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Redesignation Request for Kent and Queen Anne's Counties Ozone Nonattainment Area

SIP Revision 03-15

(Proposed)

December 18, 2003

Prepared for:

U.S. Environmental Protection Agency

Prepared by:

Maryland Department of the Environment

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Executive Summary

This document is a formal request for the U.S. EPA to redesignate Kent and Queen Anne's Counties to attainment of the 1-hour National Ambient Air Quality Standard (NAAQS) for ozone. It summarizes the progress of the area in attaining the ozone standard, demonstrates that all Clean Air Act (CAA) requirements for attainment have been adopted, and presents a maintenance plan to assure continued attainment over the next ten years.

Analyses included in this document show that measured ambient air quality data complies with 1-hour NAAQS for ozone and that the emission reductions responsible for the air quality improvement are both permanent and enforceable. This report also includes a maintenance plan that provides for maintenance of the ozone NAAQS for 10 years after redesignation.

Kent and Queen Anne's Counties are currently classified as marginal nonattainment areas and were designated as such on November 6, 1991. Even though they are a marginal nonattainment area, their emission reduction strategies include almost all severe nonattainment area requirements.

The following are state and federal emission reduction strategies adopted since 1990 that are included in this plan.

Stationary Point Sources

? Reasonably Available Control Technology (RACT) regulations
? New Source Review (NSR)
? Emissions certification requirements
? NOx SIP call
? NOx Reduction and Trading

Stationary Area Sources

? Automobile refinish coatings
? Consumer products
? Degreasing
? Architectural and industrial maintenance coatings (AIM)
? Tank truck unloading

Highway Vehicles

? Federal Motor Vehicle Control Program (FMVCP) including onboard control of evaporative and refueling emissions
? Lower Reid Vapor Pressure (RVP) for gasoline
? Reformulated gasoline
? Enhanced Vehicle Emissions Inspection/Maintenance
? National Low Emission Vehicle (NLEV) program
? EPA’s heavy-duty diesel engine standards (2004 program)
? EPA’s Tier 2/low sulfur gasoline program for light-duty vehicles

Nonroad Sources

? EPA rules for large and small compression-ignition engines
? EPA rules for smaller spark-ignition engines
? EPA rules for recreational spark-ignition marine engines

The maintenance plan included in this document establishes motor vehicle emission budgets (MVEB) for two time periods. For the period from 2002 until 2014, the MVEB for Kent and Queen's Counties combined is 4.91 tons per day VOC and 7.7 tons per day NOx. For 2014 and beyond, the MVEB is 2.09 tons per day VOC and 2.92 tons per day NOx.

Introduction

Kent and Queen Anne's Counties were designated as marginal ozone nonattainment areas on November 6, 1991. This document explains how the counties meet the five redesignation requirements as outlined in the 1990 Clean Air Act Amendments (CAAA).

In order for the EPA to redesignate an area as attainment, the area must meet five criteria. Section 107(d)(3) of the Act reads: "The administrator may not promulgate a redesignation of a nonattainment areas (or portion thereof) to attainment unless

i. The Administrator determines that the area has attained the national ambient air quality standard;
ii. The Administrator has fully approved the applicable implementation plan for the area under section 110(k);
iii. The Administrator determines that the improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of the applicable implementation plan and applicable Federal air pollutant control regulations and other permanent and enforceable regulations;
iv. The Administrator has fully approved a maintenance plan for the area as meeting the requirements of section 175; and
v. The State containing such areas has met all requirements applicable to the area under section 110 and part D."

Part One: Attainment of the National Standards in Kent and Queen Anne's Counties

Section 181(b)(2)(A) states that the EPA Administrator shall determine whether the area has achieved the standard based on the design value of the area. There is one ozone monitor that measures air quality in Kent and Queen Anne's Counties. It is located in the Millington Wildlife Management Area near Massey in Kent County (see Figure 4). The Millington station and monitor were installed at the EPA approved site in 1989 as a regional scale monitor for determination of regional background concentrations of ozone.

Using data from the Millington monitor and extrapolation techniques in 40CFR Part Appendix, EPA determined that the standard had been exceeded during the designation process that occurred directly after the 1990 Clean Air Act Amendments were passed. Based on this extrapolation, the EPA Administrator classified both Kent and Queen Anne's Counties as a marginal nonattainment area for the one-hour ozone standard. In general, air quality has hovered very close to the standard in these Counties (see Figure 1). EPA's January 17,1995 Federal Register Notice stated that the EPA has determined that the design value for Kent and Queen Anne's Counties is 0.121 ppm and the two counties have achieved the one-hour ozone standard as of November 1994 (60 FR 3349). A subsequent violation of the standard in 1997 prevented Maryland from redesignating the Counties as attainment.

In the last three-year period, 2001 – 2003, the Millington monitor recorded three exceedances of the ozone standard, two in 2002 and one in 2003. There were no exceedances in 2001. During the period of July 8 – 9, 2002, smoke plumes coming from wild fires in northern Canada (Quebec) adversely affected the air quality in Maryland. Due to this extraordinary event that occurred outside of the United States, exceedances of the 1-hr and 8-hr ozone National Ambient

Air Quality Standards (NAAQS) were recorded in Maryland. According to the provisions contained in Section 50, Appendix I of 40 CFR and the EPA guidance document titled "Guideline on the Identification and Use of Air Quality Data Affected by Exceptional Events", a state may request that monitoring data affected by natural events, such as forest fires, be excluded from being used to calculate compliance with NAAQS. Maryland submitted a request and supporting data analysis (Appendix A) to EPA to have this data excluded from the dataset. EPA concurred with this request.

According to the Code of Federal Regulations Part 50 Appendix H, if the number of exceedances for a three-year period, divided by three, is one or less, then the ozone standard has been attained. For Millington that quotient is 1.00 for the most recent three-year period, 2001-2003. Additionally, the design value for Millington for the same period is 0.122 ppm also indicative that the area has achieved the standard (the daily maximum ozone limit of 0.124 ppm is shown by the dashed line in Figure 3). Figures 1, 2, and 3 show the number of exceedances and the design values between 1989 and 2003. For an explanation of the calculation of design values, see Appendix B.

Figure 1: Number of Exceedances of the 1-hour Standard for Ozone at the Millington Monitor Between 1989 and 2003

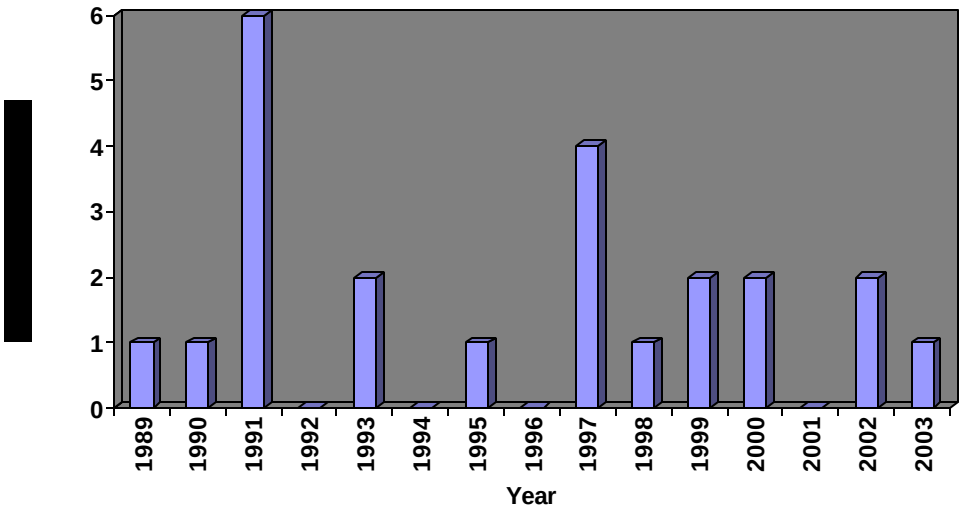


Figure 2: Trend in Number of Exceedances of the 1-hour Standard for Ozone at the Millington Monitor Between 1989 and 2003

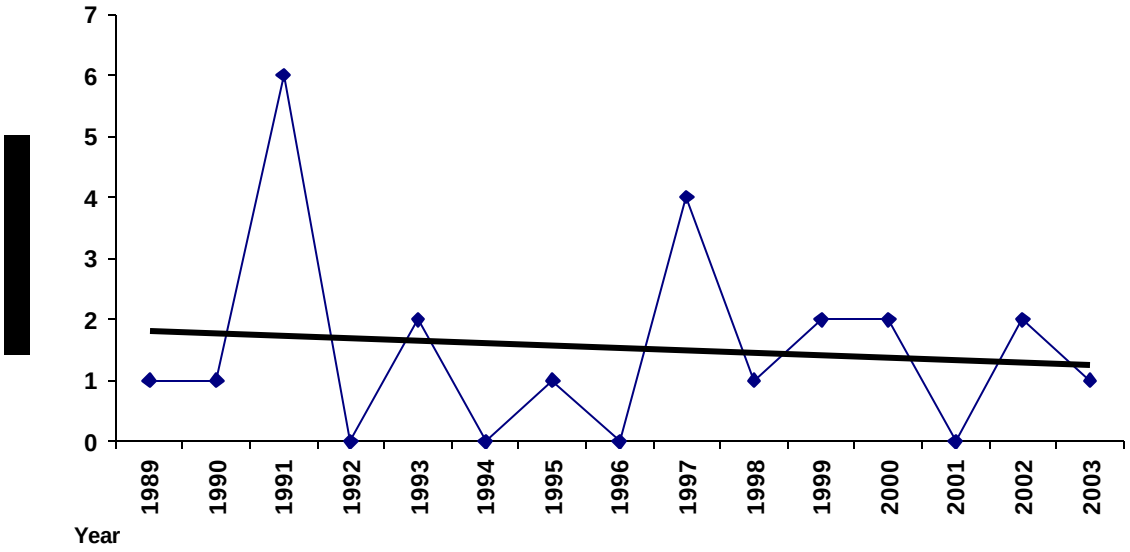
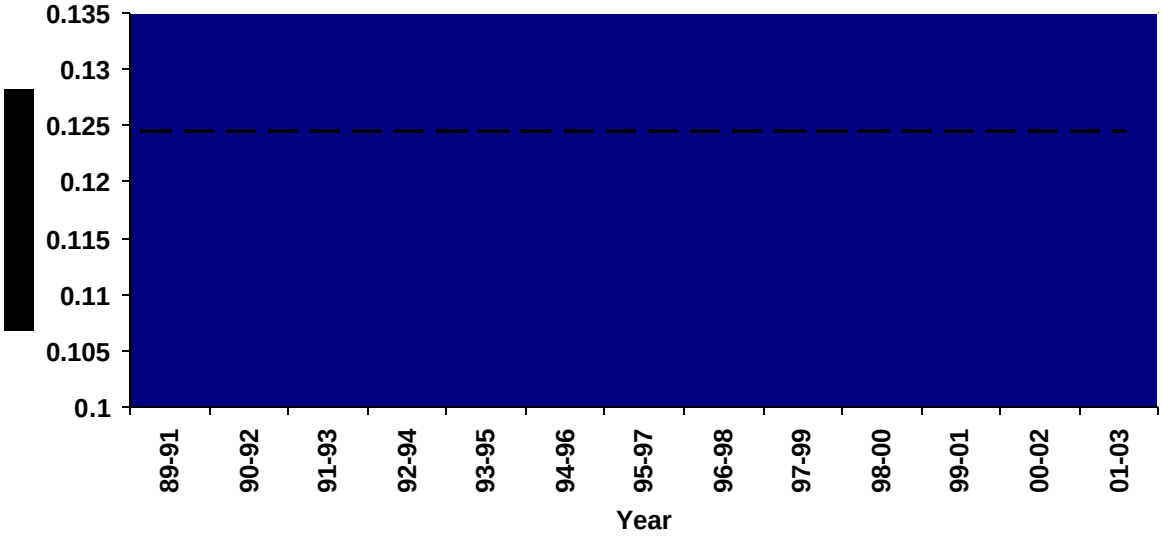


Figure 3: Ozone Design Values for the Millington Monitor Between 1989 and 2003



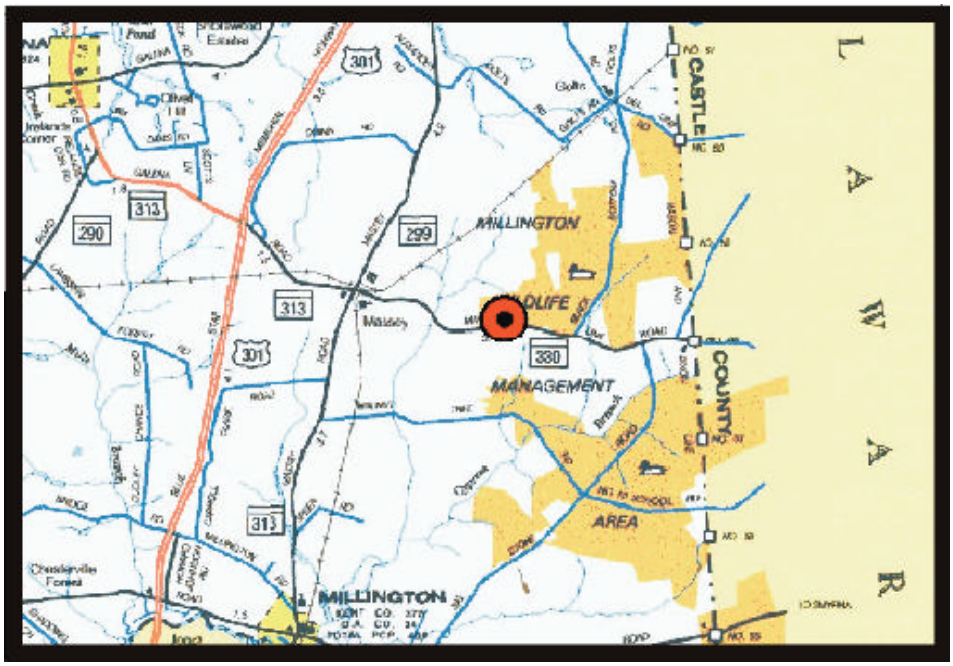
As stated earlier, Maryland examined the effects of the Canadian wildfires on air quality in Maryland during the period of July 8 – 9, 2002. The smoke plumes coming from this event adversely affected the air quality in Maryland. According to the provisions contained in Section 50, Appendix I of 40 CFR and the EPA guidance document titled "Guideline on the Identification and Use of Air Quality Data Affected by Exceptional Events", a state may request

that monitoring data affected by natural events, such as forest fires, be excluded from being used to calculate compliance with NAAQS.

On March 27, 2003, the Maryland Department of the Environment (MDE) submitted a letter and supporting documentation formally requesting that EPA Region 3 exclude the data contained in Tables 1 and 2 (Appendix A) from calculations used to demonstrate compliance with ozone NAAQS. EPA concluded that the monitored ozone exceedances on July 8 – 9 were the result of the Canadian wild fires in northern Canada. This conclusion by EPA resulted in the ozone exceedances being flagged with an "E". These exceedances will not be used to calculate compliance with the 1-hour and 8-hour ozone NAAQS.

The Maryland Department of the Environment (MDE) is confident that the monitoring data used in this report is representative of air quality in the two counties. The monitor is located at a regional scale site approved by EPA. The data was quality assured in accordance with 40 CFR 58. MDE uses regular precision checks, calibrations, and audits to ensure the validity of the data. MDE also uses the Aerometric Information Retrieval System (AIRS) as the permanent database to maintain its data and quality assures the data transfers and content for accuracy. In addition, EPA's annual network reviews have repeatedly verified the integrity of Maryland's air monitoring network (see Appendix C). For these reasons, MDE believes that the Millington air monitor serves as a reliable indicator of ambient concentrations of ozone in Kent and Queen Anne's Counties.

Figure 4: Millington Ozone Site in Kent County



Map: MDE - BJH

The SIP for the area must be fully approved under section 110 (k), which addresses completeness, deadlines, full and partial approval, conditional approval and disapproval of the SIP. The Maryland SIP submittals fall into two general categories: pre-amendment submittals and post-amendment submittals. Pre-amendment submittals consist of SIP modifications made to meet requirements in existence prior to enactment of the 1990 Clean Air Act Amendments. These submittals are fully approved as applicable to Kent and Queen Anne's Counties. Post-amendment submittals made by MDE meet EPA criteria for approval: if EPA takes action within the time frames cited in the Act, the approval of the submittals should be complete and final by the time that this redesignation request has been analyzed and approved by EPA, thus making this redesignation criteria complete. Where EPA has indicated (in preliminary review) that deficiencies exist, the deficiencies have been corrected in subsequent submittals and have been approved by EPA.

Given that Kent and Queen Anne's Counties were designated as marginal nonattainment areas on November 6, 1991, they must develop the following post-amendment requirements delineated under Section 182(a) for marginal areas and Section 184(b) for areas included in the ozone transport region:

? A 1990 base year inventory;
? A periodic inventory every three years after 1990 until attainment;
? Regulations designating any 50 ton per year VOC or 100 tons per year for NOx stationary source as a major source;
? Regulations requiring stationary sources with potential to emit above the major source threshold to undergo new source review requirements including 1.15 to 1 offsets;
? Regulations requiring stationary sources that emit above 25 tons per year VOC or NOx to file a certified emissions statement annually;
? Regulations requiring RACT on VOC and NOx sources; and
? The inclusion of Queen Anne's County in the Enhanced Inspection and Maintenance (I/M) Program because it is part of a metropolitan statistical area greater than 200,000 population in the Ozone Transport Region

The Department has met these requirements for Kent and Queen Anne's Counties through development and implementation of the following regulations and technical documents that have been submitted to EPA as SIP submittals:

? Expansion of RACT rules statewide (COMAR 26.11.19.02G);
? Emissions certification requirements (COMAR 26.11.01.05-1);
? New source review requirements (COMAR 26.11.17);
? Enhanced I/M (COMAR 11.14.08- jointly adopted by MDE and Motor Vehicle Administration);
? The 1990 base year inventory.

EPA approved the 1990 base year inventory for Kent and Queen Anne's counties along with inventories for other nonattainment areas on September 27, 1996 (61 FR 50715).

The Department has supplied the following inventories to EPA through a combination of written and electronic documentation:

? The 1993 periodic inventory;
? The 1996 periodic inventory; and
? The 1999 periodic inventory.

Additionally, the State exercised its option to voluntarily require federal reformulated gasoline in all ozone nonattainment areas, including Kent and Queen Anne's Counties (COMAR 03.03.05.01- Comptroller of the Treasury, Motor Fuel Inspection regulation). The State has fully approved VOC and NOx RACT rules for sources in Kent and Queen Anne's Counties.

The status of the above and other relevant SIP revisions is as follows:

Table 1: Status of Maryland SIP Submittals

SIP Revision	Date Submitted	Date Approved
Reformulated Gasoline Opt-in	1/17/92	4/1/92
Statewide RACT Rules-VOC	6/8/93	3/1/96
Statewide RACT Rules- NOx	6/8/93	2/8/01
Emissions Certification Rule	11/13/92	10/12/94
New Source Review Rule	6/8/92	2/12/01
1990 Base Year Inventory	3/24/94	9/27/96
Enhanced I/M Rule (QA's)	7/12/95	10/29/99
1993 Periodic Inventory*	1995	NA
Stage II Vapor Recovery comparability plan for marginal and attainment areas (includes Kent and QA's)	11/5/97	12/9/98
1996 Periodic Inventory*	1998/99	NA
Modification of Phase II Attainment Plan for Washington DC-MD-VA. Extension of attainment date to 2005 and revision of MVEB	2/14/00	1/3/01
NOx Reduction and Trading	4/27/00	1/10/01
New Source Review Rule	9/25/00	2/12/01
Modification of Phase II Attainment Plan- Baltimore region, Adding Tier 2 Standards	12/28/00	7/16/01
1999 Periodic Inventory	2001	NA

* Only base year inventories are submitted as a full SIP revision. Periodic Emissions Inventory submittals are data submittal only.

EPA Region III approved the 1990 Base Year Inventory on September 27,1996, at the same time as they approved the 15% VOC Reduction Plan for moderate and above areas of Maryland. Most other pending rules were approved in 2001 when EPA approved the *Phase II Attainment Plan for the Baltimore Region and Cecil County.* Although federal conformity rule changes are still pending, EPA believes that it is reasonable to interpret conformity requirements as not applying for purposes of evaluating a redesignation request under section 107(d). EPA may approve an ozone redesignation request notwithstanding the lack of a fully approved conformity SIP. EPA's rationale has two parts. Federal conformity rules require performance of conformity analyses even in the absence of federally approved State rules. Conformity provisions of the Clean Air Act continue to apply after redesignation because areas are subject to a maintenance plan which requires compliance with mobile budgets.

Part Three: Permanent and Enforceable Reductions

Before reviewing the various permanent and enforceable measures that have led to lower levels of ozone in Kent and Queen Anne's Counties, it is important to have a good understanding of the ozone precursors inventory for the two jurisdictions. Tables 2 and 3 present the 1990 base year emissions inventories for VOC and NOx, the precursors of ozone (1990 Base Year Inventory, September 1993).

Table 2: 1990 Base Year Ozone Precursor Emissions Inventory, VOC Emissions Summary in Tons per Day

Source of VOCs	Point	Area	Non-road Mobile	On-road Mobile	Total
Kent Co.	0	4.52	1.66	1.90	8.08
Queen Anne's Co.	0.24	5.17	1.79	4.70	11.90
Total	**0.24**	**9.69**	**3.45**	**6.60**	**19.98**

Table 3: 1990 Base Year Ozone Precursor Emissions Inventory, NOx Emissions Summary in Tons per Day

Source of NOx	Point	Area	Non-road Mobile	On-road Mobile	Total
Kent Co.	0	0.35	0.77	1.90	3.02
Queen Anne's Co.	0	0.37	1.00	5.40	6.77
Total	**0**	**0.72**	**1.77**	**7.30**	**9.79**

A number of permanent and enforceable measures have caused emission reductions and lowered ozone concentrations in Kent and Queen Anne's Counties. These reductions are from all source sectors.

A major portion of the decrease in ozone precursors is due to the Federal Motor Vehicle Control Program (FMVCP) Tier 1 tailpipe standards. Over a period of time, older, poorer performing on-road vehicles have gradually been replaced with newer vehicles that must meet increasingly more stringent tailpipe standards.

Federal regulations passed in June of 1990 specified 7.8 psia as the maximum Reid Vapor pressure (RVP) for gasoline being sold in Maryland in 1992 and beyond. Kent and Queen Anne's Counties are subject to this regulation, which results in fewer emissions from the refueling of vehicles as a result of the lower RVP.

Additionally, the State has included both Kent and Queen Anne's Counties in the federal reformulated gasoline program. The program, which began in January of 1995, results in cleaner gasoline being sold at all service stations. At a minimum reformulated gasoline must not cause an increase in NOx, must have an oxygen content of at least 2.0% by weight, must have a benzene content no greater than 1.0% by volume and must not contain any heavy metals. In addition, reformulated gasoline must have 15% fewer emissions of VOCs and toxics than 1990 levels beginning in 1995 and must have 25% fewer beginning in the year 2000. During the summer, the RVP of gasoline is 7.2 psia in all of the nonattainment areas in Maryland, with the exception of Cecil County, which has reformulated gasoline with RVP of 8.1 psia.

Finally, the Department studied growth in mobile source emissions using the HPMS module of the PPSuites modeling software. This modeling showed mobile sources would remain in check with these control measures and with new measures that will take effect in the future, throughout the maintenance period.

In 1997 and 1998, new emissions standards for non-road mobile sources took effect, leading to additional permanent and enforceable reductions in Kent and Queen Anne's Counties. The major emissions categories in these counties are farm equipment, lawn and garden equipment and recreational boats. Nonroad VOC and NOx emissions are expected to decline due primarily to implementation of the following Federal permanent and enforceable measures and remain in check with additional Tier 3 standards that will be implemented in the future:

? Tier 1, Tier 2, and Tier 3 compression-ignition standards for diesel engines greater than 50 horsepower;
? Tier 1 and Tier 2 compression-ignition standards for diesel engines below 50 horsepower;
? Phase 1 and Phase 2 of the spark-ignition standards for gasoline engines less than 25 horsepower; and
? Recreational spark-ignition marine engine controls.

Total emissions form area sources will decrease as well in the two counties, the largest categories being tank truck unloading, degreasing, architectural surface coatings, and commercial and consumer solvents. State regulations address emissions from tank truck unloading and degreasing. The tank truck unloading regulation, COMAR 26.11.13.04(C) 4 was adopted on

March 26, 1993 and went into effect on November 15, 1993. The degreasing regulation, COMAR 26.11.19.09, was adopted on May 12, 1995 and became effective on June 5, 1995. Federal regulations for reformulating architectural coatings and consumer solvents will also result in lower emissions.

There is very little industry in the two counties and thus point source emissions are very low. Growth in point sources will be controlled through the new source review program requirement for offsets. Any major sources that wish to locate in Kent or Queen Anne's Counties will need to procure emissions offsets at a ratio of 1.15 to 1 for NOx and VOCs. This will limit new point source emissions that would result from industry growth in these two counties in the future.

It is important to note that in addition to reductions caused by all of the measures outlined above, background concentrations of ozone in Kent and Queen Anne's Counties will decrease as a result of the many ozone precursor reduction strategies being implemented in the Baltimore and Washington D.C. severe nonattainment areas. These strategies are being implemented through the Baltimore approved attainment plan, the Washington severe SIP and the NOx SIP call. They help produce lower levels of ozone in the Baltimore/Washington region and less transport of ozone and precursors from that region into Kent and Queen Anne's Counties.

Part Four: Maintenance Plan for Kent and Queen Anne's Counties

MDE is requesting that the EPA consider this maintenance plan on a parallel track with the redesignation request for the two counties. This maintenance plan consists of the necessary requirements as outlined in EPA guidance: an attainment inventory, a maintenance demonstration, a monitoring network, verification of continued attainment, and a contingency plan.[1]

A. Attainment Inventory

According to EPA guidance, the attainment inventory "should include the emissions during the time period associated with the monitoring data showing attainment"[2] MDE has determined that the appropriate attainment inventory year is 2002. That year establishes a reasonable year within the three-year block of 2001-2003 as a baseline and accounts for reductions attributable to implementation of Clean Air Act requirements to date. This inventory is based on actual emissions for typical peak ozone season days, which occur during the months of June, July, and August (See Appendix D for detailed inventories of 2002 and 2014).

B. Maintenance Demonstration

MDE's calculations of future emissions of VOCs and NOx from stationary and mobile sources demonstrate that future emissions will not exceed the level of the attainment inventory (see Tables 5 and 6). Future emissions levels must continue to remain at or below attainment levels for a period of 10 years after EPA redesignates the nonattainment areas to attainment (stable and

[1] *Memorandum: Procedures for Processing Requests to Redesignate Areas to Attainment*, John Calcagni, Director, Air Quality Management Division, USEPA, Research Triangle Park, NC, 27711, September 4, 1992, pp. 7-13.
[2] Ibid. p. 8.

declining inventory methodology). MDE's planning horizon for the maintenance plan is 2014, which allows a reasonable time for EPA processing of the request.

MDE used most of the same methodologies to calculate attainment and projection inventories for this redesignation request as are outlined in the Phase II Attainment Plan for the Baltimore Region and Cecil County (May 2003 revision). Deviations are noted.

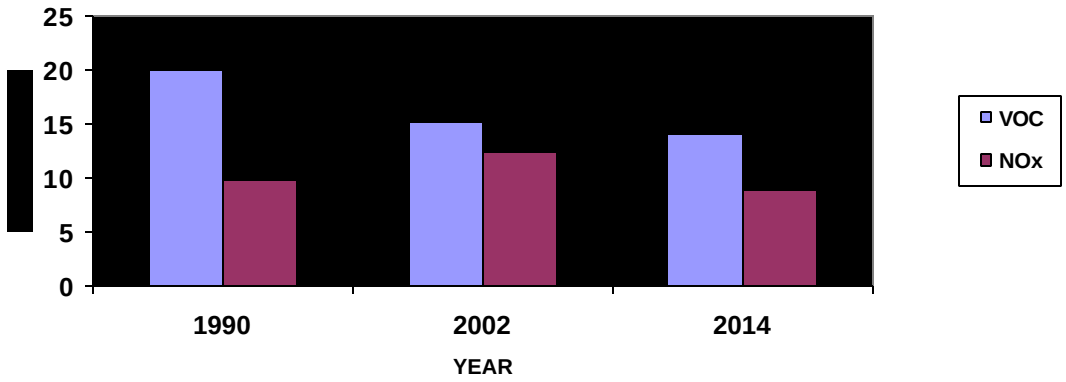
Table 4: Attainment Year and Projected VOC Emissions Inventories for the Kent and Queen Anne's County Nonattainment Area

Source Category	2002 VOC Emissions (Tons per Day)	2014 Projected VOC Emissions (Tons per Day)
On-road Mobile	4.91	2.09
Non-road Mobile	5.91	6.59
Area	4.33	5.34
Point	0.12	0.16
Total	**15.26**	**14.18**

Table 5: Attainment Year and Projected NOx Emissions Inventories for the Kent and Queen Anne's County Nonattainment Area

Source Category	2002 NOx Emissions (Tons per Day)	2014 Projected NOx Emissions (Tons per Day)
On-road Mobile	7.7	2.92
Non-road Mobile	3.22	4.15
Area	1.46	1.75
Point	0.07	0.09
Total	**12.45**	**8.91**

Figure 5: Base Year, Attainment Year, and Projection Year Emissions for Kent and Queen Anne's Counties



To project future emissions from mobile sources, MDE used the HPMS module of the PPSuites software. Growth is based on a regression analysis of historic HPMS data from Kent and Queen Anne's Counties. MDE used the EPA approved emission model, MOBILE6, to assess the mobile source emission levels in these counties and estimate the benefits gained from mobile control measures in effect in these counties. This estimate assumes the following emissions control programs, which are or will be permanent and enforceable: FMVCP, the 1992 Reid Vapor Pressure Program, Tier 1 and 2 controls on new vehicles, Evaporative Emissions Control Program, Federal Reformulated Gasoline Program, Enhanced I/M Program in Queen Anne's County, Stage I Vapor Recovery, On Board Controls and Low Emissions Vehicle (LEV) Program, federal HDDE rule and low sulfur fuels.

MDE predicted emissions from non-road mobile sources using the Nonroad 2002 model from EPA and grew them using the Economic Growth Analysis System (EGAS) model. EGAS multiplies equipment populations by appropriate growth rates. In addition, MDE followed guidance issued by EPA to incorporate reductions from the proposed federal small engine standards in 2007.[3] The Department calculated emissions from area sources by using methodologies outlined in EPA's *Procedures for the Preparation of Emission Inventories for Carbon Monoxide and Precursors of Ozone, Volume 1: General Guidance for Stationary Sources* (EPA-450/4-91-016, May 1991) and from appropriate EIIP documents. Growth in area source emissions was based on EGAS model results. The 2014 emissions were reduced based on federal regulations for consumer products and architectural and industrial maintenance coatings. These reductions were made in accordance with EPA guidance.[4]

[3] *Memorandum: Guidance on Projection of Nonroad Inventories to Future Years*, Philip A. Lorang, Director, Emissions Planning and Strategies Division, USEPA, Ann Arbor, Michigan, 48105, February 4, 1994, p. 1-7.
[4] *Memorandum: Regulatory Schedule for Consumer and Commercial Products under Section 183© of the Clean Air Act*, John Seitz, Director, Office of Air Quality Planning and Standards, USEPA, Research Triangle Park, NC, June 21, 1995, p. 1-2. *Memorandum: Credit for the 15% Rate-of-Progress Plans for Reductions from the Architectural and Industrial Maintenance (AIM) Coating Rule and the Auto body Refinishing Rule*, John Seitz, Director, Office of Air Quality Planning and Standards, USEPA, Research Triangle Park, NC, November 21, 1994, p. 1-3.

MDE projected future emissions from stationary sources by multiplying the 1990 base year inventory by EPA generated factors based on EGAS model results. Using EGAS model results to project emissions is consistent with EPA guidance on preparing emission projections.

Additional Measures Contributing to Long Term Maintenance of the Ozone Standard

Throughout the 1990's, there has been a growing understanding of the extent to which long-range transport contributes to ozone nonattainment, especially along the East Coast of the United States. Incoming ozone transported from upwind areas needs to be reduced for areas like Kent and Queen Anne's Counties to continue to meet the federal air standards. To reduce both long-range and short-range transport, Maryland has implemented the NOx SIP Call. In 2004, most other states required to implement the NOx SIP Call will have complied with this requirement. Tier 2 tailpipe standards for vehicles will also be implemented throughout the nation. EPA has performed modeling for the NOx SIP Call that shows these measures will reduce ozone transport to the Kent and Queen Anne's region substantially. In keeping with the guidance memo from John Calcagni, Director of the Air Quality Management Division at EPA Headquarters, which states that, "No … supplemental modeling is required for ozone marginal nonattainment areas seeking redesignation"[5], MDE has not done any modeling for this maintenance demonstration.

C. Monitoring Network

MDE will continue to operate the current air quality monitor in Millington in accordance with 40 CFR Part 58.

D. Verification of Continued Attainment

Section 187(a)(5) of the Act requires periodic inventories every three years for ozone nonattainment areas, and EPA Region III has requested that these inventories be statewide because Maryland is part of the Northeast Ozone Transport Region. Therefore, Maryland expects to compile a VOC and NOx inventory for Kent and Queen Anne's Counties every three years. MDE will be able to consult these inventories to make sure that the emissions levels remain at or below attainment inventory levels.

In addition, MDE will compare actual inventories to projected emissions levels. If there are significant differences between actual and projected growth, then MDE will examine its projection methods. If warranted, MDE will revise its methods and again compare inventories. If these inventories, actual or projected, reveal that emissions levels actually exceed the attainment inventory, then MDE will consider implementing contingency measures.

E. Contingency Measures

According to the Clean Air Act Amendments, states that wish to redesignate nonattainment areas to attainment must include in their submittal to EPA contingency measures which will

[5] *Memorandum: Procedures for Processing Requests to Redesignate Areas to Attainment*, John Calcagni, Director, Air Quality Management Division, USEPA, Research Triangle Park, NC, 27711, September 4, 1992, p. 3.

automatically take effect should violations of the NAAQS occur in the former nonattainment area.

MDE believes that emissions in the two counties will not cause nonattainment and that any future violations will be due to transport from other counties. Contingency plan measures include the three VOC model rules currently under adoption in Maryland. The VOC model rules have the potential to reduce emissions from consumer products, portable fuel containers, and AIM coatings.

F. New Control Measures

Portable fuel containers

This rule applies to the entire state of Maryland. Kent and Queen Anne's counties will benefit by having controls inside the two counties and in upwind areas (to cut down on transport into the area). The estimated benefits derived from such a rule would be a reduction of 2 tons per day of VOC in the Baltimore nonattainment area, and 6 tons per day of VOC in the state of Maryland by the 2005 compliance date (2 tons VOC reductions expected for central Maryland and 4 tons in the rest of the state).

The proposed *Portable Fuel Container Spillage Control Rule* will take effect on January 1, 2003. This timetable will give retailers a one-year sell-through period for containers and/or spouts manufactured before the January 1, 2003 implementation date. The one-year sell-through period would give retailers the opportunity to turn over stock to more compliant fuel containers.

The *Portable Fuel Container Spillage Control Rule* applies to any person or entity who will sell, supply, offer for sale, or manufacture for sale portable fuel containers and/or spouts on or after January 1, 2003. Persons who own conventional fuel containers prior to the January 1, 2003 implementation date will not be required to purchase or replace them with newer compliant fuel containers, nor will the rule make it a crime to continue to use conventional fuel containers.

Compliance with the proposed performance standards is designed to maximize VOC emission reductions. It is estimated that VOC emissions as a result of uncontrolled evaporative and refueling losses would be reduced by approximately 75 percent.

Consumer Products

This rule is intended to reduce volatile organic compound (VOC) emissions from approximately 80 categories and subcategories of consumer products such as cleaning compounds, paints, floor finishes, automotive products, personal care products and lawn care products. The compliance date of this rule is January 1, 2005.

Architectural and Industrial Maintenance Coatings (AIM)

This regulation is intended to reduce volatile organic compound (VOC) emissions from a variety of coatings by setting specific VOC content limits for all AIM sold in Maryland. The rule also requires a report of the total gallons of each AIM product sold in Maryland for a calendar year, beginning in 2005. The compliance date of this rule is January 1, 2005.

Reductions in VOCs from these measures are shown in Table 3.

Table 6: Projected OTC Measure Reductions in 2005 (tons per day)
Based on Figures from E.H. Pechan

County	Consumer Products	AIM	Gas Cans (PFC)	Total VOC
Kent	0.03	0.06	0.03	0.12
Queen Anne's	0.06	0.12	0.03	0.21
Total	**0.09**	**0.18**	**0.06**	**0.33**

Under certain meteorological conditions, the monitor at Millington will detect transport of high levels of ozone from the Washington, D.C., Baltimore or Philadelphia nonattainment areas. Major reductions in emissions from these large nonattainment areas have contributed to a reduction in transported emissions. The reductions are due to the permanent measures documented in the Attainment Plan such as reformulated gasoline that includes substantial reductions in RVP, and the FMVCP.

If monitors for wind direction show a direct path from the Baltimore or Washington nonattainment areas, MDE will discuss the exceedances with EPA before implementing contingency measures, to determine whether the exceedances can be attributed to transported ozone.

Part Five: Section 110 and Part D Requirements

Section 110

Section 110, (a)(2) of the Act contains general requirements for nonattainment plans. Most of the provisions of this section are the same as those contained in the pre-amended Act. The state of Maryland has fulfilled all pre-amendment Act requirements pertaining to Kent and Queen Anne's Counties and the two nonattainment areas of Baltimore and Washington.

Part D

Part D Subpart 2 of the Act, entitled "Additional Provisions for Ozone nonattainment Areas," requires that marginal nonattainment areas, which have design values between 120-140 ppb, achieve attainment by November 15, 1993. However a one-year extension of the deadline can be granted under certain conditions.[6] Kent and Queen Anne's Counties attained the standards by the fall of 1994.

Section 182 (a)(1) under Part D requires the development of a "comprehensive, accurate, and current inventory of actual emissions form all sources, and a permit program for new and modified major stationary sources." MDE submitted its 1990 base year emissions inventory on

[6] *1990 Clean Air Act*, Section 181(a)(5).

September 30, 1993 for Kent and Queen Anne's Counties and it was subsequently approved. The last inventory update was the 1999 Periodic Inventory. In addition, MDE has a fully implemented new source review permit program.

Once the two counties have been redesignated, new sources will need to undergo Prevention of Significant Deterioration (PSD) review for ozone precursors as well as other criteria pollutants. Under PSD regulations outline in COMAR 26.11.02, a Best Available Control Technology (BACT) analysis will be required for all new sources of ozone precursors that will have emissions above the major source thresholds. This analysis will require demonstrations that the new sources will not cause violations if the standard for ozone. In addition, offsets for VOCs and NOx are required statewide because the entire state is in the Ozone Transport Region.

Part Six: Conformity Process

42 U.S.C.A 7506 (c)(C) requires each state to submit to the EPA by November 15, 1992 a SIP revision including criteria and procedures for assessing conformity of transportation plans, programs and projects with SIPs. These procedures must comply with the final federal conformity requirements, 40 CFR Part 51. EPA extended the deadline to November 15, 1993. MDE and the Maryland Department of Transportation working together completed the SIP revision. The State conformity regulation adopting the federal regulation by reference has been through the public hearing process. The SIP revision itself was submitted to EPA in May of 1995 and the State regulation became effective on June 5, 1995. The State agreed with EPA that final action on the Conformity SIP was not prudent until pending amendments to the federal conformity regulations were completed. EPA published a comprehensive set of amendments to the conformity rule on August 15, 1997 (62 FR 43780), and final action was taken on the conformity SIP (the State conformity regulation was revised in 1998 and 1999). However, on June 30, 2003 EPA published a proposal that would amend the current conformity rule to be consistent with a March 2, 1999 U.S. Court of Appeals decision (68 FR 38974), again requiring changes to Maryland's conformity SIP. The EPA believes that it is reasonable to interpret conformity requirements as not applying for purposes of evaluating a redesignation request under section 107(d) so that EPA may approve an ozone redesignation request notwithstanding the lack of a fully approved conformity SIP (66 FR 53098).

Kent and Queen Anne's Counties are not members of any metropolitan planning organization (MPO). Currently, the Maryland Department of Transportation (MDOT) acts on behalf of the counties to include projects in the two counties in the State Transportation Improvement Program (STIP). Under 40 CFR Part 51.448 as part of the SIP process, this maintenance plan will establish an emissions budget to be used for transportation conformity purposes. This motor vehicle emissions budget (MVEB) establishes a cap on emissions that cannot be exceeded by predicted highway and transit vehicle emissions. For the period from 2002 until 2014, the motor vehicle emission budgets for Kent and Queen's Counties combined is 4.91 tons per day VOC and 7.7 tons per day NOx. For 2014 and beyond, the MVEB is 2.09 tons per day VOC and 2.92 tons per day NOx. Some projects may help to reduce mobile source ozone precursor emissions by leading to fewer vehicle trips in Kent and Queen Anne's Counties. These projects include increased commuter bus service and additional park and ride lot spaces.

Conclusion

Maryland's air quality monitoring network has shown Kent and Queen Anne's Counties to be in compliance with the 1-hour NAAQS for ozone. MDE has met the requirements of Section 107(d)(3) of the Clean Air Act, which outlines how nonattainment areas can be redesignated to attainment, and is confident that these counties will remain in attainment throughout the next decade.

List of Sources Consulted

1. *1990 Base Year Inventory for Precursor of Ozone, Volatile Organic Compounds (VOCs), Carbon Monoxide (CO), Nitrogen Oxides (NOx) for the State of Maryland*, Air Quality Planning Program, Air and Radiation Management Administration, Maryland Department of Environment, 2500 Broening Highway, Baltimore, Maryland 21224, September 30, 1993, Volumes 1-6.
2. *1990 Clean Air Act*, Sections 107(d)(3), 110(a)(2), 110(k), 181(a)(5), 181(b)(2)(A), 182(a), 184(b) and 187(a)(5).
3. *Maryland Air Quality Data Reports, 1981-1993,* Air Monitoring and Information Systems Program, Air and Radiation Management Administration, MDE, 2500 Broening Highway, Baltimore, Maryland 21224.
4. *Memorandum: Credit for the 15% Rate-of-Progress Plans for Reductions from the Architectural and Industrial Maintenance (AIM) Coating Rule and the Autobody Refinishing Rule*, John S. Seitz, Director, Office of Air Quality Planning and Standards, USEPA, Research Triangle Park, North Carolina, 27711, November 21, 1994, p. 1-3.
5. *Memorandum: Ozone and Carbon Monoxide Design Value Calculations,* William G. Laxton, Director, Technical Support Division, Office of Air Quality Planning and Standards, USEPA, Research Triangle Park, North Carolina, 27711, June 18, 1990, p. 1-2.
6. *Memorandum: Procedures for Processing Requests to Redesignate Areas to Attainment*. John Calcagni, Director, Air Quality Management Division, Office of Air Quality Planning and Standards, USEPA, Research Triangle Park, North Carolina, 27711, September 4, 1992, p. 3.
7. *Memorandum: Regulatory Schedule for Consumer and Commercial Products under Section 183(e) of the Clean Air Act*, John S. Seitz, Director, USEPA Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, 27711, June 21, 1995, p. 1-2.
8. *Procedures for Emission Inventory Preparation, Volume IV: Mobile Sources*, USEPA, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, 27711, (EPA-450/4-81-026d {Revised}, 1992).
9. *Procedures for the Preparation of Emission Inventories for Carbon Monoxide and Precursors of Ozone, Volume 1: General Guidance for Stationary Sources*, USEPA, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina, 27711, (EPA 45-/4-91-0616, May 1991).
10. *Rate-of-Progress Plan for the Baltimore Nonattainment Area and Cecil County,* Air Quality Planning Program, Air and Radiation Management Administration, Maryland Department of Environment, 2500 Broening Highway, Baltimore, Maryland, 21224, March 22, 1994.

Appendix A: Effects of Canadian Fires on Air Quality Monitoring

During the period of July 8 – 9, 2002, smoke plumes coming from wild fires in northern Canada (Quebec) adversely affected the air quality in Maryland. Due to this extraordinary event that occurred outside of the United States, exceedances of the 1-hr and 8-hr ozone National Ambient Air Quality Standards (NAAQS) were recorded in Maryland. According to the provisions contained in Section 50, Appendix I of 40 CFR and the EPA guidance document titled "Guideline on the Identification and Use of Air Quality Data Affected by Exceptional Events", a state may request that monitoring data affected by natural events, such as forest fires, be excluded from being used to calculate compliance with NAAQS.

On March 27, 2003 The Maryland Department of the Environment (MDE) submitted a letter and supporting documentation formally requesting that EPA Region 3 exclude the data contained in Tables 1 and 2 from calculations used to demonstrate compliance with ozone NAAQS.

On September 23, 2003 a conference call between EPA, University of Maryland College Park (UMCP), Pennsylvania State University (PSU) and MDE took place. The purpose of this conference call was to determine what MDE needed to prepare and submit to EPA Region 3 in the way of a data analysis to supplement what was submitted to EPA Region 3 on March 27, 2003. Attachment 1 contains the notes of this conference call.

After additional discussions with Ted Erdman (EPA Region 3) and Fred Dimmick (RTP) the UMCP, PSU and MDE prepared a formal presentation on the Canadian Smoke Event in Maryland. Attachment 2 contains this presentation. After reviewing this presentation EPA concluded that the monitored ozone exceedances on July 8 – 9 were the result of the Canadian wild fires in northern Canada. This conclusion by EPA resulted in the ozone exceedances being flagged with an "E" and will not be used to calculate compliance with the 1-hour and 8-hour ozone NAAQS.

Table 1. 1-Hour Ozone Data to be Excluded From Compliance Calculations

Date	Monitoring Site	EPA AIRS Code	1-hr Ozone Concentration (ppb)
July 8, 2002	Aldino	240259001	131
	Fairhill	240150003	135
			147
			138
			127
July 9, 2002	Aldino	240259001	132
			135
			128
	Davidsonville	240030014	129
	Edgewood	240251001	133
			141
			147
			135
	Fairhill	240150003	143
			144
			136
			127
	Millington	240290002	129
			134
			131
			128

Table 2. 8-Hour Ozone Data to be Excluded From Compliance Calculations

Date	Monitoring Site	EPA AIRS Code	8-hr Ozone Concentrations (ppb)										
July 8, 2002	Aldino	240259001	91.86	102.18	109.05	110.49	109.26	107.68	101.62	93.45	87.14		
	Davidsonville	240030014	89.67	91.38	90.32	88.02							
	Edgewood	240251001	88.49	97.97	104.84	107.86	102.77	97.04	92.62	87.43			
	Essex	240053001	90.88	95.22	93.19	88.05							
	Ft. Meade	240030019	85.14	89.19	90.40	86.75							
	Padonia	240051007	89.60	90.60	87.52								
	Greenbelt	240330002	85.21	86.19									
	Fairhill	240150003	86.10	100.50	112.46	120.84	125.62	125.64	122.86	115.86	106.64	96.11	86.34
	Millington	240290002	87.29	93.79	94.77	91.46	86.01						
July 9, 2002	Aldino	240259001	92.35	103.08	111.8	116.86	117.52	114.14	108.09	98.51	90.76		
	Davidsonville	240030014	85.26	92.4	99.15	104.66	108.65	110.28	108.11	102.48	94.56	85.12	
	Edgewood	240251001	90.72	103.68	112.52	119.50	123.96	122.43	114.25	103.58	90.22		
	Essex	240053001	90.97	97.11	98.07	93.40	87.01						
	Ft. Meade	240030019	89.15	96.58	100.28	98.73	94.03	87.42					
	Padonia	240051007	86.10	91.57	93.01	92.38	88.9						
	Greenbelt	240330002	86.62	94.58	98.55	95.91	89.61						
	Fairhill	240150003	94.87	106.13	115.63	121.56	122.28	117.48	109.88	98.65	86.93		
	Ponca Street Supersite	245100053	86.6										
	Rockville	240313001	86.29										
	PG County Equestrian Center	240338003	87.60	94.17	98.42	96.16	93.12	87.70					
	Millington	240290002	87.35	98.06	107.88	115.64	120.30	120.92	115.87	109.31	101.19	91.34	
	Hagerstown	240430009	85.65	85.81									

Attachment 1

2002 Canadian Wildfires Impact on Maryland Air Quality Conference Call

Attendees:
EPA – Ted Erdman, Todd Ellsworth, Fred Dimmick
UMCP – Lackson Marufu, Brett Taubman, Charles Piety, Jeff Stehr
Penn State – Bill Ryan
MDE – Tad Aburn, Diane Franks, David Krask, Matthew Seybold, Mike Woodman

The purpose of the conference call was to discuss what Maryland needed to prepare and submit to EPA Region 3 in the way of a data analysis to supplement what was submitted to EPA Region 3 on March 27, 2003. The submittal would be used to justify that the Canadian wild fires adversely affected the air quality in Maryland during July 7-9, 2002.

Based on the conference call EPA requested that the following items would be needed to support Maryland's position that the Canadian wildfires adversely affected the air quality in Maryland during July 7 – 9, 2002:

1. Aircraft data to demonstrate elevated concentrations of pollutants compared to what is normally observed – Brett Taubman & Lackson Marufu (UMCP)
2. Philadelphia NEOP's data – Bill Ryan (Penn State)
3. Satellite Photos showing the smoke plume drifting into Maryland – Charles Piety (UMCP)
4. Ft. Meade speciation data – Brett Taubman (UMCP)
5. Comparison between forecasted 1-hr ozone concentrations and observed 1-hr ozone concentrations. What happened to the forecast? (Bill Ryan – PSU)

MDE Requirements based on conversation:

1. Prepare technical presentation for Fred Dimmick.
2. Prepare a policy maker presentation for Ted Erdman and Tad Aburn.

Both presentations should be sent out within 2 weeks (October 7, 2003).

Attachment 2

Attachment 2 is a power point presentation available on request. This file is very large is size and was not included with this report.

Appendix B: Design Values

A design value is calculated as a way to determine if there have been violations of the NAAQS. Ozone attainment requires that not more than one 1-hour average per year exceed the standard of 0.12 ppm. Attainment is evaluated over a three-year period. A design value is calculated for ozone by taking the fourth highest value over a three-year period. For example:

Four Highest Monitored Values of Ozone in Parts per Million for the Millington Monitor in Kent County

	2001	**2002**	**2003**
Max 1	0.122	0.134*	0.129
Max 2	0.118	0.131	0.119
Max 3	0.114	0.131	0.105
Max 4	0.110	0.122	0.098

* EPA flagged this value on 7/9/02 due to Quebec forest fires

0.122 ppm is the design value for this site because 0.122 ppm represents the fourth highest value over a three-year period pf time. If regional design values are lower than the standard, then the area is in attainment of the standard. In this case, 0.122 is lower than 0.125, which is the 1-hour standard, thus indicating that the Millington monitor demonstrates attainment.

Appendix C: Verification of Monitoring Network

1993 Network Information

APPENDIX C: Verification of Monitoring Network

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 Chestnut Building
Philadelphia, Pennsylvania 19107-4431

MAY 10 1993

Ms. Merrylin Zaw Mon, Director
Maryland Air and Radiation Administration
2500 Broening Highway
Baltimore, MD. 21224

Dear Ms. Zaw Mon,

Attached is the final narrative report of the FY'93 Systems Audit of Maryland's Ambient Air Monitoring Program written by Dave O'Brien.

Your staff is doing an excellent job with the operation of Maryland's Ambient Air Monitoring Network and the submission of the AIRS AQS data. Please keep up the good work!

If you have any questions, please call me.

Sincerely,

Victor Guide, Chief
Philadelphia Operations Section

cc: Dave Arnold, 03/Mobile Source
Ed Carter, MD/Air Monitoring & Information Program
Ed Gluth, MD/QA Officer
Robert Kellam, OAQPS
Joe Kunz, Program Development
Dave Lutz, OAQPS, HQ NAMS
Dave O'Brien, POS, NAMS Coor.
Marcia Spink, Air Programs
Dick Wies, MD/DAM

2003 Network Information

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

December 2, 2003

SUBJECT: State of Maryland
Department of the Environment
Air and Radiation Management Administration
Systems Audit for CY 2000

FROM: Victor Guide
U.S. EPA Region 3
Air Protection Division

TO: David Krask, Chief
Division of Air Monitoring
Air and Radiation Management Administration
Maryland Department of the Environment

THRU: Walter Wilkie, Chief
Air Quality & Analysis Branch
Air Protection Division

A. Summary

The Maryland Department of the Environment , Air and Radiation Management Administration continues to operate and maintain and excellent ambient air monitoring program. All elements of the program from network design and siting, instruments/methods , laboratory operations/facilities, standards/traceability, data management and quality assurance combine to result in producing valid data of known quality , precision and accuracy. The data set is complete and submitted in a timely manner to the AIRS data base.

In addition, it should be noted that the MDE staff is of high technical quality and continues to provide quality support for the oversight, maintenance and quality assurance of the ambient air monitoring equipment utilized in the MDE network. MDE continues to provide support to a variety of Region 3 initiatives and to Region 3 state/local agencies : TO14/15 for air toxics at Chester/Marcus Hook, for PADEP; support to Region 3 Air Toxics projects.

Attachments

2003 Ozone Audit Cover Letter

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

David Krask, Chief
Division of Air Monitoring
Air and Radiation Management Division
Maryland Department of the Environment

December 2, 2003

Dear David,

Attached please find copies of all the ozone audits conducted in the State of Maryland for the 2003 ozone season. I have also included copies of all ozone audits conducted by EPA Region 3 staff for the years 1997-2003 for your information. Special thanks to you and your staff for the continued cooperation and excellent work in all matters related to ambient air monitoring. All of the ozone instrumentation at the stations were found to be in good condition and the audits revealed no problems as related to instrument response to the Region 3 primary standard for ozone (TEI 49PS s/n 75758-30).

We are planning to continue this important audit oversight role for our state/local agencies in Region 3 in 2004. Performance audits for ozone, sulfur dioxide and carbon monoxide will be included in our work plans for next year and we will be in contact with you and your staff to plan out the schedule in the next few weeks.

Sincerely,

Walter Wilkie, Chief
Air Quality & Analysis Branch
Air Protection Division

Attachments

2001 Ozone Audit Results

Ozone Audit Form
(O_3)

Agency Maryland

Site Name Millington

Site Location Millington, MD

Airs No. _____ Date 5-23-2001

EPA Auditor(s) Victor Guida

Agency Representative Bob Judd

Analyzer (MFGR/Model/SN DASIBI 3913

Audit Equipment (MFGR/Model/SN TEI 49PS #67732

PPB Dial Setting	x ppm UV photometer	y ppm Inst.Response	% = (y-x)/x x 100	Regression Data
0000	0.000	0.000		m Slope 0.9851432
400	0.400	0.398	-	
300	0.300	0.301	2	b Intercept 0.00253530
200				
125	0.126	0.126	2	r Corr. Coeff. 0.99999
80	0.080	0.082	-	

Slope (m) <± 10%
Intercept (b) <± 0.015
Correlation Coefficient (r) > 0.995

%D ± 5% or less - Passed : Millington Station passed the audit 5-23-2001
± Greater than 5% but less than 10% - Passed, but marginally

± 10% or more - Failed audit

2002 Ozone Audit Results

Ozone Audit Form
(O_3)

Agency Maryland

Site Name Millington

Site Location Millington, MD

Airs No. _____ Date 6/20/02

EPA Auditor(s) Victor Guide

Agency Representative Steve Quarles

Analyzer (MFGR/Model/SN DASIBI #1012191

Audit Equipment (MFGR/Model/SN TRI 49C AMS #608

PPB dial setting	x ppm UV photometer	y ppm Inst. respon.	% = Y - X / X x 100	Regression Data
0000	0.000	0.000		m slope
400	0.400	0.403	0.75	1.0058
300				b intercept
200	0.175	0.177	1.10	0.0008
125				r Corr.Coeff.
80	0.070	0.071	1.40	1.0000

Slope (m) <± 10%
Intercept (b) <± 0.015
Correlation Coefficient (r) > 0.995

%D ± 5% or less - Passed
± Greater than 5% but less than 10% - Passed, but marginal
± 10% or more - Failed audit

Millington Station passed the ozone audit conducted on 6/20/02.

2003 Ozone Audit Results

Ozone Audit Form
(O_3)

Agency Maryland

Site Name Millington

Site Location Millington, MD

Airs No. _____ Date 8-19-2003

EPA Auditor(s) Victor Guida

Agency Representative Tom Gronaw

Analyzer (MFGR/Model/SN TEI #1010378

Audit Equipment (MFGR/Model/SN TEI 42PS #75758-30

PPB Dial Setting	x ppm UV photometer	y ppm Inst.Response	% = (y-x)/x x 100	Regression Data
0000	0.000	0.000		m Slope 0.995674409
400	0.402	0.392	2	
300	0.300	0.296	1	b Intercept 0.000213444
250				
125	0.126	0.124	-	r Corr. Coeff. 0.99999
70	0.071	0.070	-	

Slope (m) <± 10%
Intercept (b) <± 0.015
Correlation Coefficient (r) > 0.995

%D ± 5% or less - Passed : Millington Station passed the audit 8-19-03
± Greater than 5% but less than 10% - Passed, but marginal
± 10% or more - Failed audit

Appendix D: Complete Base Year, Attainment and Maintenance Year Inventories

Kent/QA's VOC Peak Ozone Day Emissions

Point Source NOx Emissions								
COUNTY	COMPANY NAME	FACID	DEV	PROID	POL	POL NAME	EM 2002 (tpd)	EM 2014 (tpd)
035	Paul Reed Guitars, LTD.	0042	2	40299996	42603	NOX	0	0
035	Paul Reed Guitars, LTD.	0042	4	40299996	42603	NOX	0	0
035	Paul Reed Guitars, LTD.	0042	3	40299996	42603	NOX	0	0
035	Tidewater Publishing Corp.1	0020	10	40500412	42603	NOX	0	0
035	Tidewater Publishing Corp.1	0020	13	40500412	42603	NOX	0	0
035	Tidewater Publishing Corp.1	0020	11	40500412	42603	NOX	0.00133	0.00167
035	Tidewater Publishing Corp.1	0020	9	40500412	42603	NOX	0.00075	0.00094
035	Tidewater Publishing Corp.1	0020	8	40500412	42603	NOX	0	0
035	Tidewater Publishing Corp.1	0020	12	40500412	42603	NOX	0	0
029	Velsicol Chemical Corp.	0001	23	30182002	42603	NOX	0	0
029	Velsicol Chemical Corp.	0001	22	30199999	42603	NOX	0	0
029	Velsicol Chemical Corp.	0001	24	40799997	42603	NOX	0	0
029	Velsicol Chemical Corp.	0001	25	10200402	42603	NOX	0.014	0.01635
029	Velsicol Chemical Corp.	0001	26	10200402	42603	NOX	0.0265	0.03094
029	Velsicol Chemical Corp.	0001	29	10500113	42603	NOX	0.01	0.01168
029	Velsicol Chemical Corp.	0001	27	10500113	42603	NOX	0.01	0.01168
029	Velsicol Chemical Corp.	0001	28	10500113	42603	NOX	0.0105	0.01226
				TOTAL		NOX	0.07308	0.08552

Point Source VOC Emissions								
COUNTY	COMPANY NAME	FACID	DEV	PROID	POL	POL NAME	EM 2002 (tpd)	EM 2014 (tpd)
035	Paul Reed Guitars, LTD.	0042	1	40299996	43100	VOC	0.01487	0.02126
035	Paul Reed Guitars, LTD.	0042	2	40299996	43100	VOC	0.01487	0.02126
035	Paul Reed Guitars, LTD.	0042	3	40299996	43100	VOC	0.01487	0.02126
035	Paul Reed Guitars, LTD.	0042	4	40299996	43100	VOC	0.01487	0.02126
035	Tidewater Publishing Corp.1	0020	12	40500412	43100	VOC	0.00244	0.00307
035	Tidewater Publishing Corp.1	0020	11	40500412	43100	VOC	0.0115	0.01445
035	Tidewater Publishing Corp.1	0020	10	40500412	43100	VOC	0.00033	0.00041
035	Tidewater Publishing Corp.1	0020	9	40500412	43100	VOC	0.01303	0.01637
035	Tidewater Publishing Corp.1	0020	8	40500412	43100	VOC	0.0004	0.0005
035	Tidewater Publishing Corp.1	0020	13	40500412	43100	VOC	0.00211	0.00265
029	Velsicol Chemical Corp.	0001	23	30182002	43100	VOC	0.0185	0.02176
029	Velsicol Chemical Corp.	0001	22	30199999	43100	VOC	0.005	0.00622
029	Velsicol Chemical Corp.	0001	24	40799997	43100	VOC	0.0025	0.00294
029	Velsicol Chemical Corp.	0001	25	10200402	43100	VOC	0.001	0.00117
029	Velsicol Chemical Corp.	0001	28	10500113	43100	VOC	0.0005	0.00058
029	Velsicol Chemical Corp.	0001	27	10500113	43100	VOC	0.0005	0.00058
					TOTAL	VOC	0.11729	0.15575

Nonroad Source Inventory by Subcategory

Source Subcategory	2002 VOC			2002 NOx			2014 VOC			2014 NOx		
	Kent	Queen Anne's	Total	Kent	Queen Anne's	Total	Kent	Queen Anne's	Total	Kent	Queen Anne's	Total
Agricultural	0.1258	0.1574	0.2831	0.9215	1.1530	2.0746	0.1605	0.2008	0.3613	1.1896	1.4884	2.6780
Commercial	0.0388	0.0959	0.1347	0.0249	0.0617	0.0866	0.0542	0.1340	0.1881	0.0354	0.0875	0.1229
Construction and Mining	0.0318	0.0723	0.1041	0.1923	0.4321	0.6244	0.0387	0.0878	0.1265	0.2544	0.5712	0.8257
Industrial	0.0038	0.0035	0.0073	0.0107	0.0098	0.0205	0.0023	0.0021	0.0044	0.0132	0.0120	0.0253
Lawn and Garden	0.0750	0.1414	0.2164	0.0093	0.0177	0.0271	0.0940	0.1771	0.2710	0.0117	0.0222	0.0339
Pleasure Craft	2.1108	2.1431	4.2539	0.1795	0.1846	0.3641	2.3069	2.3422	4.6491	0.2118	0.2180	0.4297
Recreational	0.6423	0.2633	0.9057	0.0173	0.0093	0.0266	0.7022	0.2879	0.9901	0.0201	0.0106	0.0307
Total	3.0283	2.8769	5.9052	1.3555	1.8682	3.2239	3.3588	3.2319	6.5905	1.7362	2.4099	4.1462

Area Source NOx Inventory by Category

Emission Process Description	Kent NOX 2002	Queen Anne's NOX 2002	TOTAL 2002 NOX	Kent NOX 2014	Queen Anne's NOX 2014	TOTAL 2014 NOX
Emissions from industrial distillate oil combustion.	0.000036	0.000031	0.000067	0.000045	0.000038	0.000084
Emissions from commercial/institutional distillate oil combustion.	0.000126	0.000106	0.000233	0.000092	0.000077	0.000170
Emissions from commercial/institutional residual oil combustion.	0.000005	0.000004	0.000009	0.000005	0.000004	0.000009
Emissions from commercial/institutional natural gas combustion.	0.000317	0.000267	0.000584	0.000403	0.000339	0.000741
Emissions from commercial/institutional LPG combustion.	0.003314	0.004139	0.007453	0.004124	0.005151	0.009275
Emissions from commercial wood combustion.	0.000030	0.000101	0.000131	0.000035	0.000116	0.000151
Emissions from commercial/institutional kerosene combustion.	0.000018	0.000016	0.000034	0.000020	0.000017	0.000037
Emissions from residential coal combustion.	0.000192	0.000306	0.000497	0.000224	0.000356	0.000580
Emissions from residential distillate oil combustion.	0.000174	0.000146	0.000320	0.000116	0.000097	0.000213
Emissions from residential natural gas combustion.	0.000595	0.000500	0.001096	0.000875	0.000736	0.001611
Emissions from residential LPG combustion.	0.014712	0.018376	0.033088	0.014635	0.018280	0.032916
Emissions from residential wood combustion.	0.000181	0.000609	0.000791	0.000182	0.000612	0.000794
Emissions from residential kerosene combustion.	0.000018	0.000015	0.000033	0.000017	0.000015	0.000032
Emissions from military aircraft LTOs	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Emissions from commercial aircraft LTOs	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Emissions from general aviaion aircraft LTOs	0.000010	0.004480	0.004490	0.000016	0.007431	0.007447
Emissions from air taxi aircraft LTOs	0.000000	0.000043	0.000043	0.000000	0.000072	0.000072
Emissions from commercial diesel marine vessels	0.482887	0.794427	1.277315	0.587191	0.966024	1.553215
Emissions from railroad line haul engines	0.005762	0.005071	0.010833	0.002763	0.002431	0.005194
Emissions from railroad yard engines	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Open Burning - Land Clearing Debris	0.010000	0.030000	0.040000	0.011498	0.034494	0.045992
Open Burning - Residential - Household Waste	0.020000	0.060000	0.080000	0.022996	0.068988	0.091984
Emissions from forest fires.	0.001862	0.002260	0.004123	0.001862	0.002260	0.004123
Emissions from slash burning.	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Emissions from prescribed burning.	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
TOTAL	0.54024	0.92090	1.46114	0.64710	1.10754	1.75464

Area Source VOC Inventory by Category

Emission Process Description	Kent VOC 2002	Queen Anne's VOC 2002	TOTAL 2002 VOC	Kent VOC 2014	Queen Anne's VOC 2014	TOTAL 2014 VOC
Emissions from tank truck unloading.	0.014232	0.030580	0.044812	0.015983	0.034341	0.050323
Emissions from industrial distillate oil combustion.	0.000000	0.000000	0.000001	0.000000	0.000000	0.000001
Emissions from industrial residual oil combustion.	0.000000	0.000000	0.000001	0.000001	0.000000	0.000001
Emissions from commercial/institutional distillate oil combustion.	0.000002	0.000002	0.000004	0.000002	0.000001	0.000003
Emissions from commercial/institutional residual oil combustion.	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Emissions from commercial/institutional natural gas combustion.	0.000009	0.000007	0.000016	0.000011	0.000009	0.000021
Emissions from commercial/institutional LPG combustion.	0.000118	0.000148	0.000266	0.000147	0.000184	0.000331
Emissions from commercial wood combustion.	0.002642	0.008873	0.011515	0.003053	0.010251	0.013304
Emissions from commercial/institutional kerosene combustion.	0.000000	0.000000	0.000001	0.000000	0.000000	0.000001
Emissions from residential coal combustion.	0.000211	0.000336	0.000547	0.000246	0.000392	0.000637
Emissions from residential distillate oil combustion.	0.000007	0.000006	0.000013	0.000005	0.000004	0.000008
Emissions from residential natural gas combustion.	0.000046	0.000039	0.000085	0.000068	0.000057	0.000124
Emissions from residential LPG combustion.	0.000525	0.000656	0.001182	0.000523	0.000653	0.001176
Emissions from residential wood combustion.	0.015979	0.053656	0.069635	0.016043	0.053870	0.069913
Emissions from residential kerosene combustion.	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001
Emissions from general aviaion aircraft LTOs	0.000058	0.026363	0.026421	0.000096	0.043725	0.043822
Emissions from air taxi aircraft LTOs	0.000000	0.000335	0.000335	0.000000	0.000556	0.000556
Emissions from aircraft refueling.	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Emissions from commercial diesel marine vessels	0.016392	0.026967	0.043359	0.019932	0.032792	0.052725
Emissions from railroad line haul engines	0.090449	0.079595	0.170044	0.043370	0.038166	0.081536
Emissions from railroad yard engines	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Emissions from small bakeries.	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Emissions from small breweries	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Emissions from solvent-based architectural surface coatings.	0.047887	0.104586	0.152473	0.053514	0.116875	0.170389
Emissions from water-based architectural surface coatings.	0.042271	0.092320	0.134591	0.047238	0.103168	0.150406
Emissions from automobile refinishing.	0.072344	0.072344	0.144688	0.093230	0.093230	0.186459
Emissions from traffic paints.	0.020215	0.021215	0.041430	0.022590	0.023708	0.046298
Emissions from traffic paint solvents.	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Emissions from surface coatings of finished wood products.	0.001512	0.046858	0.048369	0.003997	0.123920	0.127917
Emissions from surface coatings of metal furniture & fixtures.	0.043569	0.009077	0.052646	0.121149	0.025239	0.146388
Emissions from surface coatings of metal cans.	0.049033	0.107088	0.156120	0.122336	0.267183	0.389519
Emissions from surface coatings of misc. metals.	0.018859	0.041188	0.060046	0.047064	0.102788	0.149851
Emissions from surface coatings of machinery & equipment.	0.007108	0.007404	0.014512	0.008123	0.008462	0.016585
Emissions from surface coatings of marine.	0.005923	0.009477	0.015400	0.014882	0.023811	0.038693
Emissions from surface coatings - misc. manufacturing.	0.022630	0.049425	0.072055	0.052353	0.114340	0.166693
Emissions from surface coatings for industrial maintenance.	0.024139	0.052720	0.076859	0.042820	0.093520	0.136340
Emissions from surface coatings - other categories.	0.024139	0.052720	0.076859	0.026975	0.058915	0.085890
Emissions from surface coatings of all categories.	0.000000	0.001615	0.001615	0.000000	0.002154	0.002154
Emissions from cold cleaning solvents.	0.062711	0.136962	0.199673	0.140931	0.307795	0.448726
Emissions from graphic arts.	0.021257	0.016625	0.037881	0.031366	0.024531	0.055897
Emissions from emulsified asphalt.	0.000151	0.000330	0.000480	0.000227	0.000496	0.000723
Emissions from pesticide application.	0.518161	0.732336	1.250497	0.441939	0.624609	1.066549
Emissions from commercial/consumer solvents.	0.189682	0.414267	0.603949	0.218096	0.476324	0.694421

Area Source VOC Inventory by Category						
Emission Process Description	**Kent VOC 2002**	**Queen Anne's VOC 2002**	**TOTAL 2002 VOC**	**Kent VOC 2014**	**Queen Anne's VOC 2014**	**TOTAL 2014 VOC**
Emissions from Stage II refueling.	0.079230	0.168091	0.247320	0.088975	0.188766	0.277741
Emissions from underground tank breathing.	0.015141	0.032533	0.047675	0.017004	0.036535	0.053539
Emissions from tank trucks in transit.	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Open Burning - Yard Waste - Leaf Species Unspecified	0.002000	0.010000	0.012000	0.002300	0.011498	0.013798
Open Burning- Yard Waste - Brush Species Unspecified	0.001000	0.004000	0.005000	0.001150	0.004599	0.005749
Open Burning - Land Clearing Debris	0.020000	0.060000	0.080000	0.022996	0.068988	0.091984
Open Burning - Residential - Household Waste	0.100000	0.280000	0.380000	0.114980	0.321944	0.436924
Emissions from solid waste landfills.	0.010000	0.010000	0.020000	0.013750	0.013750	0.027500
Emissions from POTWs.	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Emissions from soil/groundwater remediation.	0.010000	0.010000	0.020000	0.013750	0.013750	0.027500
Emissions from forest fires.	0.002794	0.003390	0.006184	0.002794	0.003390	0.006184
Emissions from slash burning.	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Emissions from prescribed burning.	0.002229	0.002722	0.004951	0.002229	0.002722	0.004951
Emissions from catastrophic/accidental releases/oil spills.	0.000024	0.000128	0.000152	0.000027	0.000147	0.000174
Emissions from military aircraft LTOs	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Emissions from commercial aircraft LTOs	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Total	1.554679	2.776984	4.331663	1.868266	3.472161	5.340426