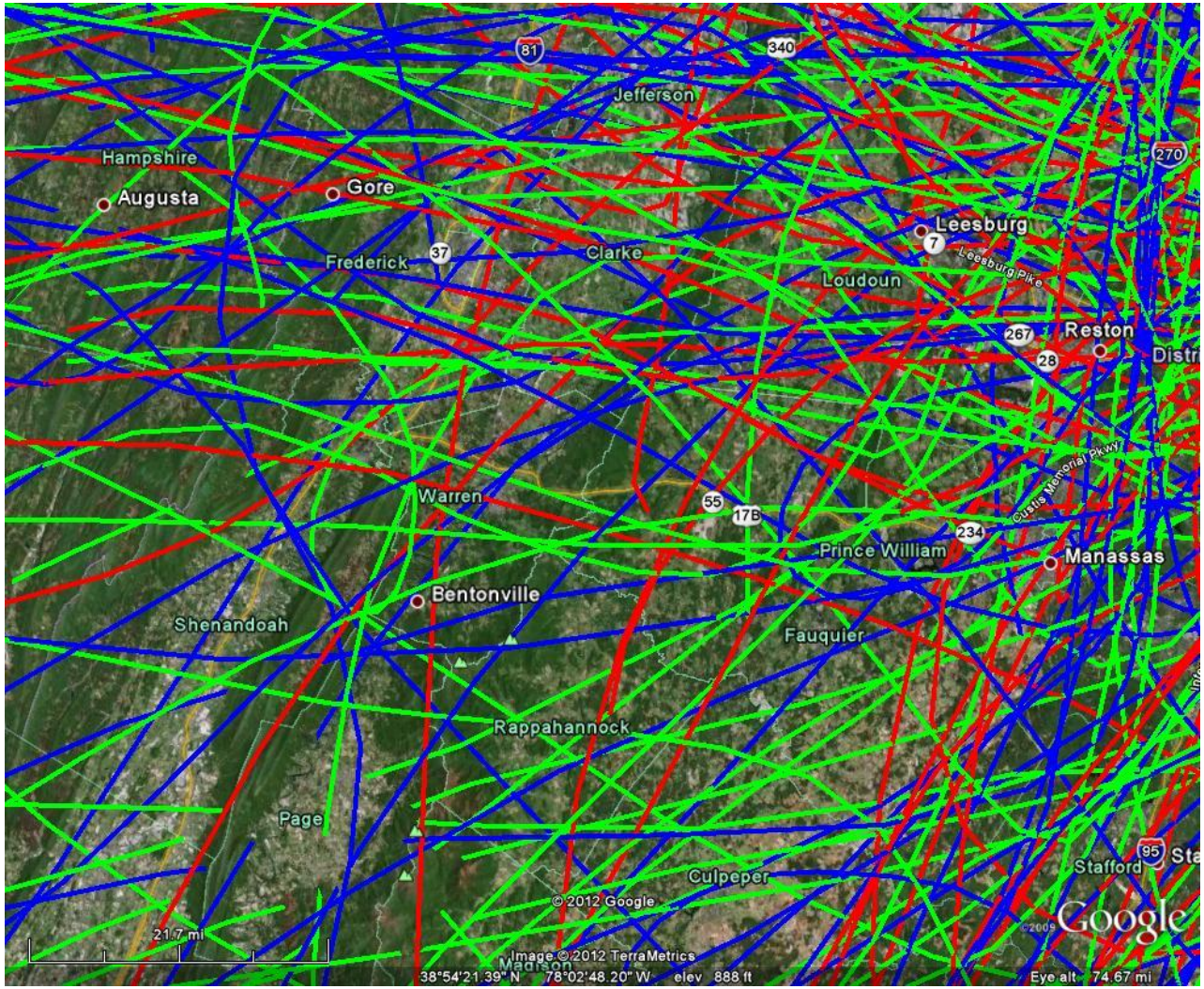


Figure 9A-5. Back-Trajectories from Certain Violating Monitors in the Washington CBSA Crossing St. Mary's County

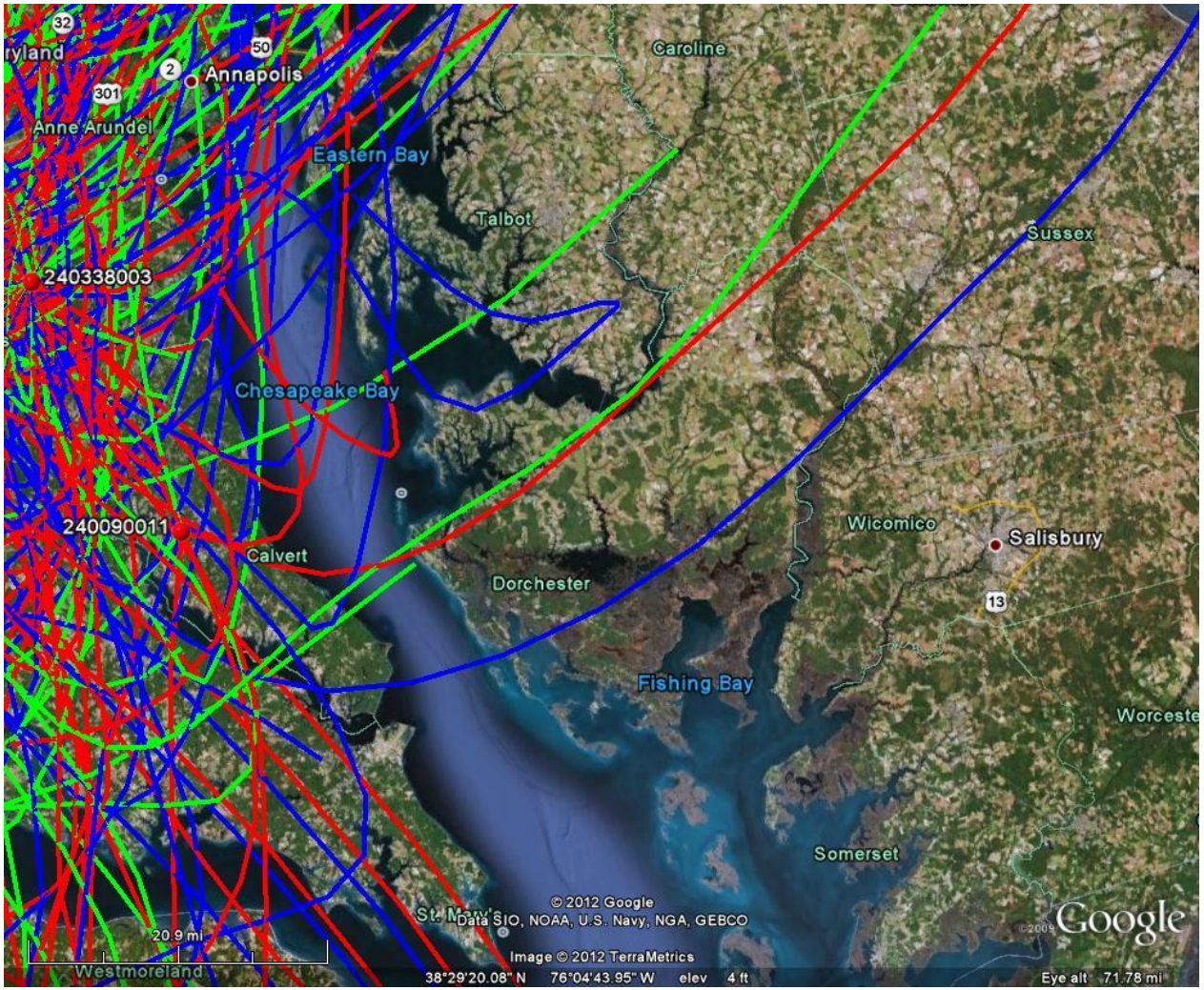


Figure 9A-6. Back-Trajectories from Certain Violating Monitors in the Baltimore CBSA Crossing St. Mary's County

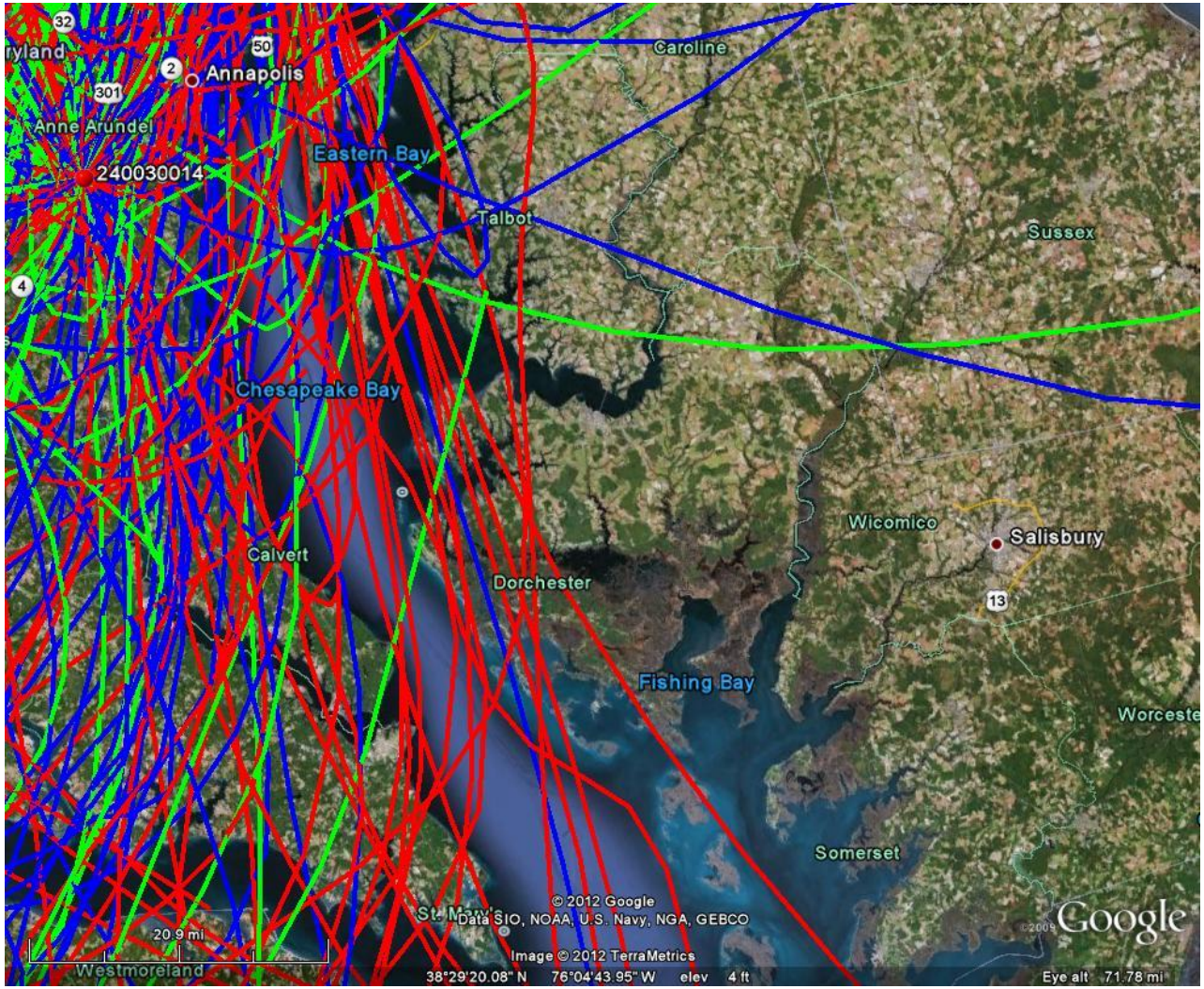


Figure 9A-7. Back-Trajectories from Certain Violating Monitors in the Baltimore CBSA Crossing Queen Anne's County

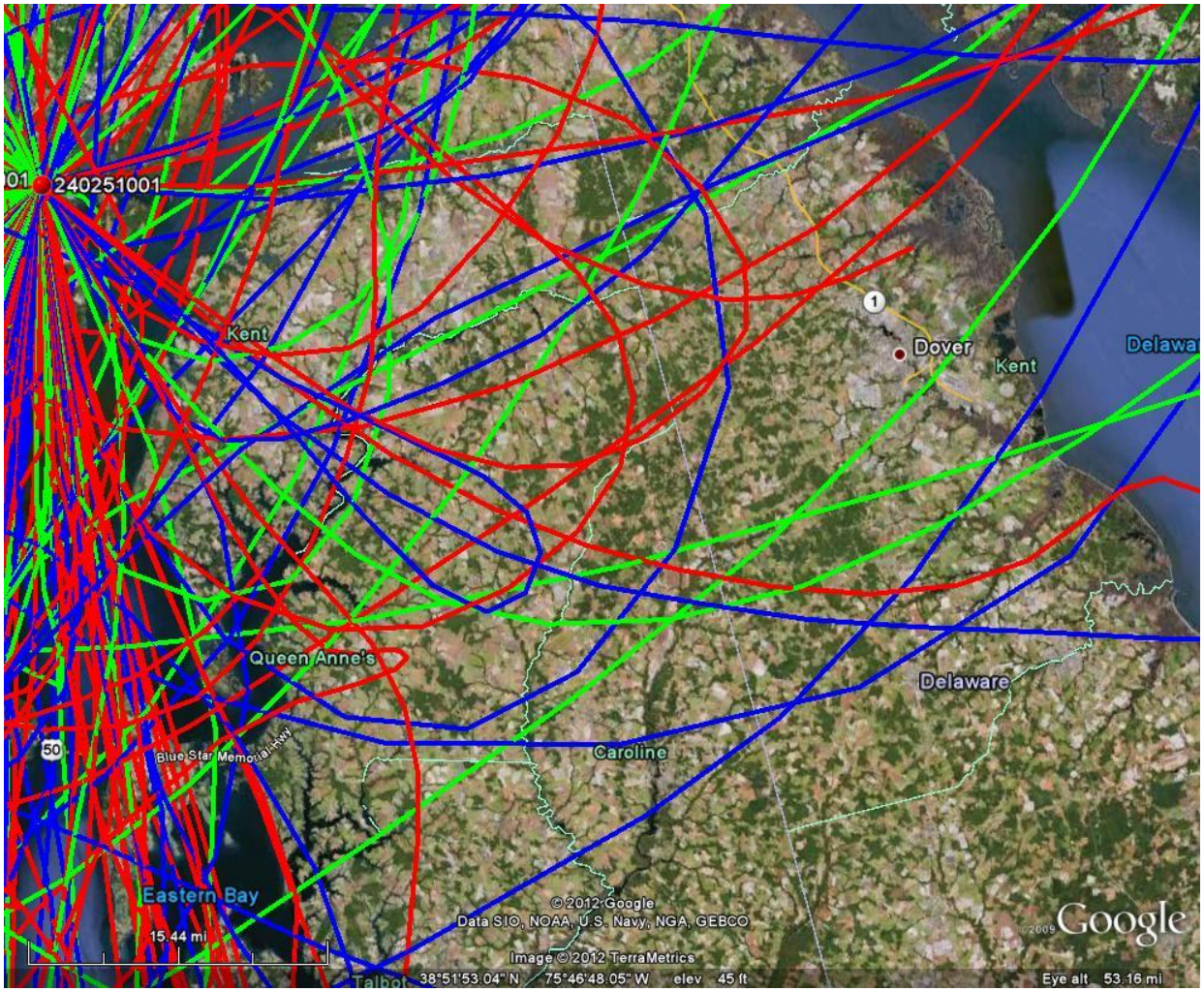


Figure 9A-8. Back-Trajectories from Certain Violating Monitors in the Washington CBSA Crossing Queen Anne's County

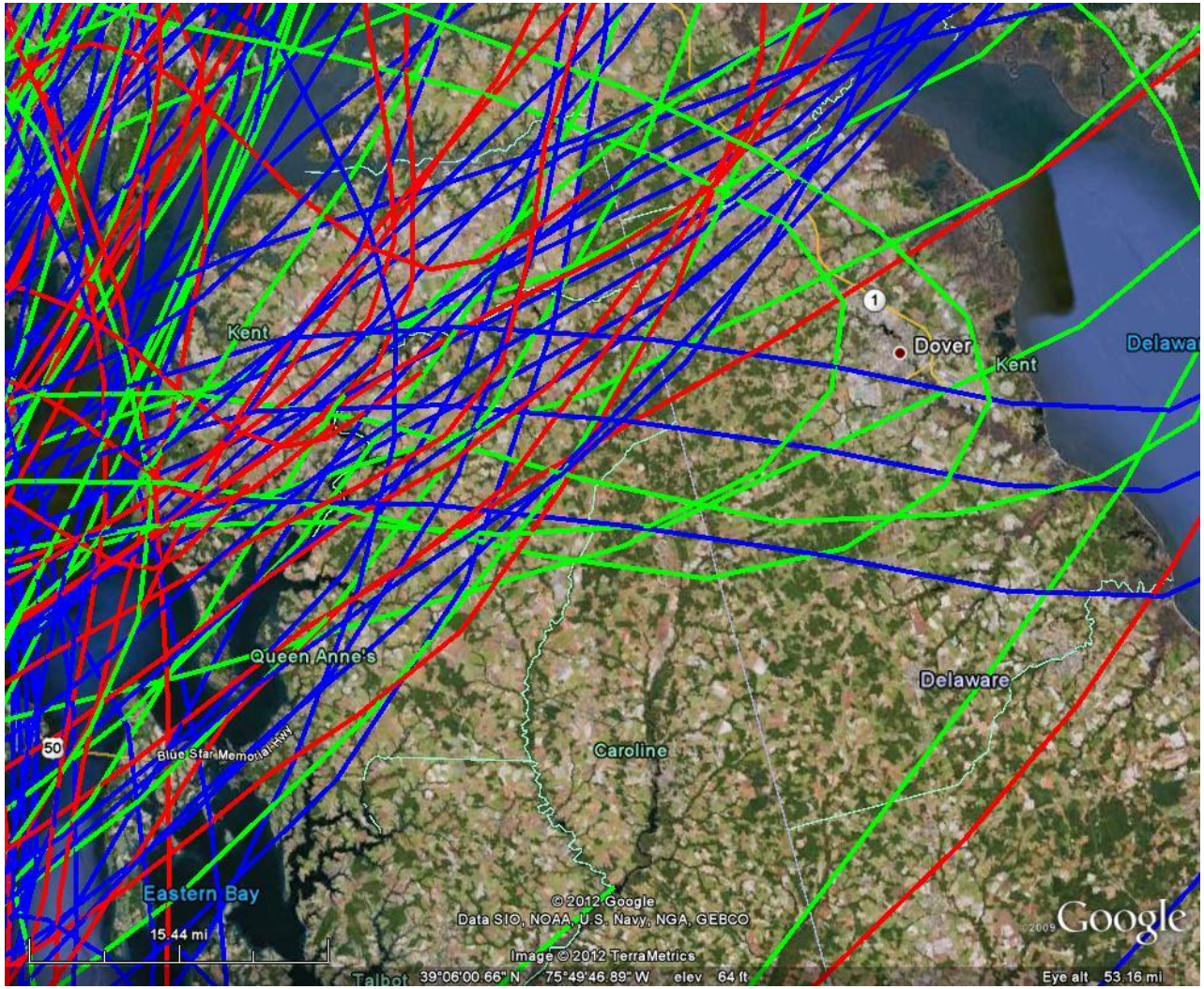


Figure 9A-9. Back-Trajectories from Certain Violating Monitors – Franconia, Fairfax Co. and Arlington, Arlington County – Crossing the Fredericksburg, VA Area

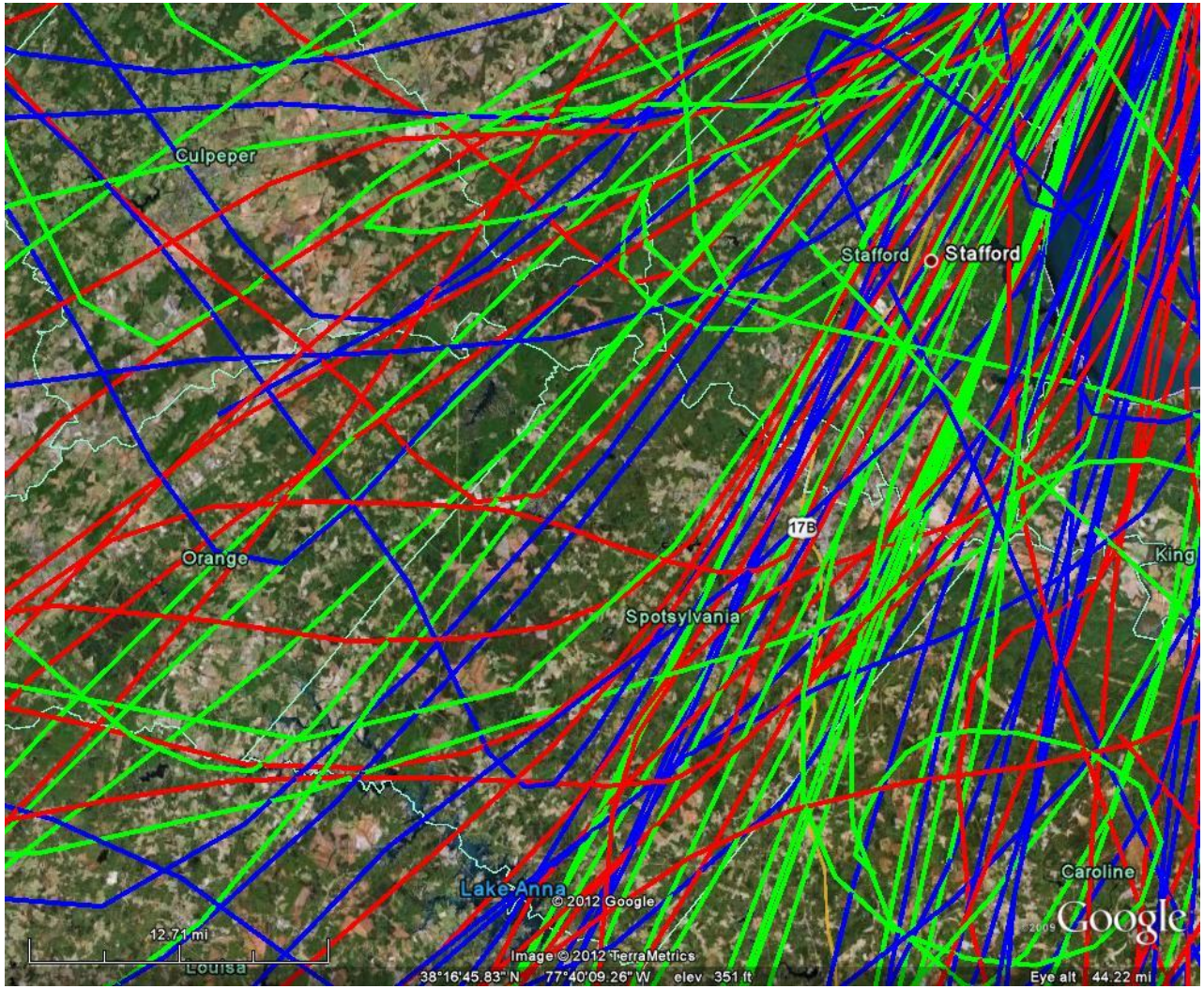


Figure 9A-10. Back-Trajectories from Certain Violating Monitors – in Prince George's County, MD and the District of Columbia – Crossing the Fredericksburg, VA Area

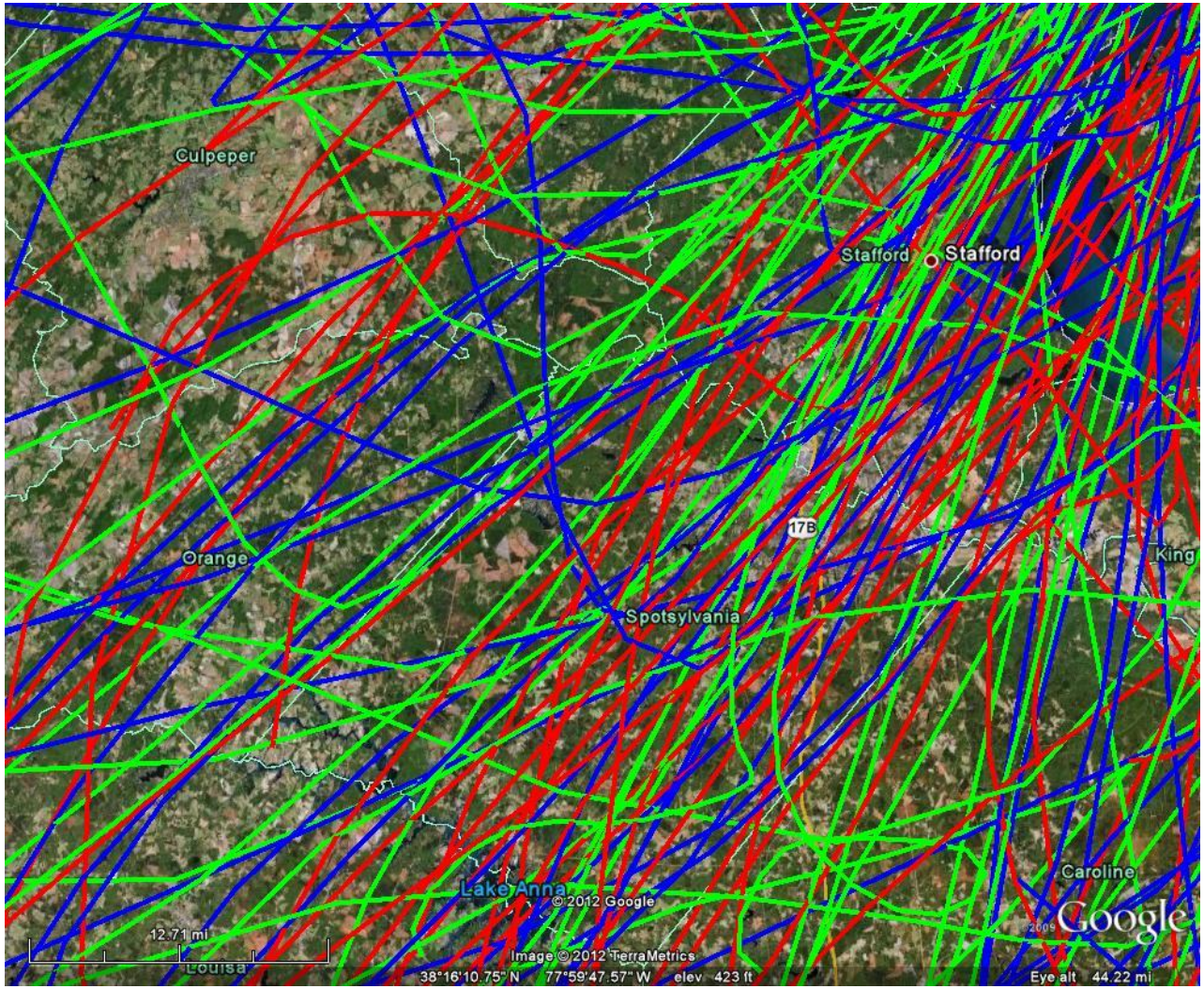
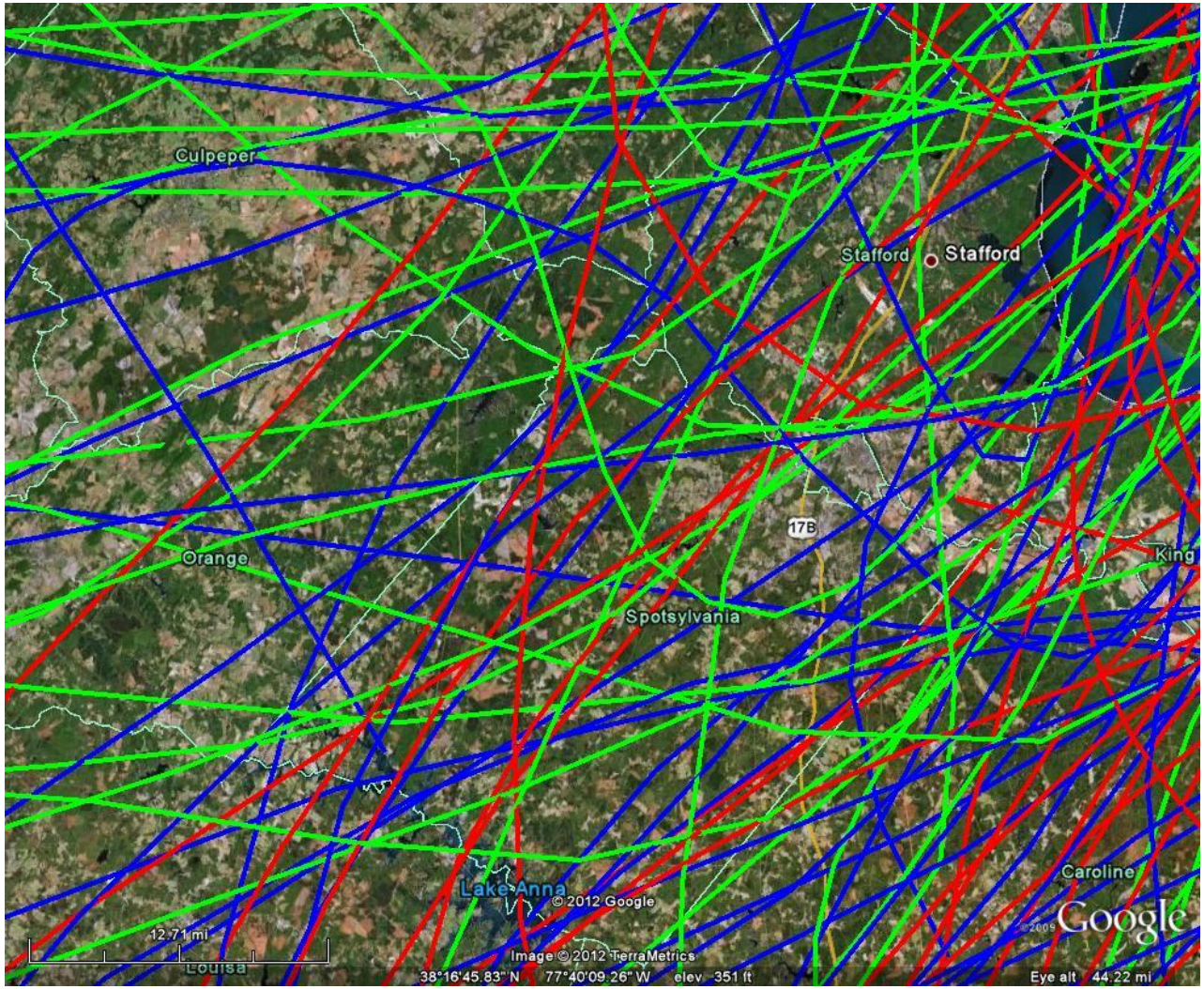


Figure 9A-11. Back-Trajectories from Certain Violating Monitors in the Baltimore CBSA Crossing the Fredericksburg, VA Area



Appendix 10. EPA analysis and response to Maryland's Five Factor Analysis for a Washington-Baltimore-Northern Virginia CSA Nonattainment area. Technical Support Document— Area Designations for the Washington-Baltimore-Northern Virginia, DC-MD-VA-WV Combined Statistical Area (CSA) 2008 Ozone National Ambient Air Quality Standards

Purpose:

This appendix provides a summary of:

(1) Maryland's five factor analysis for a single nonattainment area a 17 State nonattainment area comprising the District of Columbia, Maryland, Delaware, New Jersey, New York, Pennsylvania, Virginia, West Virginia, Ohio, North Carolina, Tennessee, Missouri, Illinois, Indiana, Kentucky, Michigan and Wisconsin.

(2) EPA's response to this 5 factor analysis to indicate what Maryland supplied information EPA considered and what Maryland supplied information EPA did not or could not consider and the reason(s) why.

Summary of Maryland's 5 Factor Analysis:

Maryland provided a 5-factor analysis in support of its recommendation to designate the entire Washington-Baltimore-NV Combined Statistical Area (CSA) as a single nonattainment area.[1]

With regard to Factor 1 – Air Quality Data Maryland asserted:

Plotting the design values for each county on a map would show that most of this CSA has similar design values with few exceptions. The exceptions are the monitors in:

Baltimore City,

The Edgewood monitor (AQS ID No. 24-025-1001) in monitors in Harford County, and,

Those counties on the "fringe" of the CSA in Virginia and Maryland.

In the TSD[2] for the December 9, 2011 letter[3], EPA noted that the Anne Arundel County monitor tracks well with values at the current design value monitor[4] for the current Washington DC-MD-

[1] Under Factor 5 – Jurisdictional Boundaries Maryland acknowledged that "it may be possible to exclude some of the outer ring counties, the fact that these counties are included as part of the CSA indicates their forming ties to the core urban area."

[2] Refer to a document entitled "Maryland Area Designations for the 2008 Ozone National Ambient Air Quality Standards," prepared by the Region 3 USEPA, item number EPA-HQ-OAR-2008-0476-0235 in the docket for this action.

VA NA area. This is because the overall air quality of the CSA is fairly uniform and emissions from the region as a whole generate ozone uniformly throughout the region. This is an indication that the Baltimore region is affected strongly and mostly by sources to the south and west, which includes the Washington DC area. Maryland concludes that this uniformity demonstrates that the two current nonattainment areas should be designated as one nonattainment area and therefore it seems rather arbitrary to separate the two areas based on Metropolitan Statistical Area (MSA) boundaries.

Maryland has performed micro-scale modeling that shows the influence of the Chesapeake Bay on the transported emissions from the Washington, DC region and explains the abnormally high readings at the Edgewood monitor (further discussed in Maryland's meteorology discussion). The other monitor (Aldino AQS ID No. 24-025-9001) in Harford County tracks well with other design values in the CSA. Maryland has empirical evidence of emissions transported by the nocturnal low level jet (NLLJ) which is a strong southwest wind along eastern side of the Appalachian Mountains that runs very close to the ground. It begins at sundown and can last until dawn. It can start as far south as North Carolina and can reach as far north as New Jersey, Massachusetts, and Connecticut. Given an average speed of 30 mph, a NLLJ that runs for 7 hours carries gases and particulates 210 miles. Data collected simultaneously from wind profilers and ozonesondes has revealed that ozone is transported via the low level jet.

(The preceding was included under Maryland's discussion of Factor 1 – Air Quality; similar information about the NLLJ and other meteorological phenomenon was also discussed under Factor 3 – Meteorology and factor 4 Geological/Topological Barriers. EPA will respond to this information mainly under Factor 3 – Meteorology.)

With regard to Factor 2 Emissions and Related Maryland asserted:

Traffic and commuting patterns indicate the location of non point source emissions. Transport becomes central to attainment in more and more states with every lowering of the NAAQS. In Maryland's case, this includes transport from nearby areas, such as the other half of the CSA. Estimates of the time needed to form ozone correspond with the time it takes emissions from the Washington, DC region to travel over the Baltimore region. Emissions throughout the CSA are fairly uniform. In making its proposed designations, Maryland provided an assessment of the effects of the 2009 ozone season caps in their regulation[5] mandated by the Maryland Healthy Air Act. NOx emissions remain high for the Maryland counties in the Washington CSA. This is because emissions in the Washington metropolitan area are predominantly from mobile sources. Three quarters of the 495 Beltway which serves the CSA lies within Maryland. The NOx

[3] Letter dated December 9, 2011, from Shawn M. Garvin, Regional Administrator, EPA Region III, to the Honorable Martin J. O'Malley, Governor of Maryland.

[4] This would be the "Franconia"monitor (AQS ID No. 51-059-0030) in Fairfax County, VA.

[5] Refer to regulation COMAR 26.11.27.01 through .04, and .06 "Emission Limitations for Power Plants" in the codification of the Maryland SIP at 40 CFR 52.1070(c) and also to 73 FR 51599, September 4, 2008.

emissions from traffic on this portion of the beltway are attributed to Maryland even though Virginia commuters regularly utilize this highway. Growth factors in Virginia far outpace growth factors for counties in Maryland implying growth in additional non-point source emissions in the region. Under Maryland's discussion of Factor 3 Meteorology – Transport on the Intra-CSA Scale, Maryland said that the split of mobile source emissions between the Baltimore and Washington areas is approximately 40% and 60%, respectively. Growth rates are not uniform throughout the CSA. The higher growth rates in some Virginia counties will result in additional emissions impacts to the Baltimore region due to transport. The impacts of this growth would be shared if EPA designated the CSA as one nonattainment area.[6]

In its discussion of Factor 5 – Jurisdictional boundaries Maryland noted that while it may be possible to exclude some of the outer ring (CSA) counties, the fact that these counties are included as part of the CSA indicates their forming ties to the "core" urban area.

With regard to Factor 3 – Meteorology Maryland asserted:

Transport on the Intra-CSA Scale:
Maryland said the meteorological data does not provide a basis for separating the Baltimore and Washington, DC nonattainment areas. They cited the "Preliminary TSD[7]" for EPA's December 9, 2011 letter.[8] The Chesapeake Bay breeze is caused by the sharp gradient between land and water temperatures which causes the air over the warmer land to rise and be replaced at the surface by cooler air from atop the Bay waters. Maryland cited research and modeling performed by the University of Maryland. This includes high resolution (0.5 kilometer (km) domain) WRF (meteorological) and CMAQ (photochemical) modeling in an effort to learn how the bay breeze dynamics work and if pollution from the Washington area is transported towards the Edgewood monitor. This high resolution meteorological modeling shows westerly winds transport ozone and ozone precursors from the Washington region to over the bay starting in the early morning hours (7 AM). This modeling illustrates how early morning stagnation over the Chesapeake Bay allows high pollution concentrations at the bay breeze convergence zone to buildup and then be lofted and transported downwind towards the Edgewood monitor. Maryland provided summary results in form of map overlays for the 0.5 km grid and coarser grids for July 9, 2007. One such result compared the model-predicted ozone concentrations to the actual measured values for July 9th for 0.5, 1.5, 4.5 and 13.5 km grid resolutions. The higher the resolution (that is, the smaller the grid size) the better the model-predicted values matched the measured value near the Edgewood monitor.

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[6] Subsequent to the State's March 7, 2012 letter Maryland also submitted data comparing growth rates in

[7] Refer to a document entitled "Maryland Area Designations for the 2008 Ozone National Ambient Air Quality Standards," prepared by the Region 3 USEPA, item number EPA-HQ-OAR-2008-0476-0235 in the docket for this action..

[8] Letter dated December 9, 2011, from Shawn M. Garvin, Regional Administrator, EPA Region III, to the Honorable Martin J. O'Malley, Governor of Maryland

As noted previously under Factor 2 – Emissions and Related, Maryland asserted that emissions in the Washington metropolitan area are predominantly from mobile sources. Maryland asserts that the largest remaining source of NOx emissions in the CSA are from mobile sources and that the emissions split between the "Baltimore and Washington areas" is approximately 40% and 60%, respectively. Based upon their modeling results and the mobile source emissions split between the two areas, Maryland concludes that high ozone concentrations at the Edgewood monitor (AQS ID 510251001) in Harford County can be directly linked to "Washington area" mobile NOx emissions.

Surface Wind Roses:
Maryland asserted that surface wind roses do not represent the three-dimensional flow of air in the atmosphere. Transport patterns based solely on surface wind speed and direction ignores aloft winds and regular vertical mixing such as occurs in the daily cycle of the planetary boundary layer (PBL). Three-dimensional wind fields provide a more realistic presentation of the origins of air during ozone exceedance days.

Transport on Larger Scales and the Nocturnal Low Level Jet (NLLJ):

Regarding the Bay Breeze" and "Lee-side" trough:

Maryland asserted that the Chesapeake Bay breeze stops ozone and its precursors from being blown out to sea and instead funnels dirty air along the I-95 corridor. The Appalachian Mountains are responsible for both the "leeside trough" and "nocturnal low level jet" that speed the transport of pollution toward Maryland.

Regarding Back-trajectory Results:

Maryland asserted that analysis using back trajectories the most common transport routes for Maryland ozone exceedance days has identified five meteorological regimes associated high ozone days: The largest cluster is westerly transport through Ohio and Pennsylvania. The second largest cluster is northwest transport through Pennsylvania. The third largest cluster is southwest transport from Virginia and West Virginia. Two smaller local clusters were also identified: recirculation and stagnation.

Regarding Cross-State Air Pollution Rule (CSAPR) Model Results:
Maryland asserted that approximately one-third of Maryland's air pollution is from local anthropogenic sources. Approximately half is from interstate transport. This data came from the EPA's modeling for the CSAPR. Maryland provided a summary of the contributions in ppb (percentages) of projected 2012 ozone design values for the 15 Maryland monitors included in the source apportionment modeling runs.

With regard to Factor 4 - Geography/topography (mountain ranges or other air basin boundaries) Maryland asserted:

Maryland agreed with the EPA conclusion that the Washington-Baltimore-NV CSA generally does not have any barriers appreciably limiting air pollution within its air shed. The Appalachian Mountains are a barrier to surface transport but not to aloft transport of ozone and ozone precursors.

Maryland repeated information about the Chesapeake Bay "breeze," the leeside trough," the NLLJ provided in its 5 factor analysis for a 17 State nonattainment area and again asserted that the "air shed" that is relevant to the ozone nonattainment area boundary should be the same as the "air shed" for the Chesapeake.

With regard to Factor 5 – Jurisdictional boundaries Maryland asserted:

The CSA has county boundaries even though it crosses state lines. A nonattainment designation corresponding with the CSA would have three or more functional sub regions currently performing both air quality and transportation planning. While it may be possible to exclude some of the outer ring counties, the fact that these counties are included as part of the CSA indicates their forming ties to the "core" urban area.

EPA's Response:

In general, EPA has considered some of the information Maryland supplied in response to EPA's December 9, 2011 letter regarding EPA's proposed modifications to Maryland's recommendation. Where EPA did not weigh heavily or did not at all give weight to Maryland's data, EPA explains our rationale in this response. Where EPA used Maryland's data and information, we note that fact below and refer the reader to the appropriate portion(s) of the main body of this TSD "Area Designations for the Washington-Baltimore-Northern Virginia, DC-MD-VA-WV Combined Statistical Area (CSA) 2008 Ozone National Ambient Air Quality Standard" for further details. In some cases, EPA cannot dispute Maryland's information such as the fact that transport may have an impact on ozone levels but does not agree that nonattainment designations pursuant to section 107(d)(1) is the proper remedy (for the reasons provided in of "Responses to Significant Comments on the State and Tribal Designation Recommendations for the 2008 Ozone National Ambient Air Quality Standards (NAAQS)," Docket Number EPA-HQ-OAR-2008-0476, U.S. Environmental Protection Agency, April 2012 (Hereafter the "RTC document"). In other cases, our analysis suggested that Maryland's information could be correct but we could not conclude that Maryland's conclusions had the level of effect Maryland asserted or were true for all cases.

Because EPA agrees with comments regarding the adequacy of the 30-year average wind data, EPA had to perform a comprehensive, revised assessment of Factor 3 – Meteorology. EPA also had to perform this comprehensive, revised assessment of Factor 3 to consider Maryland's meteorology information; to decide whether the CSA should be divided into two or more areas or to combine all the violating monitors into one nonattainment area, and if the area was to be

divided which monitors belong in which area, and, finally, to decide which counties/cites with attaining monitors or no monitor should be designated nonattainment based upon the "'contributes to' a violation in a 'nearby area'" provision of section 107(d)(1)(A). These evaluations required a level of detail far beyond that needed for most other areas in the consideration of meteorological information, air quality and the relationship between prevailing winds and monitored daily ozone concentrations. ***EPA therefore needed to examine the air quality data and meteorological information and correlate the two in vastly more detail than in the case of many other areas in the country where perhaps there is only one violating monitor, perhaps the relationship between a few counties' emissions and one or only one or two monitors are at issue, or where substantial geographic barriers constrain air movement.***

The responses that follow provide a summary of the salient conclusions only.

With regard to Factor 1 – Air Quality Data

EPA does not disagree that plotting the DVs on a map show a sort of uniformity across the areas of highest design values nonattainment – Fairfax and Arlington Counties and Alexandria City in Virginia, the District of Columbia and Anne Arundel, Baltimore and Harford Counties in Maryland – shows a general patter with the exception of the Edgewood monitor in Harford County. Nor does EPA disagree that the DV of the Davidsonville monitor (AQS ID No. 24-003-0014) in Anne Arundel County has track fairly closely with the design value of the current Washington DC-MD-VA area. EPA noted as much in the "Preliminary TSD for EPA's December 9, 2011" letter to Maryland.

EPA partially disagrees with the Maryland's characterization of EPA's Factor 1 Air Quality Data in the Preliminary TSD for EPA's December 9, 2011 letter said the design value for the Edgewood monitor (AQS ID 240251001) in Harford County, MD is the same as those in the Virginia portion of the CSA. In Table 7 of the Preliminary Technical Support Document, December 2011 (item number EPA-HQ-OAR-2008-0476-0235 in the docket for this action) EPA did note that the design value for the Edgewood monitor seemed to be 0.004 ppm higher than the design value monitor in the current Washington DC-MD-VA ozone nonattainment area for the periods ending 2003 and 2008. EPA noted that the difference for 2010 is now 0.008 ppm where the Edgewood monitor has the higher design value.

EPA also disagrees Maryland's characterization of EPA's process of determining the boundary of a nonattainment area endings once monitors measuring attainment are found; see the response under "Regarding Factor 1 – Air Quality Data" in EPA's response to Maryland's 5 factor analysis for 17 State area.

With respect to Maryland's comment s regarding the use of surface wind roses do not represent EPA received similar comments from the public.[9] As a result of such comments, EPA re-evaluated the five-factors for this CSA in light of meteorology data resulting from use of the National Oceanic and Atmospheric Administration's (NOAA) Hybrid Single Particle Lagrangian

[9] For example, refer to documents EPA-HQ-OAR-2008-0476-0405 and EPA-HQ-OAR-2008-0476-0456.

Integrated Trajectory (HYSPLIT) Model to supplement the Factor 3 Meteorology portion of the analysis of the Preliminary TSD.[10]

To allow consideration of air movement above the surface layer we ran the HYSPLIT model to obtain trajectories for three heights – 100 meters, 500 meters and 1,000 meters. We ran the HYSPLIT to obtain 1,000 meter runs in order to better understand aloft movement of air that can be expected to mix down as the night-time inversion breaks-up. Due to the number of monitors and exceedance days EPA did not (and could not due to time constraints) run trajectories for each exceedance day at each monitor in the CSA.

To narrow down the level of effort, EPA examined the air quality data (Factor 1) in more detail.

We examined the 2006 to 2010 8-hour ozone concentrations for the monitors in the "violating center"[11] of the CSA and grouped the data by days when the 2008 ozone NAAQS was exceeded. When selecting monitors for which to run the HYSPLIT model EPA had to consider the density of the monitoring network, the need to decide whether to designate all or a substantial portion of this CSA as one nonattainment area or split the CSA into more than one nonattainment area, and the need to develop a conceptual model of the relationship between meteorology (wind directions on exceedance days) and ozone concentrations within the CSA in light of Maryland's (and other parties') comments on meteorology, the "tracking" of the design value for the current Washington DC-MD-VA nonattainment area by the Davidsonville monitor in Anne Arundel County.[12] ***EPA therefore needed to examine the air quality data in vastly more detail than in the case of many other areas in the country where perhaps there is only one violating monitor, perhaps the relationship between a few counties' emissions and one or only one or two monitors are at issue, or where substantial geographic barriers constrain air movement.***

Some other conclusions can be reached: generally, especially high concentrations (those over 0.091 ppm[13]) are often recorded on days which are part of a multi-day episode (that is, two or more consecutive days with at least one exceedance recorded at least one monitor within the CSA); there are single day episode exceptions such as on July 23, 2010, where Edgewood

[10] "Refer to a document entitled "Maryland Area Designations for the 2008 Ozone National Ambient Air Quality Standards," prepared by the Region 3 USEPA, item number EPA-HQ-OAR-2008-0476-0235 in the docket for this action.

[11] Basically all monitors in the CSA were considered except the monitor in Frederick County, VA.

[12] More detail on this selection process, refer to the main body of this TSD under Factor 1: Air Quality Data.

[13] For details of choosing 0.091 ppm as a threshold for "especially high" refer to the main body of this TSD under Factor 1: Air Quality Data.

recorded a concentration of 0.101 ppm, and July 10, 2008, (0.099 ppm at the Padonia monitor in Baltimore County),

There are many days where the Edgewood monitor recorded a peak 8-hour concentration 10, 20 or even 30 ppb (0.010, 0.020 and 0.030 ppm) higher than other close monitors such as the "Essex," Aldino and Padonia monitors in Harford and Baltimore Counties.

With regards to Factor 2 Emissions & Related:

With regards to Updated Emissions data for Maryland to reflect Regulation under the Healthy Air Act:

EPA considered this data because the regulation in the approved Maryland State implementation Plan sets caps on emissions from certain EGUs that commenced with the start of the 2009 ozone season. EPA considered the effect this data had under Factor 2 – Emissions. For more details on how EPA weighed this Maryland supplied data, refer to the main body of this TSD under Factor 2: Emissions and Emissions-Related Data.

With regards to Growth Rates:

First, EPA agrees that generally the population growth rates in some Virginia portions of the CSA are greater than those in most portions of the Maryland portions. For instance, the growth rate (that is, percent) and the absolute magnitude of the 2000 to 2010 population change in some Virginia Counties are remarkable. EPA does note Maryland's data for the change in population from 2000 to 2010 for Fairfax, Frederick (VA) and Loudoun Counties but notes the differences really do not change the comparisons or the numbers. The counties with the highest growth rates were still the highest in the CSA. The change in absolute population change likewise did not materially change the magnitude of the values. EPA did note some of Maryland's data but could not weigh it heavily because Maryland provided data for only a part of the nonattainment area with differing periods – for instance 2000 to 2009 or 2000 to 2007 whereas EPA had data for the changes between 2000 and 2010 the whole area. EPA elected to rely on comparisons with the data set for the change over the same time interval. However, percent change is not necessarily the whole story. Culpeper County in Virginia had a 2000 to 2010 growth rate of 35 percent but its total 2010 population is only 46,689 persons which is about equal to the absolute growth in population in Anne Arundel and Baltimore Counties and far less than that in Montgomery County, Maryland.[14] EPA believes there can be cases where the growth rate may be a large percentage but not necessarily determinative because the large percentage is of a small baseline; even though a county may have a large percentage growth and such growth continues in the future the overall change may not be substantial enough. EPA considers growth rates in

[14] Refer to Tables 10 and 11 in a document entitled "Maryland Area Designations for the 2008 Ozone National Ambient Air Quality Standards," prepared by the Region 3 USEPA, item number EPA-HQ-OAR-2008-0476-0235 in the docket for this action.

conjunction with the other factors before determining to designate a county nonattainment. For more details on how EPA weighed this Maryland supplied data, refer to the main body of this TSD under Factor 2: Emissions and Emissions-Related Data.

With regards to Mobile Source Emissions within the CSA:

EPA does not disagree that highway, mobile source emissions in the Washington DC-MD-VA nonattainment area (under the 1997 ozone standard) could well be 1.5 times those in the current Baltimore ozone nonattainment area. The ratio of vehicle miles traveled (VMT) is approximate 43 billion in Washington to 25 billion in Baltimore.[15] EPA examined the 2008 emissions data used for the analysis for EPA's "Preliminary TSD"[16]. EPA broke out the on-road mobile sources NOx emissions data for the CSA and found that the split between the aggregate on-road mobile source emissions of the Washington and Baltimore nonattainment areas is 61.6% in the current Washington DC-MD-VA NA area and 38.4% in the current Baltimore NA area. Maryland's on-road NOx emissions are 62.1% of the CSA total and 69.3% of the aggregate on-road mobile source NOx emissions in the Washington, DC-MD-VA and Baltimore, MD nonattainment areas.

Due to such comments, EPA considered the impact of mobile source emissions throughout the Washington-Baltimore-Northern Virginia DC-MD-VA-WV CSA when evaluating the 5-factors for the final decision. For more details on how EPA weighed this Maryland supplied data, refer to the main body of this TSD under Factor 2: Emissions and Emissions-Related Data.

With Regards to Counties in the CSA and Mobile Source Emissions:

In their Factor 5 discussion Maryland stated that the fact that these counties are included as part of the CSA indicates their forming ties to the core urban area. As stated in our response to various comments advocating expansion of nonattainment area boundaries out to the CSA/CBSA boundary, EPA believes the fact that a city or county is in a CSA does not automatically requires inclusion in a nonattainment area. In our guidance for delineating boundaries, EPA recommended starting the boundary determination process at the boundaries of a CSA/CBSA because the factors used to establish the CBSAs and CSAs are similar to the factors EPA considers in determining whether a nearby area is contributing to the violation(s) of the standard. But EPA determines whether an area is contributing to the violation(s) of the standard at a nearby monitor only after consideration of all five factors. EPA believes the fact that a county or

[15] Refer to Table 12 in a document entitled "Maryland Area Designations for the 2008 Ozone National Ambient Air Quality Standards," prepared by the Region 3 USEPA, item number EPA-HQ-OAR-2008-0476-0235 in the docket for this action..

[16] *Ibid.*

city is not in a CBSA/CSA is noteworthy because the level of employment interchange and hence commuting is usually less than the criteria levels used by OMB

For more details on EPA's consideration of CSA boundaries in the 5 factor analysis for the Baltimore, MD and the Washington, DC-MD-VA nonattainment areas, refer to the main body of this TSD under Factor 2: Emissions and Emissions-Related Data and Summary of the 5-Factor Analysis.

Regarding Factor 3 -- Meteorology:

Regarding Surface Wind Roses:

As stated in a response to Maryland's comments regarding air quality data, EPA re-evaluated the five-factors for this CSA in light of meteorology data resulting from use of the National Oceanic and Atmospheric Administration's (NOAA) Hybrid Single Particle Lagrangian Integrated Trajectory (HYSPLIT) Model to supplement the Factor 3 Meteorology portion of the analysis of the Preliminary TSD.[17]

Regarding Back-trajectory Results:

EPA performed back-trajectory analyses for the Washington-Baltimore-NV CSA. As described in detail under EPA's response to Maryland's comments on Factor 1 – Air Quality Data, EPA examined the ambient air quality data to narrow down the number of back-trajectories to model.

Like Maryland, EPA found that the back-trajectories from the Edgewood monitor in Harford County, MD can be grouped into several regimes. Examining the back-trajectory results for Edgewood monitor, EPA does not dispute that one could categorize these into several categories based upon geographic origin of the back-trajectories. EPA saw evidence of westerly transport, northwest transport, southwest as well as recirculation and stagnation. EPA also saw evidence of North to Northeast flows on exceedance days as well.

EPA categorized the back-trajectory results using a different scheme than Maryland. EPA grouped the exceedance days into roughly five quintiles by the concentration measured at the Edgewood monitor.[18] EPA also considered whether or not the back-trajectory passed through any portion of the Washington-Baltimore-NV CSA other than the 1997 Baltimore NA area because EPA was considering the back-trajectories in order to response to Maryland's recommendation and comments for a single nonattainment area with this CSA. EPA does agree that air masses arriving at the Edgewood monitor on exceedance days can arrive from the West-Northwest, from the Northwest, from the Southwest and even from the North and Northeast as well as days where the air mass stayed locally – essentially circulated within the CSA boundaries – for a 24-hour period.

[17] For more details, refer to the main body of this TSD under Factor 1: Air Quality Data.

[18] For more details, refer to the main body of this TSD under Factor 1: Air Quality Data.

Examining the back-trajectory results for Edgewood monitor, EPA does not dispute that the Washington CBSA or even just the "core CBSA counties and cities" of the 1997 Washington DC-MD-VA NA area is upwind of the Baltimore CBSA on many days the 2008 ozone NAAQS is exceeded.[19] Likewise, based upon the back-trajectories EPA cannot exclude the outlying However, based upon the back-trajectories for days when the concentration recorded at the Edgewood monitor was 0.087 ppm or higher, EPA found a considerable number of days for which the back-trajectories predicted that the bulk of the air did not cross most portions of the Washington CBSA (excepting at time Frederick County, MD) but came from the Northwest, the North-northwest, the North and even from the Northeast for the back-trajectories did not cross any portion of the portion of the Washington

EPA believes its analysis of the back-trajectories would also support a conclusion that portions of other adjacent CBSAs[20] in Pennsylvania, Maryland and Delaware are also upwind of the Baltimore CBSA on sufficient days when ozone concentrations substantially above (say 0.079 ppm or over) the 0.075 ppm NAAQS and a sufficient number of such days have occurred within the last three years to raise concerns. These other CBSAs include the York-Hanover PA CBSA, the Lancaster, PA CBSA, the Philadelphia-Camden-Wilmington, PA-NJ-DE-MD CBSA and even the Hagerstown MD-WV CBSA. EPA also examined back-trajectories for other monitors to gain a sense of prevailing winds on days ozone exceedances were found.

EPA analysis of the back-trajectories does support the conclusion that the Washington CBSA is upwind of the Baltimore CBSA as shown by the results for the Edgewood and Davidsonville monitors.

While EPA has concluded that the Washington CBSA and 1997 nonattainment area are upwind of the monitors in the Baltimore area (CBSA or 1997 nonattainment) EPA can also conclude *that the converse is true*.

For more details, refer to the main body of this TSD under Factor 3: Meteorology (weather/transport patterns).

<u>Regarding Cross-State Air Pollution Rule (CSAPR) Model and Back-trajectory Results:</u>

EPA does not disagree that the CSPAR and back-trajectory analyses implicate Ohio, Pennsylvania, Virginia and West Virginia as possible contributors to ozone concentrations in Maryland as well. EPA's own back-trajectory analyses (and CSAPR modeling results) show that additional States (in particular New York, New Jersey and Delaware and to a lesser extent, others such as Kentucky or North Carolina) may also be upwind of violating monitors in Maryland on days the 2008 ozone NAAQS was exceeded. As explained in the RTC document

[19] As defined by OMB these would be: Montgomery and Prince George's Counties in Maryland; the District of Columbia; and, Arlington, Fairfax County, Loudoun, Prince William and (to a lesser extent) Stafford Counties plus the Cities of Alexandria, Fairfax, Falls Church, Manassas, and Manassas Park in Virginia. Refer to OMB Bulletin No. 10-02, "Update of Statistical Area Definitions and Guidance on Their Uses," December 1, 2009.

[20] In this case, adjacent to the Baltimore CBSA or the Fredrick County, MD portion of the Washington CBSA.

(for example, section 3.1.2.), EPA believes that the CAA requires the nonattainment designation process under section 107(d)(1)(A) requires contribution to be of a level sufficient to warrant a nonattainment designation and such contribution must be to violating areas that are "nearby" and that other provisions of the CAA address longer-range interstate transport.

Regarding Transport on Larger Scales, the Nocturnal Low Level Jet (NLLJ) the "Bay Breeze" and "Lee-side" trough[21]:

EPA does not disagree with Maryland that transport of ozone and its precursors from other States such as those of the Ohio River Valley and Pennsylvania, Virginia North Carolina and others affects ozone levels at monitors in Maryland. As discussed elsewhere in this document, EPA believes that large scale transport is to be addressed under other provisions of the CAA and not section 107(d)(1)(A) designations. , EPA believes that the CAA requires the nonattainment designation process under section 107(d)(1)(A) requires contribution to be of a level sufficient to warrant a nonattainment designation and such contribution must be to violating areas that are "nearby;" for the longer range transport that is not addressed under the section 107(a)(1)(A), the CAA prohibits "significant" contribution not any contribution.

EPA does not dispute Maryland's data regarding aloft levels of ozone entering Maryland. However, EPA notes that these aloft levels do not seem to be the main cause of exceedances at ground level ozone monitors between Maryland's borders and most of the States that Maryland has identified as discussed in the RTC document (for example, section 3.1.2.).

With respect to ozone levels on exceedance days within the Washington-Baltimore-NV CSA, EPA examined a number of episodes to determine what sorts of ozone gradients are observed within the CSA. EPA examined the back-trajectories to gain some understanding of the prevailing winds on the particular episode day and considered the ozone concentrations at all monitors within the violating center of the CSA. EPA considered a variety of episodes with emphasis on the longer episodes, those with highest ozone readings, and those with the most widespread extent of measured exceedances.[22] Some single day episodes were considered as well such as July 23, 2010 on which the Edgewood monitor recorded 0.101 ppm with only two other monitors in the CSA exceeding at 0.082 ppm.

EPA considered the peak ozone concentrations at monitors for which the HYSPLIT back-trajectories predicted were on the upwind edge of the CSA for that day of the episode and examined the ozone concentrations across the CSA. In most instances the monitors on the predicted upwind edge were below the 0.075 ppm NAAQS. Sometimes the values were below 0.060 ppm (60) ppb bit at other times often between 0.070 and 0.074 ppm (70 to 74 ppb).

[21] Maryland's March 7, 2012, letter in response to EPA's December 9, 2011, letter discussed portions of these topics under various factors; EPA is consolidating the responses here.

[22] Needless to say, quite often the longest episodes produce the highest concentrations and the widest extent of measured exceedances.

Lower upwind values often correlated with lower peak values and vice versa. Based upon examination of the predicted upwind, ground level concentrations, EPA can conclude that incoming aloft ozone levels do not seem to cause appreciable numbers of exceedances at monitors located at the predicted, upwind edges of the CSA.

As discussed elsewhere in this appendix and the main body of this TSD under Factors 1 and/or 3, EPA did note that the gradients around the Edgewood monitoring site in Harford County, MD might well be steeper on some days than elsewhere in the CSA on high exceedance days.

EPA concludes that the greater extremes in concentration gradients around the Edgewood monitor than that found in other parts of the CSA could well be an indication that the "Bay Breeze" and/or convergence of southwest and the lee-side winds do in fact result in more extreme exceedances at the Edgewood monitor (and perhaps the Essex monitor at times) than would be otherwise seen.

Regarding Maryland's Modeling Results for July 9, 2007:

EPA compared the back-trajectories predicted by the HYSPLIT model to the results Maryland submitted for July 9, 2007. The HYSPLIT back-trajectories showed the turning from a northwesterly flow to a flow running to the northeast parallel the shore of the bay between Anne Arundel County and the Edgewood monitoring site. The 100 meter back trajectory was closest to the bay and the 1000 meter trajectory was furthest away with the 500 meter trajectory in between. The recorded concentration at the Edgewood monitor on July 9th was 0.0113 ppm which was the highest concentration recorded at this monitor in the 5 years 2006 through 2010, inclusive. In the 5 year period 2006 through 2010, inclusive, the Edgewood monitor has recorded five additional concentrations in excess of 0.100 ppm. These occurred on August 10, 2010 (0.110 ppm), June 25, 2009 (0.109 ppm), May 30, 2006 (0.103 ppm), July 18, 2008 (0.102 ppm) and July 23, 2010 (0.101 ppm). The HYSPLIT predicted 15 back-trajectories for these days of which eight do not pass anywhere near the 1997 Washington-DC-MD-VA nonattainment area or the Washington DC-MD-VA-WV CBSA at all. Of the remaining seven back-trajectories, three pass through the core CBSA counties and cities of the Washington DC-MD-VA_WV CBSA; two graze either the extreme corner of Montgomery or Prince George's Counties in Maryland and pass through the outer counties of either Calvert or Frederick (MD); one starts in Pennsylvania then heads southeast through Frederick, Carroll, Howard and Anne Arundel Counties before looping abruptly through Prince George's and finishes in a northeasterly direction via Anne Arundel towards Edgewood, and, the last passes in a northeasterly direction through the Winchester Virginia CBSA and the Hagerstown-Martinsburg MD-WV CBSA and grazes the northwest corner of Frederick County, MD, then arches through Adams County, PA, and finishes in a southeasterly direction through Carroll and Baltimore Counties. EPA does not dispute that such modeling shows that emissions from the Washington CBSA or portions thereof could contribute to concentrations in excess of the 2008 ozone NAAQS at the Edgewood monitor. However, EPA's analyses implicate areas other than portions of the Washington DC-MD-VA-WV CBSA or 1997 Washington DC-MD-VA ozone nonattainment area on days when particularly high ozone concentrations have been recorded at the Edgewood monitor. EPA cannot concur with Maryland's conclusion that mobile source emissions in the 1997 Washington DC-MD-VA ozone nonattainment area or even the

Washington DC-MD-VA-WV CBSA are the *sole* cause of the higher ozone concentrations measured at Edgewood.

Regarding Maryland's Modeling Results:

EPA acknowledges that Maryland has investigated use of a finer grid around the Edgewood monitoring site for modeling ozone concentrations. EPA does not dispute that such modeling shows that emissions from the Washington CBSA or portions thereof could contribute to concentrations in excess of the 2008 ozone NAAQS at the Edgewood monitor. However, using the HYSPLIT model generated back-trajectories, EPA has identified around 15 days in the last three years where the HYSPLT predicted prevailing winds did not arrive via the 1997 Washington DC-MD-VA NA area or even from anywhere within the Washington CBSA and the Edgewood monitor recorded exceedances of 0.082 ppm or higher. On around 11 of those days the recorded concentration was 0.087 ppm or higher. The HYSPLIT results predict that Chester, Lancaster and York Counties in Pennsylvania, Cecil and Washington Counties in Maryland, and New Castle County, DE are upwind on some of such days. All of these counties are part of other CBSAs. All of these counties except Cecil and Washington Counties are comparable various Maryland Counties in the Baltimore CBSA in terms of emissions, VMT, population, population growth rates, population densities.[23] Cecil County, MD does is not comparable to any county or city in the Baltimore CBSA but rather is most comparable to Calvert County in the Washington CBSA for many factors and Carroll County for VMT. Washington County, MD is comparable to the less densely populated Harford County in the Baltimore CBSA for most factors but matches Charles County, MD in the Washington CBSA in terms of population and population density.

EPA cannot concur with Maryland's conclusion that mobile source emissions in the 1997 Washington DC-MD-VA ozone nonattainment area or even the Washington DC-MD-VA-WV CBSA are the *sole* cause of the higher ozone concentrations measured at Edgewood.

With regard to Factor 4 - Geography/topography (mountain ranges or other air basin boundaries):

As noted previously, EPA has considered certain geographical-topological related phenomenon which affects air movements under the Factor 3 Meteorology response. EPA acknowledges that the "leeside" trough and the "bay breeze" could well act as barriers to air movement and tend to concentrate ozone levels at the Edgewood monitor site more than elsewhere. To the extent the "leeside" trough and NLLJ relate to transport from other States beyond the scale of intra-CSA or transport from adjacent CBSAs, EPA considers such transport to be within the scope of the prohibitions of sections 110(a) (2)(D) and/or 176A. As stated elsewhere in this document, EPA believes section 107(d) is not the statutory remedy to address transport.

[23] This not to claim that there is a direct one-to-one correspondence for all factors; rather, one county not in the Baltimore CBSA might be comparable (values close or greater than) to one in the Baltimore for some factors, to another for other factors and perhaps another for remaining factors.

With regard to Factor Jurisdictional boundaries:

EPA does not dispute that some conformity budgets aspects of designating the entire CSA as one nonattainment area can be addressed through the use of sub-regional budgets, that is, separate mobile vehicle emissions budgets (MVEBs) for each metropolitan planning organization (MPO) or even for individual counties within one transportation planning area. The entire CSA has at least three MPOs – one for the National Capital Region Transportation Planning Board, one for Baltimore, one for the Fredericksburg (VA) area. However, counties not covered by an MPO would also have to be covered separately in some manner. As noted above, EPA performed a comprehensive reevaluation for Factor 3 – Meteorology. Using results of the HYPLIT model, EPA could not rule out any of the counties/cities within the CSA because no city/county was untouched by all back-trajectories in the set EPA used. Jurisdictional boundaries are one of 5 factors that EPA considered.

Maryland Comment:

Subsequent to the State's March 7, 2012 letter Maryland also provided various, recent presentations on addressing attainment of the 2008 ozone NAAQS in Maryland or the OTR. These were:

(1) "Where does the air pollution in the OTR come from and what do we need to do to fix it?," Tad Aburn, Director, Air and Radiation management Administration, presented at the OTC Annual meeting June 9 and 10, 2010.[24] This document discussed the "elevated reservoir," the NLLV, long-range transport, the correlation between ozone reductions and the number of EGUs installing controls due to the NOx SIP call, the "leeside" trough, linkage between all emissions in the 1997 Washington DC-MD-VA NA area, and a call for controls throughout the eastern part of the country.

(2) "Moving Forward to Address Regional Transport," Tad Aburn, Air Director, MDE,

February 8, 2012, MARAMA Science Meeting.[25] This document discussed recent ozone data for the ten monitors in the OTR (2011 data), remaining possible local controls, the relative ratio of Baltimore emissions to other areas, emissions of top four States contributing to Maryland ozone, the "elevated reservoir," the NLLV, long-range transport, Washington DC-MD-VA NA

[24] Also available on-line at http://www.otcair.org/upload/Documents/Meeting%20Materials/ConceptualModel_20090602%20TAD%20FOR%20OTC%20Final.pdf.

[25] Also available on line at http://www.marama.org/presentations/2012_Science/Aburn_Science2012#542,1,Slide.

area contribution and the "bay breeze," city to city transport, aloft measurements of up to 0.070 to 0.080 ppm after 2004, local emissions estimated to contribute 10 to 20 percent, the need for "super-regional" NOx controls, results of OTC scenario 4 modeling and with 5 percent additional beyond scenario 4 controls result in little ozone reductions, a call for Federal NOx measures on six source categories that represent 75 percent of the NOx left to regulate.[26]

(3) "Making Progress on Cleaner Air, What We've Achieved Under the Clean Air Act Amendments of 1990, and Where We Need to Go, Getting to the New Ozone Standards, A Pathway Forward," November 10th, 2010.[27] This November 10th, 2010 presentation: discussed trends in regulatory measures and ozone levels since 1990; predicted probable nonattainment areas under the 2008 ozone NAAQS, concluded that additional controls within the OTR are still critical but may only reduce about 1/3 of the ozone problem in most OTC cities; and concluded that national/super-regional controls are now essential because incoming ozone is already measured at levels above a 60-70 ppb standard and thus contribution from outside the OTR represents approximately 2/3 of the ozone problem in most OTC cities. OTC identified priority source categories from the June 2010 OTC Resolution urging EPA to adopt national rules to reduce interstate NOx emissions from EGUs, from more stringent On-Road Vehicle Standards, from ICI Boilers, Cement Kilns, Marine Engines and Locomotives because these categories represent 75 percent of the NOx left to regulate, models of transport westerly and NLLJ, the "elevated reservoir," the NLLJ, long-range transport, and reductions in ozone concentrations in both the "elevation reservoir" and at ground level attributable to the NOx SIP call.

(4) "Modeling Committee Update," OTC Air Directors' Meeting, April 24th, 2012." This document discussed 8-hour ozone trends, how design values changed (based upon 2011 preliminary data), potential nonattainment areas under the 2008 ozone NAAQS, hypothetical 2012 design values discounting 2009 data, and schedules for OTC air quality modeling.

Most of the salient points of these presentations were also discussed in Maryland's March 7, 2012 letter.

EPA Response:

EPA has addressed these various items --- the "bay breeze," the NLLJ, long-range transport, the "leeside" trough, the measures identified by the OTC that represent 75 percent of the NOx left to regulate, the "elevated reservoir," the impact on Washington on Baltimore ozone levels in response to other comments in this document.

[26] Subsequent to the State's March 7, 2012 letter Maryland also submitted in a separate 4-page document pages 33 through 36 of this document.

[27] Also available on line at http://www.otcair.org/upload/Documents/Meeting%20Materials/OTC%20Overall%20Progress%20Report%20-%20Fall%202010.pdf.

Additional Maryland Materials:

On March 7, 2012, Maryland provided as Appendix C a summary of air quality modeling runs that compared "Baltimore zero-out modeling" and "Maryland Zero-Out Modeling" for the period July 25 – August 17, 2007. Zero-out modeling is when a particular source, set of sources or even an area as large as a CBSA or even a whole State are removed from the emissions files fed into the air quality model. Maryland stated that these modeling analyses examined the effect on ozone concentrations if all emissions in the 1997 Baltimore Nonattainment Area (NAA) (Baltimore, Carroll, Howard, Anne Arundel, Harford Counties and Baltimore City) were zeroed out or if all emissions in Maryland were zeroed out. Maryland stated that the results were that after comparing zero-emissions in the Baltimore NAA scenario with those of the base case during local and regional pollution event days it was determined that certain specific areas in Maryland saw a decrease in ozone, but there were still areas of Maryland which exceeded the 2008 ozone NAAQS of 0.075 ppm (75 ppb). Likewise, Maryland stated that the results of the zero-emissions Maryland scenario with those of the base case during local and regional pollution event days it was determined that certain specific areas in Maryland saw a decrease in ozone, but there were still areas of Maryland which exceeded the 2008 ozone NAAQS of 0.075 ppm (75 ppb). From this Maryland concluded that based on this modeling analysis, even if there were no sources of emissions in either the 1997 Baltimore NAA or all of Maryland, the State would still not be able to demonstrate compliance with the 2008 ozone NAAQS and that this modeling analysis clearly demonstrates keeping Maryland as a small nonattainment area will force Maryland to adopt minimally effective and extremely expensive control programs that will not help Maryland attain the 2008 ozone NAAQS. Maryland concluded that A better course of action would be for other states that contribute to Maryland's nonattainment problem to implement much more cost-effective control programs that would help slash their pollutant contribution to Maryland and help the State demonstrate compliance with the 8-hour ozone 75 ppb NAAQS.

Subsequent to the State's March 7, 2012 letter Maryland also provided various summaries of the results of the OTC modeling, or of Maryland modeling including the results summarized in the State's March 7, 2012 letter. These were:

"Using CMAQ to Evaluate the Impact of the Washington DC Area on the Baltimore Area,

A Series of Sensitivity Runs to look at Contribution and Culpability, Additional Information for EPA" MDE and the UMCP, April 7, 2012

And its attachment "Attachment Baltimore NAA and Maryland Zero Emissions Modeling, and Washington DC NAA Only Emissions Modeling Results, Modeling Completed by University of Maryland College Park (UMD) for the Maryland Department of the Environment (MDE)"

This document included the same summary information as that in Appendix C of the State's March 7, 2012 letter but also included sensitivity analysis for the emissions in the 1997 Washington DC-MD-VA NA area.

Copies of these documents have been placed in the docket for this final action.

EPA Response:

EPA does not dispute that the zero-out modeling runs suggest transport may be a factor to high ozone concentrations in Maryland. The modeling does show that perhaps the aggregate domain-wide emissions do contribute to ozone levels in Maryland. However, as discussed in the RTC document (for example, section 3.1.2.), CAA section 110(a)(2)(D) prohibits only those emission that contribute significantly to nonattainment in another State, and, that section 107(d)(1)(A) requires a designation of nonattainment only for contributions that are sufficient to warrant a nonattainment designation.

EPA does not dispute that the 1997 Washington DC-MD-VA NA area and other areas may contribute to ozone concentrations in the 1997 Baltimore NA area. EPA's own meteorological assessment resulted in the same conclusion that the prevailing winds on some ozone exceedance days in Baltimore are such that emissions in the 1997 Washington DC-MD-VA NA area contribute to ozone levels in the Baltimore NA area. However, the issue is whether when considered in light of all five factors whether the 1997 Washington DC-MD-VA and Baltimore nonattainment areas should be one area under the 2008 ozone NAAQS.

Appendix 11. EPA analysis and response to Maryland's Five Factor Analysis for a 17-State Nonattainment area.
Technical Support Document— Area Designations for the Washington-Baltimore-Northern Virginia, DC-MD-VA-WV Combined Statistical Area (CSA) 2008 Ozone National Ambient Air Quality Standards

Purpose:

This appendix provides a summary of:

(1) Maryland's five factor analysis for a single nonattainment area in the in the Washington-Baltimore-Northern Virginia, DC-MD-VA-WV.

(2) EPA's response to this 5 factor analysis to indicate what Maryland supplied information EPA considered and what Maryland supplied information EPA did not or could not consider and the reason(s) why.

EPA acknowledges that a large part of the ozone problem for eastern states like the District of Columbia, Maryland, Delaware, and others is due to long range transport of ozone that comes from upwind states in the mid-west and south. The Cross State Air Pollution Rule is a federal program that will reduce ozone and PM precursors regionally, and provide air quality benefits to downwind states. Other national rules that address SO2 and NOx will provide additional benefits. EPA recognizes that these states have aggressively pursued control measures for sources within their states. In the case of Baltimore, for example, while there are certainly local contributions to the ozone problem, EPA recognizes that a significant portion of the air quality problems come from outside the Baltimore, MD and Washington, DC-MD-VA nonattainment areas.

Generally, as explained in "Responses to Significant Comments on the State and Tribal Designation Recommendations for the 2008 Ozone National Ambient Air Quality Standards (NAAQS)," Docket Number EPA-HQ-OAR-2008-0476, U.S. Environmental Protection Agency, April 2012 (Hereafter the "RTC document") (for example, section 3.1.2.), the remedy to address interstate transport is not to designate the entirety of all of the potentially contributing States as part of a single nonattainment area.

Summary of Maryland's 5-Factor Analysis

Maryland provided a 5-factor analysis in support of its recommendation to designate the as a single, multi-state ozone nonattainment area consisting of the following 16 states plus the District of Columbia: Maryland, Delaware, New Jersey, New York, Pennsylvania, Virginia, West Virginia, Ohio, North Carolina, Tennessee, Missouri, Illinois, Indiana, Kentucky, Michigan and Wisconsin. The following comments and EPA's responses follow regarding Maryland's 5 factor analysis.

With regard to Factor 1 – Air Quality Data Maryland asserted:

EPA reviews the design values for ozone monitors to locate violating monitors. EPA then establishes nonattainment areas around those monitors expanding outward and geographically ending the nonattainment area when monitors measuring attainment are found. Certainly this technique is a good foundation but falls far short of examining other air quality data that should factor into designations, especially in light of what is known about long range transport.

Subsequent to Maryland's March 7, 2012,[1] response (March 7, 2012 letter or March 7, 2012 response) to EPA's December 9, 2011 letter regarding EPA's proposed modifications to Maryland's recommendations, Maryland provided EPA a copy of the presentation "Modeling Committee Update, OTC Air Directors' Meeting, April 24th, 2012, Washington, DC" (a copy of which has been placed in the docket) and drew EPA's attention to slides 11, 12, 13 and 14. Maryland noted that the Washington area (and other areas) would be likely be classified as moderate because during 2009 ozone levels were affected by: (1) below normal temperatures at the surface; (2) below normal temperatures aloft; (3) above normal precipitation; and (4) a deep economic recession.

With regard to Factor 2 Emissions and Related Maryland asserted:

This includes emissions-related data such as actual and estimated emissions of volatile organic compounds (VOC) and nitrogen oxides (NOx) from sources, including data available in the latest National Emissions Inventory, the latest information and trends for Vehicle Miles Traveled (VMT) and commuting, and population characteristics and trends of the area (growth factors). Traffic and commuting patterns indicate the location of non point source emissions.

Controlling transported pollution is very important in attaining the ozone NAAQS to downwind states such as Maryland. Transport becomes central to attainment in more and more states with every lowering of the NAAQS. In Maryland's case, this includes transport from nearby areas, such as the other half of the Washington-Baltimore-Northern Virginia DC-MD-VA-WV Combined Statistical Area (Washington-Baltimore-NV CSA or just the/this "CSA"). Estimates of the time needed to form ozone correspond with the time it takes emissions from the Washington, DC region to travel over the Baltimore region. Local measures in Maryland have been all but exhausted. Very deep, additional regional reductions of NOx will be needed for Maryland to attain the new ozone standard.

Many of the states Maryland proposed including in the large nonattainment area meet the criteria EPA says it uses to include a nearby area in a nonattainment designation. NOx emissions for these states are quadruple the NOx emissions from Maryland. Not including them in the nonattainment area is a direct disadvantage to Maryland sources which are deregulated and operate in a merchant situation. This encourages growth in emissions in these states as most

[1] Letter dated March 7, 2012, from Robert M. Summers, Ph.D., Secretary, Maryland Department of the Environment to Shawn M. Garvin, Regional Administrator, EPA Region III.

plants are not yet operating at maximum capacity. Maryland is highly urbanized containing a large city and half the suburbs of the nation's capital. Its small geographic size accentuates that density. Many of the states Maryland requested as part of the large nonattainment area are much larger in square miles and though they have major cities, their population density is diluted with the additional geographic area. These cities are experiencing growth just as Maryland is, yet they are not required to offset the growth in emissions that accompanies growth in population the way Maryland will be as the lone moderate nonattainment area in the east. Growth in emissions includes growth in VMT, growth in area sources and growth in nonroad sources as well as growth in point sources and EGU capacity.

With regard to Factor 3 – Meteorology Maryland asserted:

Transport in general, the Nocturnal Low level Jet (NLLJ) and the elevated reservoir and their effects on air quality:

The number one contributor to Maryland's high ozone level is an elevated reservoir of high transported ozone that forms and collects in the middle of the night. This elevated reservoir is trapped at about 2000 feet above the earth's surface by a nocturnal inversion and can be pushed by elevated nighttime winds for hundreds of miles in a single night. Maryland has data, from airplanes, balloons, mountaintop monitors, wind profilers and other measuring equipment that show that as the nocturnal inversion begins to break up, the "elevated reservoir" of ozone, routinely measured at levels above 75 ppb, slowly mixes down to earth. The elevated reservoir is created by emissions from nearby, upwind states. Maryland also has empirical evidence of emissions transported by the NLLJ. This is a strong southwest wind along eastern side of the Appalachian Mountains that runs very close to the ground. It begins at sundown and can last until dawn. It can start as far south as North Carolina and can reach as far north as New Jersey, Massachusetts, and Connecticut. Given an average speed of 30 mph, a NLLJ that runs for 7 hours carries gases and particulates 210 miles.

(Maryland presented the information in the preceding paragraph in its March 7, 2012 letter under the discussion of Factor 1 – Air Quality Data to support the argument that ozone levels in the "elevated reservoir" transported into Maryland need to be considered in addition to ground level monitoring data and support the designation of a 17 State area on this basis.)

Subsequent to the State's March 7, 2012 letter Maryland also provided some analysis to show the effects of the "elevated reservoir."[2] Maryland considered ozone data from three monitors located at higher elevations and are close to Maryland's borders. These monitors were the Shenandoah National Park (SNP) monitor ("SNP") (AQS ID No. 51-113-0003) located in Madison County,

[2] Refer to "Where does the air pollution in the OTR come from and what do we need to do to fix it?," Tad Aburn, Director, Air and Radiation management Administration, presented at the OTC Annual meeting June 9 and 10, 2010 which Maryland sent to EPA subsequent to their March 7, 2012, response and copy of which has been placed in the docket; also available on-line at: http://www.otcair.org/upload/Documents/Meeting%20Materials/ConceptualModel_20090602%20TAD%20FOR%20OTC%20Final.pdf

VA, the monitor in Garrett County, Maryland ("Piney Run," AQS ID No. 24-023-0002) and the monitor in Franklin County, PA ("Methodist Hill," AQS ID No. 42-055-0001). For several days Maryland compared the hour by hour ozone concentrations recorded at these three monitors to the average of concentrations recorded at Maryland monitors and also the spread of concentrations at Maryland monitors. The days shown were July 15, 1995, July 15, 1997, August 13, 2005, and June 13, 2008.[3]

Transport on the Intra-CSA Scale:

Maryland agrees with the EPA finding that meteorological data does not provide a basis for separating the Baltimore and Washington, DC nonattainment areas. The Preliminary TSD[4] for EPA's December 9, 2011 letter[5] stated "[s]everal Maryland counties in the current Washington DC-MD-VA nonattainment area are most frequently upwind of and most proximate to a violating monitor in the current Baltimore nonattainment area."

Surface Wind Roses:

Surface wind roses do not represent the three-dimensional flow of air in the atmosphere.

Transport patterns based solely on surface wind speed and direction ignores aloft winds and regular vertical mixing such as occurs in the daily cycle of the planetary boundary layer (PBL). Three-dimensional wind fields provide a more realistic presentation of the origins of air during ozone exceedance days.

Transport on Larger Scales and the Nocturnal Low Level Jet (NLLJ):

There is an extensive body of scientific findings proving that regional transport plays a significant role in urban high ozone episodes in Maryland. More than 15 years of aircraft measurements by the UMD, have proven that the "elevated reservoir" of ozone coming into Maryland contains ozone concentrations between 60 – 100 ppb as the result of sources the nearby states; including Ohio, West Virginia, Pennsylvania, and Virginia. Each of states contributes substantially to Maryland's air quality problems. Consistently high concentrations of ozone (and ozone precursors) measured within NLLJ (based on ozonesondes and wind profiler

[3] Another document entitled "Moving Forward to Address Regional Transport," by Tad Aburn - Air Director, MDE for the February 8, 2012 - MARAMA Science Meeting was also submitted subsequent to the State's March 7, 2012, also considered a June 1, 2011 day. EPA did not consider days in 2011 because of time constraints and concerns about using 2011 air quality data that had not been certified in time.

[4] Refer to a document entitled "Maryland Area Designations for the 2008 Ozone National Ambient Air Quality Standards," prepared by the Region 3 USEPA, item number EPA-HQ-OAR-2008-0476-0235 in the docket for this action.

[5] Letter dated December 9, 2011, from Shawn M. Garvin, Regional Administrator, EPA Region III, to the Honorable Martin J. O'Malley, Governor of Maryland

measurements) make a compelling case that ozone is being transported into Maryland from areas outside the State.

In their emissions discussion of Factor 2 Emissions and Related, Maryland stated micro-scale modeling that shows the influence of the Chesapeake Bay on the transported emissions from the Washington, DC region and explains the abnormally high readings at the Edgewood monitor[6] (further discussed in Maryland's meteorology discussion). The other monitor[7] in Harford County tracks well with other design values in the CSA.

Regarding the Bay Breeze" and "Lee-side" trough:

The Chesapeake Bay breeze stops ozone and its precursors from being blown out to sea and instead funnels dirty air along the I-95 corridor. The Appalachian Mountains are responsible for both the "leeside trough" and "nocturnal low level jet" that speed the transport of pollution toward Maryland.

Regarding Back-trajectory Results:

Analysis using back trajectories the most common transport routes for Maryland ozone exceedance days has identified five meteorological regimes associated high ozone days:

The largest cluster is westerly transport through Ohio and Pennsylvania. The second largest cluster is northwest transport through Pennsylvania. The third largest cluster is southwest transport from Virginia and West Virginia. Two smaller local clusters were also identified: recirculation and stagnation.

Regarding Cross-State Air Pollution Rule (CSAPR) Model Results:

Approximately one-third of Maryland's air pollution is from local anthropogenic sources.

Approximately half is from interstate transport. This data came from the EPA's modeling for the CSAPR. While the CSAPR modeling used an 85 ppb standard, the release of the contribution modeling results along with the established 1% significant contribution threshold allows states like Maryland to identify significant contributors under the 75 ppb standard. These states, in order of the magnitude of their contribution to Maryland, are: Virginia, Pennsylvania, Ohio, West Virginia, Kentucky, Indiana, Michigan, New York, North Carolina, Tennessee, Illinois, and New Jersey.

[6] This monitor is located in Harford County, MD and has an Air Quality System Identification number (AQS ID No.) of (24-025-1001.

[7] This is the Aldino site -- AQS ID No. 24-025-9001.

The EPA analysis for ozone nonattainment area boundaries and CSAPR both have the goal of identifying "linkages" and "significant contributions" to an area's ozone problem. For consistency, the EPA should use the same standard as laid out in CSAPR federal regulations, which have gone through the public comment process, should have priority over the interpretation of ozone nonattainment area boundary criteria, which only appear in EPA memoranda to the states. In addition, the CSAPR approach to identifying meteorology-based linkages is consistent with the science of ozone formation and more importantly transport. Therefore, the meteorology factor supports an ozone nonattainment area boundary of a large multistate area.

With regard to Factor 4 - Geography/topography (mountain ranges or other air basin boundaries) Maryland asserted:

Maryland agrees with the EPA conclusion that the Washington-Baltimore-NV CSA generally does not have any barriers appreciably limiting air pollution within its air shed. The Appalachian Mountains are a barrier to surface transport but not to aloft transport of ozone and ozone precursors.

Maryland states that the following geographical features create meteorological phenomenon that function in a role similar to a geographical barriers:

(1) The Chesapeake Bay "breeze" plays a role similar to a geographical barrier by preventing pollution from blowing out to sea and channeling it back toward the Baltimore area, and especially at the Edgewood monitor.

(2) Maryland also said that the position of the Appalachian Mountains enables formation of a meteorological phenomenon called a "leeside trough." According to the *American Meteorological Association Glossary* (2010), a leeside trough is "a pressure trough formed on the lee side [opposite the wind] of a mountain range in situations where the wind is blowing with a substantial component across the mountain ridge; often seen on United States weather maps east of the Rocky Mountains, and sometimes east of the Appalachians." Maryland said that the leeside trough usually develops over Maryland, this phenomenon results in pollutants from the Ohio River Valley and Western PA veering (or turning northward) into Maryland and at the same time allows ozone and ozone precursors to be transported from Virginia and North Carolina into Maryland too.

(The information summarized in the preceding three paragraphs was included under Maryland's discussion of Factor 4 Geological/Topological Barriers. EPA will respond to this information regarding the NLLJ, the "bay breeze" and the "leeside" trough mainly under Factor 3 – Meteorology because these are phenomenon arising from topological/geographical features that Maryland asserts affect wind patterns.)

(3) The "air shed" that is relevant to the ozone nonattainment area boundary should be the same as the "air shed" for the Chesapeake Bay, since both seek to delineate sources of nitrogen oxides (NOx) that contribute to federally-regulated pollution. Maryland's figure shows that this "air

shed" consists of all of Delaware, Maryland, Ohio, Pennsylvania, Virginia, and West Virginia, essentially all of New Jersey, New York and North Carolina, and, parts of Georgia, Indiana, Kentucky, South Carolina, Tennessee, and Vermont.

With regard to Factor 5 – Jurisdictional Boundaries Maryland asserted:

The proposed large nonattainment area has clearly defined legal boundaries within the nonattainment area. The air quality planning functions, transportation planning functions and enforcement functions can work as such has done for the Philadelphia region, with the additional of more sub regions. Maryland cited the "Philadelphia-Wilmington-Trenton Area"[8] ozone nonattainment area (under the 1997 ozone NAAQS) as an example of a nonattainment area that includes four states, two EPA regions, and at least two MPOs, as an example of a larger nonattainment area where the various jurisdictions have a positive record of working together to achieve good air quality:

EPA Responses:

Generally, as explained RTC document (for example, section 3.1.2.), the remedy to address interstate transport is not to designate the entirety of all of the potentially contributing States as part of a single nonattainment area.

Regarding Designating a 17 State area based upon Contribution:

EPA does not disagree that CSAPR modeling and Maryland's extensive research efforts show that emissions in other States contribute to ozone levels at monitors in Maryland which are violating the 2008 ozone NAAQS. However, EPA disagrees that the mere fact that emissions in other States contribute to violations means these other States in their entirety must be designated nonattainment. However, for the reasons discussed in the RTC document (for example, section 3.1.2.) and the following: (1) any nonzero contribution is not necessarily enough to warrant a nonattainment designation; (2) section 107(d)(1) requires some level of geographic proximity between contributing emissions and violating monitor when defining geographic areas within a State or States to designated nonattainment on the basis of contribution; (3) the scale for considering geographic/political subdivisions of a State under section 107(d)(1) is less on a State-wide basis; and, (4) because other provisions of the CAA can be applied on a State-wide basis to address interstate transport.

[8] This was the name of the 1-hour ozone nonattainment area; the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE 8-hour ozone nonattainment area under the 1997 ozone NAAQS consists of the same four States but included additional counties in some. See, 40 CFR 81.308, 81.301, 81.331 and 81.339 for details on the exact composition of these areas. See, 68 FR 23858, April 30, 2004.

Regarding Cross State Air Pollution Rule (CSAPR) Modeling Results and Transport affecting Nonattainment in Maryland:

With respect to Maryland's claim that Wisconsin and Missouri are among "those states that EPA has identified as significantly contributing to Maryland's ozone problem," EPA is not able to figure out the exact basis for that claim. Wisconsin and Missouri are not among the States specified by name in Table 3-1 (containing a summary of modeled contributions to 2012 Ozone Design Values derived from the CSAPR modeling[9]) nor in the table (2010 population, 2010 emissions reported to the Clean Air Markets Division (CAMD) of EPA and per capita NOx emissions) on page 16 of the attachment entitled "Maryland Department of the Environment 120 Day Letter Response" to Maryland's March 7, 2012 response. On page 24 of the March 7, 2012, Response, Maryland stated a number of States for which EPA determined contributed 1 percent of 0.075 ppm or more to Maryland ozone monitors based upon results of the CSAPR contribution analysis.[10] These States are (in the order presented in the March 7, 2012, Response): Virginia, Pennsylvania, Ohio, West Virginia, Kentucky, Indiana, Michigan, New York, North Carolina, Tennessee, Illinois, and New Jersey. Here again, Missouri and Wisconsin are not identified. The results of the modeling[11] cited by Maryland give a maximum contribution by Missouri and Wisconsin as 0.659 ppb (or 0.000659 ppm) and 0.727 ppb (0.000727 ppm), respectively, to any violating monitor in Maryland. To the extent that all emissions in a State contributes more than 1 percent of the 2008 ozone standard to any violating monitor in Maryland, EPA would point out that such a level of contribution would pass only the first – the linkage of emissions to receptor – of the two steps in EPA's significant contribution analysis of whether that State's sources "contribute significantly to nonattainment" under EPA's latest interpretation of the prohibition of section 110(a)(2)(D)(i)(I). See, 76 FR 48208 at 48236, August 8, 2011 (Transport Rule or CSAPR). Because Missouri and Wisconsin are geographically further way from Maryland than Michigan and Illinois, respectively, EPA's rationale for not designating Michigan and Illinois as part of a nonattainment area containing one or more violating monitors in Maryland applies equally well to Missouri and Wisconsin.

Regarding Transport Affecting Nonattainment in Maryland:

With respect to many of Maryland's conclusions that ozone concentrations at monitors in Maryland are affected by transport of ozone and its precursors from other States in the eastern half of the country, EPA does not disagree. EPA's latest modeling done to support tot CSAPR supports this conclusion. However, explained in the RTC document (for example, section

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[9] "Contributions of 8-hour ozone, annual PM2.5, and 24-hour PM2.5 from each state to each monitoring site." (CSAPR_Ozone and PM2.5_Contributions xls) available at http://www.epa.gov/airtransport/techinfo.html.

[10] "Contributions of 8-hour ozone, annual PM2.5, and 24-hour PM2.5 from each state to each monitoring site." (CSAPR_Ozone and PM2.5_Contributions xls) available at http://www.epa.gov/airtransport/techinfo.html.

[11] *Ibid.*

3.1.2.), the remedy is not to designate the entirety of all of the potentially contributing States as part of a single nonattainment area.

Regarding Factor 1 – Air Quality Data:

EPA partially disagrees that EPA ends the process of determining the boundary of a nonattainment area once monitors measuring attainment are found. EPA has designated as nonattainment counties with monitors measuring attainment of the 2008 ozone NAAQS. EPA designates such counties as nonattainment based upon a contribution analysis using the 5 factors to determine if a county has sufficient contribution to a nearby monitor to warrant a nonattainment designation. For example, in the Washington, DC-MD-VA nonattainment area, EPA is designating Prince William County, VA as nonattainment based upon an conclusion that this county has sufficient contribution to one or nearby violating monitors to warrant the nonattainment designation even though the design for the monitor located in this county is 0.070 (parts per million) ppm. Similarly, EPA reached the same conclusion for Baltimore City, MD even though the only monitor therein has an even lower design value of 0.067 ppm.[12] However, the presence of monitors, say "X, Y and Z," attaining the 2008 ozone NAAQS are located between a county, say "County W," undergoing evaluation for contribution and a violating monitor, call it monitor "V," provides some indication that "County W" might not be within the area which warrants designation of nonattainment based upon contribution. If several intervening monitors "X, Y and Z" are not violating the 2008 ozone NAAQS, then it seems clear that "County W" by itself is not causing violations at the closer, attaining monitors "X, Y and Z" and that County "W" in conjunction with other adjacent counties do not cause violations at monitors "X," "Y," and "Z.". Therefore, "County X" may not be sufficiently contributing to attainment at the violating monitor "V" further away to warrant a nonattainment designation. However, EPA makes the designation decisions upon consideration of all 5 factors.

EPA examined the air quality data for 2006 to 2010 in part of a reevaluation of the Factor 3 – Meteorology under "Regarding to Factor 3 – Meteorology – Use of Surface Wind Roses, Nocturnal Low-Level Jet (NLLJ), Elevated Reservoir of Ozone and "LeeSide" Trough."

As discussed elsewhere in this document in repose to Maryland's 5-factor analyses supporting a 17-State nonattainment area and a single nonattainment area in the Washington-Baltimore-NV CSA. EPA did find that Edgewood monitor does appear to be out of the ordinary besides just its design value: This monitor typically does not record the highest 8-hour concentration of any monitor in this CSA for an ozone season but clearly as the design value indicates has had a 4th ranked 8-hour maximum daily concentration for each season that is greater than on average than other nearby monitors. For the period 2006 to 2010, this monitor exceeded the 2008 ozone NAAQS on 96 days. The monitors with the next highest numbers of exceedance days recorded only 62 over the same period. This monitor also represented about 20% of the days where only

[12] For more details on design values, refer to the main body of this TSD under Factor 1: Air Quality Data.

one monitor within the CSA exceeded 0.075 ppm. For more details, also refer to the main body of this document under "Factor 3: Meteorology (weather/transport patterns)."

With respect to consideration of aloft ozone levels in an "elevated reservoir" or carried by the NLLJ travelling 200 miles overnight, EPA believes these are not to be addressed by nonattainment the section 107(d) designations to the extent these are the result of interstate transport over a scale larger than that which falls under "nearby" when defining the geographic areas within which states must address local emission sources for purposes of local attainment needs as explained in the RTC document (for example, section 3.1.2.).

EPA also discusses the aloft ozone levels in an elevated reservoir and the NLLJ under "Regarding to Factor 3 – Meteorology – Use of Surface Wind Roses, Nocturnal Low-Level Jet (NLLJ), Elevated Reservoir of Ozone and "Leeside" Trough" elsewhere in this document.

EPA acknowledges that recent design values may or may not truly reflect the state of air quality in all areas because 2009 ozone season overall did not exhibit the sort of weather patterns conductive to ozone formation in parts of the country. EPA has examined the 2006 to 2010 monitoring data for this CSA and has noted far lower number of exceedance days in 2009 versus other year at all currently violating or close to violating monitors within the CSA. As far as affecting classifications and designations, EPA is limited to applying the standards for determining compliance with and to classifying areas under the 2008 ozone NAAQS found in 40 CFR 51.15 and Appendix P thereto using the most recent three years worth of complete, State-certified and quality-assured data. Regardless of whether EPA has 2008 to 2010 or 2009 to 2011 data which meets these criteria, the 2009 data must be considered. EPA notes that that design values may (or may not) rise once these are computed using 2010 to 2012 data. To the extent States believe that a particular area may not attain by its applicable attainment date based upon consideration of 2012 air quality data, States are free to request a reclassification under section 181(b)(3). EPA also has **limited discretion** to reclassify areas to the next higher or next lower classification but this action is not the forum for exercise of that discretion.

Regarding Factor 2 Emissions and Related:

For the most part, EPA does not dispute most of the points raised by Maryland.

EPA disagrees that many of the States for which Maryland seeks inclusion in nonattainment area composed of 17 States meet all the criteria EPA uses to include a nearby area in a nonattainment designation. As explained in the RTC document (for example, section 3.1.2.), EPA believes that the entirety of most of these States do not fall within section 107(d)'s direction to identify those nearby areas that are contributing to the violations as the geographic areas within which states

must address local emission sources for purposes of local attainment needs, in accordance with the requirements of sections 172 and 182 and applicable regulations.[13]

EPA agrees that controlling transported pollution may well be very important in attaining the 2008 ozone NAAQS and that emissions from mobile sources, including onroad, nonroad, marine, air, and rail, also continue to contribute significantly to NOx and VOC emissions levels, and that the setting of mobile emissions standards is outside the authority of most states to regulate. EPA agrees that the CAA places limits on any State's ability to control emissions from new motor vehicles or vehicle engines as well as lesser limits on EPA's authority to regulate such sources as well. EPA has implemented a comprehensive suite of mobile source emission control programs which apply nationwide that will result in reductions in areas upwind of Maryland. While mobile source emissions reductions under these programs may or may not be occurring on the schedule Maryland would prefer, EPA must decline use of the section 107(d)(1)(A) designation process to address transport covered by other provisions of the CAA in order to remedy any implementation delays.

EPA would note that the comparison of per capita NOx emissions and the absolute NOx emissions of the various States[14] identified explains in part why the emissions in some of these States have more effect on ozone levels than emissions from other States listed. But as discussed elsewhere, EPA believes that emissions such a vast geographic area and the effects on ozone concentrations in other States is not to be addressed using the designation of ozone nonattainment areas under section 107(d) as explained in the RTC document (for example, section 3.1.2.).

With regard to transportation planning, EPA notes that the conformity requirements are part of the package which comes with a nonattainment designation and are intended to ensure that such planning will not cause or contribute to a violation of NAAQS, increase the severity of an existing violation or delay or hinder timely attainment. See, section 176. EPA notes that Congress specifically amended the CAA after 1990 to add section 176(c)(5) which restricts the reach of transportation conformity to designated nonattainment areas and areas subject to a maintenance plan under section 175A.[15] Nor did Congress include conformity among the requirements and control mandates for in attainment areas when addressing with section 184 the transport problem in the northeastern United States. EPA can conclude that these were deliberate choices not to require transportation planning in attainment/unclassifiable areas to consider interstate transport effects; in contrast, the CAA does require major sources and major modifications thereto for major sources in attainment/unclassifiable areas to receive

[13] As noted earlier, there can be exceptions for small States. In the case of the District of Columbia, the District itself contains several violating monitors and the District recommended that the entire District be designated nonattainment.

[14] Namely, Maryland, New York, Pennsylvania, Virginia, West Virginia, North Carolina, Tennessee, Indiana, Kentucky and Michigan; EPA notes that several of the 17 States for which Maryland recommended be nonattainment were not listed such as Illinois, Missouri, Ohio and Wisconsin.

[15] The latter are former nonattainment areas redesignated to attainment pursuant to the requirements of section 107(d)(3)(E).

comprehensive preconstruction scrutiny. See, CAA sections 165 and 184. EPA has always considered mobile source emissions when modeling impacts for rulemakings on transport related to section 110(a)(2)(D). As mentioned in a prior paragraph, EPA has implemented a comprehensive suite of mobile source emission control programs which apply nationwide that will result in reductions in areas upwind of Maryland. While mobile source emissions reductions under these programs may or may not be occurring on the schedule Maryland would prefer, EPA must decline use of the section 107(d)(1)(A) designation process to address transport covered by other provisions of the CAA in order to remedy any implementation delays.

Regarding Factor 3 – Meteorology – Use of Surface Wind Roses, Nocturnal Low-Level Jet (NLLJ), Elevated Reservoir of Ozone and "LeeSide" Trough:

Surface Wind Roses:

With respect to Maryland's comment s that the use of surface wind roses do not represent the complex movement of air masses and ignore the ozone levels in higher air masses which may contribute to ground level ozone concentrations when the nocturnal inversions breaks up as ground level air is heated by the sun. EPA received similar comments from the public.[16] As a result of such comments, EPA re-evaluated the five-factors for this CSA in light of meteorology data resulting from use of the National Oceanic and Atmospheric Administration's (NOAA) Hybrid Single Particle Lagrangian Integrated Trajectory (HYSPLIT) Model to supplement the Factor 3 Meteorology portion of the analysis of the Preliminary TSD.[17]

EPA examined the meteorology factor to better determine the prevailing wind directions on days the 2008 Ozone Standard was exceeded during the period 2006 to 2010. EPA also performed analyses to determine the extent of nonattainment area boundaries related to violating areas in Maryland as well as analyses focusing on Maryland's alternative position that at a minimum EPA should designate the entire Washington-Baltimore-Northern Virginia DC-MD-VA-WV CSA as one nonattainment area.

To allow consideration of air movement above the surface layer we ran the HYSPLIT model to obtain trajectories for three heights – 100 meters, 500 meters and 1,000 meters. We ran the HYSPLIT to obtain 1,000 meter runs in order to better understand aloft movement of air that can be expected to mix down as the night-time inversion breaks-up. Due to the number of monitors and exceedance days within the CSA EPA did not (and could not due to time constraints) run trajectories for each exceedance days at each monitor in the CSA. To narrow down the level of effort, EPA examined the air quality data (Factor 1) in more detail. We examined the 2006 to

[16] For example, refer to documents EPA-HQ-OAR-2008-0476-0405 and EPA-HQ-OAR-2008-0476-0456 and to the response to comments elsewhere in this document.

[17] Refer to a document entitled "Maryland Area Designations for the 2008 Ozone National Ambient Air Quality Standards," prepared by the Region 3 USEPA, item number EPA-HQ-OAR-2008-0476-0235 in the docket for this action.

2010 8-hour ozone concentrations for the currently violating monitors in the "nucleus"18 of the CSA and grouped the data by days when the 2008 ozone NAAQS was exceeded. For more details on the exceedance day and monitors examined, refer to the main body of this TSD under Factor 1: Air Quality Data and Factor 3: Meteorology (weather/transport patterns).

Maryland presented a case that low level jets, the "bay effect" and "elevated reservoirs" are phenomenon relevant to nonattainment problems in Maryland especially at the Edgewood monitoring site in Harford County. EPA does not disagree that the Edgewood monitor is atypical of monitors in the Washington-Baltimore-NV CSA. For starters, the design value at this Edgewood monitor is some 0.008 ppm (8 ppb) higher than the next nearest DV in the CSA. Our reconsideration of the meteorology factor required a determination of the individual days the 2008 ozone NAAQS was actually exceeded at any monitor in the CSA to determine which days to seek NOAA HYSPLIT model back-trajectories.

Elevated Reservoir, NLLJ and Transport Effect on Air Quality in Downwind Areas in General:

EPA does not dispute Maryland's data regarding aloft levels of ozone entering Maryland. However, EPA notes that these aloft levels do not seem to be causing violations at ground level ozone monitors between Maryland's borders and most of the States that Maryland recommended for a nonattainment designation: Kentucky, North Carolina, Ohio, Michigan, Indiana, West Virginia and others. This is based upon the fact that many of these are attaining the 2008 ozone NAAQS at this time. All monitors in West Virginia are currently attaining the 2008 ozone NAAQs. Of note are those closest to Maryland such as that in Monongalia, Greenbrier and Berkeley Counties as well as those along the Pennsylvania-West Virginia border. The monitors in Virginia south of the Washington-Baltimore-NV CSA in particular those in Frederick, Caroline, Loudoun, Fauquier, Stafford, Albemarle, Page, Madison and all but one in the Richmond, VA Core Based Statistical Area (CBSA) are currently attaining the 2008 ozone NAAQS. The monitor in Madison County, VA is located on a ridge of the mountains within the border of Shenandoah National Park. So are the monitors in Garrett and Washington Counties in Maryland. The same is true for all monitors save a couple in Pennsylvania located west of the Lancaster, Reading, Allentown-Bethlehem-Easton and Philadelphia-Camden-Wilmington CBSAs in Pennsylvania. The only exceptions are two in Alleghany County and one in Beaver County; so are many in Eastern Ohio along the Pennsylvania-Ohio border. [19]

In addition to the monitors in the CSA, EPA examined measured ozone concentrations at three higher elevation monitors near the CSA for 2008-2010 episode days. These monitors were the Shenandoah National Park (SNP) monitor ("SNP") (AQS ID No. 51-113-0003) located in Madison County, VA, the monitor in Garrett County, Maryland ("Piney Run," AQS ID No. 24-023-0002) and the monitor in Franklin County, PA ("Methodist Hill," AQS ID No. 42-055-

[18] Basically all monitors in the Washington-Baltimore-NV CSA were considered except the monitor in Frederick County, VA.

[19] This result is based upon 2008-2010 design values. Data Source: ozone_dv75_20082010.xls (downloaded on 9/22/2011 from http://www.epa.gov/airtrends/values.html)

0001). Maryland identified these three as examples of "higher elevation" monitors which might provide an indication of the levels in an elevated reservoir.[20] In some cases where our HYSPLIT results suggested one or more of these monitors could be upwind of the CSA, EPA did indeed find one of these monitors recording an ozone concentration above the 0.075 ppm NAAQS.[21] These days were often on the second or later day of a multi-day episode. EPA would agree that for Maryland's example, June 13, 2008, there was a correlation between high ozone levels at these three higher elevation monitors and high concentrations in Maryland. However, on other days where monitors in this CSA exceeded the 2008 ozone NAAQS,EPA found that the measured ozone concentrations at one or more of these "higher elevation" monitors was 0.010 ppm (10 ppb) below the 2008 ozone NAAQS and more days where the measured ozone concentrations at one or more of these monitors was well below 0.065 ppm.[22] EPA also found that high levels of zone at these three higher elevation monitors did not always correspond to the worst levels of ozone measured within the CSA. For more details, refer to the main body of this TSD under Factor 3: Meteorology (weather/transport patterns).

Edgewood Monitor

The Edgewood monitor does appear to be out of the ordinary besides just its design value and number of exceedances discussed elsewhere in this document under "Regarding Factor 1 – Air Quality Data" in the response to this comment 1. This monitor represented about 20% of the days where only one monitor within the CSA exceeded 0.075 ppm. There are many days where this monitor recorded a peak 8-hour concentration are 0.010, 0.020 and 0.030 ppm (10, 20 or even 30 ppb) higher than other close by monitors within the Baltimore CBSA such as those other monitors in Harford or Baltimore Counties. Based upon a comparison of geographically close pairs of monitors throughout the CSA, a difference in daily maximum 8-hour concentration of 0.010 or 0.015 ppm can often occur between two geographically close monitors in the Baltimore and the Washington CBSAs. However, the Edgewood monitor can differ from the others in Harford or Baltimore Counties by 0.020 to 0.030 ppm at times.

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[20] Refer to "Where does the air pollution in the OTR come from and what do we need to do to fix it?," Tad Aburn, Director, Air and Radiation management Administration, presented at the OTC Annual meeting June 9 and 10, 2010, which Maryland sent to EPA subsequent to their March 7, 2012, response and copy of which has been placed in the docket; also available on-line at: http://www.otcair.org/upload/Documents/Meeting%20Materials/ConceptualModel_20090602%20TAD%20FOR%20OTC%20Final.pdf.

[21] EPA did not necessarily require the back-trajectory to cross the county; if one of these three higher elevation monitors was between back-trajectories at different elevations or close enough to be a reasonable indicator, EPA considered the data.

[22] Needless to say, the only day in common our analysis and Maryland have in common is June 13, 2008. EPA did not consider July 15, 1995, and July 15, 1997, because these occurred before the NOx SIP call and are therefore dated. EPA also did not examine August 13, 2005, because due to time constraints EPA did not examine air quality data from before 2006.

Summary and Conclusions:

EPA concedes that Maryland's information regarding the effects of the "bay breeze" and "leeside" trough can help explain the higher design value and other ways this monitor is atypical at the Edgewood monitoring site. To the extent that these elevated ozone levels at the Edgewood (and perhaps other monitors close to the western shore of the bay) is the result of long-range interstate transport, EPA believes that such emissions and sources are not to be addressed when designating nonattainment areas under section 107(d).

EPA has reviewed Maryland's information on the NLLJ and concludes that by Maryland's own data – winds travelling 200 miles overnight – are indicative of long-range transport not to be addressed when designating nonattainment areas under section 107(d) for the reasons discussed explained in the RTC document (for example, section 3.1.2.).

EPA does not dispute that an "elevated reservoir" of ozone and its precursors can mix down, but, these do not seem to be causing a uniform effect throughout the CSA. Also, EPA believes that the part of this reservoir which is from long-range transport cannot to be addressed by designations of nonattainment areas under section 107(d) to the extent these are the result of interstate transport on a regional scale for the reasons discussed in the RTC document (for example, section 3.1.2.).

Insofar as ozone and precursors carried by the "elevated reservoir," the NLLJ, the "bay breeze" effect and the "leeside trough" are results from interstate transport over a scale larger than that which falls under "nearby" when defining the geographic areas within which states must address local emission sources for purposes of local attainment needs, EPA believes these are not to be addressed by designations of nonattainment areas under section 107(d) for the reasons discussed in the RTC document (for example, section 3.1.2.). EPA does not dispute that transport of ozone and its precursors can be transported hundreds of miles overnight, that ozone concentrations aloft can remain high after the nighttime inversion becomes established or that ozone concentrations entering Maryland overnight at 2,000 feet often exceed the 0.075 ppm NAAQS. As for reasons stated elsewhere in this document for the reasons discussed in the RTC document (for example, section 3.1.2.).

EPA believes the "elevated reservoir," the "bay breeze" and/or the "leeside trough" these can be relevant factors for consideration when designating nonattainment areas under section 107(d) insofar as these hold or accentuate ozone and precursors emissions on a scale which is within the scope of "nearby" when defining the geographic areas within which states must address local emission sources for purposes of local attainment needs.

For more details, refer to the main body of this TSD under Factor 3: Meteorology (weather/transport patterns).

Regarding Factor 4 - Geography/topography (mountain ranges or other air basin boundaries):

Regarding the "bay breeze," "leeside trough," and NNLJ:

EPA covered the following meteorological phenomenon that function in a role similar to a or arise from geographical barriers elsewhere in this response under "Regarding Factor 3 – Meteorology – Use of Surface Wind Roses, Nocturnal Low-Level Jet (NLLJ), Elevated Reservoir of Ozone and "LeeSide" Trough:"

(1) The Chesapeake Bay "breeze;"

(2) The formation of a meteorological phenomenon called a "leeside trough" by the Appalachian Mountains;

(3) The nocturnal low level jet (NLLJ).

Regarding an ozone nonattainment area boundary the same as the "air shed" for the Chesapeake Bay:

EPA disagrees that the ozone nonattainment area boundary should be the same as the "air shed" for the Chesapeake Bay. While both seek to delineate sources of NOx that contribute to federally-regulated pollution, each operates under different statutory regimes with different statutory purposes. Of relevance to this action, the CAA sets forth a comprehensive scheme for the control of air pollution in order to achieve the statutory purpose of attainment of NAAQS set pursuant to section 109. As explained in the RTC document (for example, section 3.1.2.), EPA believes that setting the setting of nonattainment area boundaries under section 107(d)(1)(A) is limited by section 107(d) direction to identification of those areas that are violating, and those nearby areas that are contributing to the violations, as the geographic areas within which states must address local emission sources for purposes of local attainment needs, in accordance with the requirements of sections 172 and 182. For this reason EPA declines to create a multi-state nonattainment area for ozone with a boundary the same as the "air shed" for the Chesapeake Bay.

Regarding Factor 5 – Jurisdictional Boundaries and the Workability of a 17 State Area with Respect to Air Quality Planning:

Maryland cited the "Philadelphia-Wilmington-Trenton Area"[23] ozone nonattainment area (under the 1997 ozone NAAQS) as an example of a nonattainment area that includes four states, two EPA regions, and at least two MPOs, as an example of a larger nonattainment area where the various jurisdictions have a positive record of working together to achieve good air quality: Each State submits a separate SIP selecting the reduction strategies it prefers; photochemical

[23] This was the name of the 1-hour ozone nonattainment area; the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE 8-hour ozone nonattainment area under the 1997 ozone NAAQS consists of the same four States but included additional counties in some. See, 40 CFR 81.308, 81.301, 81.331 and 81.339 for details on the exact composition of these areas. See, 68 FR 23858, April 30, 2004.

modeling, inventories and attainment demonstrations are completed through an existing regional process that involves multiple states; this arrangement still permits sanctions to be levied against a particular state for failure to complete CAA requirements without harm to the other states involved.

EPA notes that this four-state area has done a laudable job in the past 20-plus years in achieving in a timely the prior ozone 1-hour and 1997 8-hour NAAQS within the Philadelphia-Wilmington-Trenton and Philadelphia-Wilmington-Atlantic City nonattainment areas. EPA also notes that the nucleus of this area has been centered on the central urban cities of Philadelphia, Camden, and Wilmington plus various adjacent metropolitan areas and some outlying counties.[24] However, since 1990 the same four States have coordinated the planning for the ozone nonattainment area centered about these central cities.

EPA believes that incorporating the whole of 13 other States for nonattainment planning of a 17 State nonattainment area could well be another matter. Maryland's proposed 17-State area cuts across numerous regional planning organizations for ozone and other criteria pollutants and those created for visibility. This includes four regional planning organizations[25] and several multi-state criteria pollutant planning organizations. The latter include the Ozone transport Commission (OTC) created by statute (CAA section 184), Mid-Atlantic Regional Air Management Association (MARAMA)[26] Lake Michigan Air Directors Consortium (LADCO),[27] Metro 4, Inc. and Southeastern States Air Resource Managers, Inc. (Metro-4/SESARM),[28]

EPA recognizes that the level of coordination among States in air quality planning and implementation has been greatly enhanced by these various multi-state air quality planning organizations both among each organization's members and among member States of different organizations. However, the effort would likely require establishment of a new multi-state group of the 17 States or at least an executive oversight group to coordinate among the existing agencies.[29] Such coordination by 17 States is a larger task than the planning within the Philadelphia-Camden-Vineland, PA-NJ-DE-MD CSA by four States utilizing existing MPOs and sharing the same CSA which implies distinct social, economic, and cultural ties implicit from the existence of this CSA.

EPA must note that Maryland's proposed 17-State area also covers innumerable Metropolitan Planning Organizations (MPOs). A MPO is required to perform all transportation planning

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[24] Section 107(a)(4)(A)(iv) by operation of law expanded the presumptive boundaries of the severe nonattainment area out to the then existing Consolidated Metropolitan Statistical Area. For historical information of the metropolitan area(s) including these core cities refer to http://www.census.gov/population/metro/ or http://www.census.gov/population/metro/data/pastmetro.html.

[25] Refer to http://www.epa.gov/visibility/regional.html.

[26] Refer to http://www.marama.org/ and http://www.marama.org/about-us/member-agencies for mission and member agencies.

[27] Refer to http://www.ladco.org/ for mission and member agencies.

[28] [28] Refer to http://www.metro4-sesarm.org/ for mission and member agencies

[29] Section 182(j) establishes the minimum requirements for coordination among States regarding a shared multi-state ozone nonattainment area.

processes in any urbanized areas. See, 23 U.S.C. 134 and 135 or 23 CFR 450.[30] The Census Bureau defines an urbanized area (UZA) as "densely developed territory that contains 50,000 or more people."[31] Designated nonattainment areas are subject to the transportation conformity requirements of CAA section 176 and of 40 CFR part 93, subpart A (sections 93.100 to 93.190). While EPA proposed around 19 other areas in these 17 States for nonattainment designation and thus subject to the conformity requirements many MPOs and areas were not proposed for designation as nonattainment. EPA is not going to estimate the resource burden due to the conformity requirements on the additional MPOs which would be affected by a 17 State nonattainment area nor upon our fellow agency -- Federal Highway Administration – because EPA does not deny these other States contribute to ozone levels in Maryland but the CAA does not prohibit any contribution but rather significant contribution under sections 110(a)(2)(D), 126 and 176A and requires contribution to nearby violating areas to be of a level sufficient to warrant a nonattainment designation as explained in the RTC document (for example, section 3.1.2.).

[30] Source: Federal Highway Administration at http://www.fhwa.dot.gov/planning/metro/index.htm
[31] Source: Census Bureau at http://www.census.gov/geo/www/2010census/gtc/gtc_urbanrural.html.