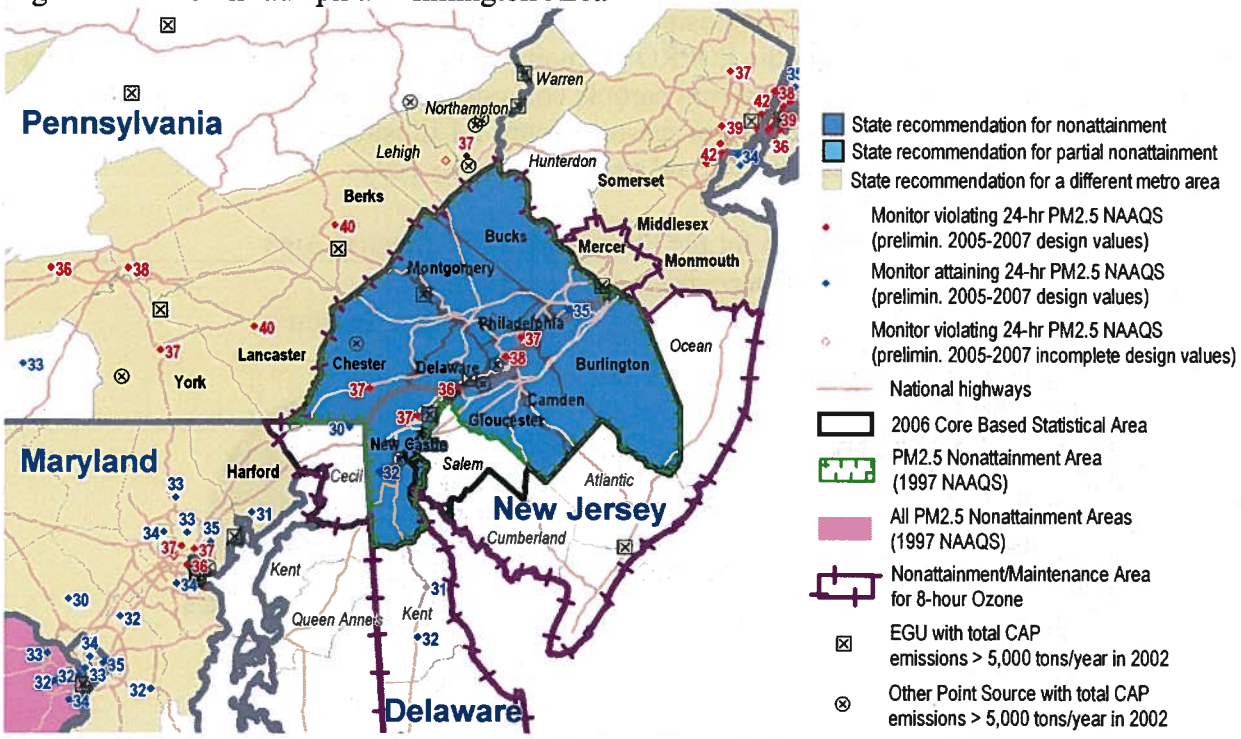
EPA Technical Analysis for Philadelphia-Wilmington Area

Pursuant to section 107(d) of the Clean Air Act, EPA must designate as nonattainment those areas that violate the NAAQS and those areas that contribute to violations. This technical analysis for the Philadelphia-Wilmington area identifies the counties with monitors that violate the 2006 24-hour $PM_{2.5}$ standard and evaluates the counties that potentially contribute to fine particle concentrations in the area. EPA has evaluated these counties based on the weight of evidence of the following nine factors recommended in EPA guidance and any other relevant information:

- pollutant emissions
- air quality data
- population density and degree of urbanization
- traffic and commuting patterns
- growth
- meteorology
- geography and topography
- jurisdictional boundaries
- level of control of emissions sources

Figure 1.0 is a map which identifies the counties in the Philadelphia-Wilmington area and provides other relevant information such as the locations and design values of air quality monitors, the metropolitan area boundary, and counties recommended as nonattainment by the States.

Figure 1.0. The Philadelphia-Wilmington Area



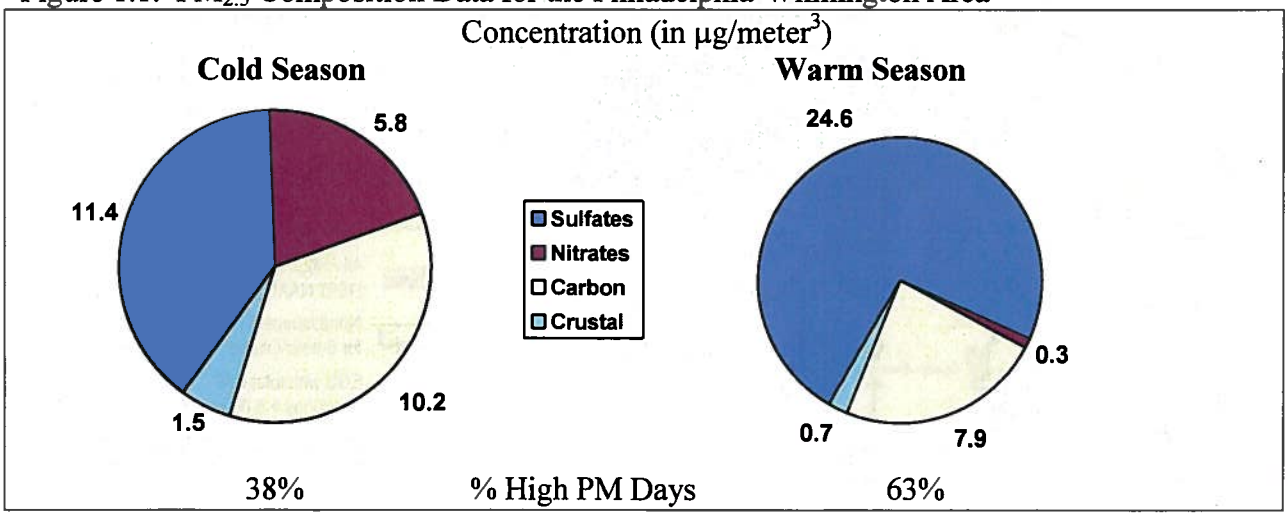
For this area, EPA previously established $PM_{2.5}$ nonattainment boundaries for the 1997 $PM_{2.5}$ NAAQS that included nine full counties, with five counties in Pennsylvania, one county in Delaware, and three counties in New Jersey.

In December 2007, the Commonwealth of Pennsylvania recommended that Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties be designated as "nonattainment" for the 2006 24-hour $PM_{2.5}$ standard based on air quality data from 2004-2006. In addition, the State of New Jersey recommended that Burlington, Camden, and Gloucester Counties be designated as "nonattainment" and included in the Philadelphia-Wilmington area for the 2006 24-hour $PM_{2.5}$ standard. Pennsylvania and New Jersey's recommended boundaries are the same as the previously established nonattainment boundaries for the 1997 $PM_{2.5}$ NAAQS. These data are from Federal Reference Method (FRM) and Federal Equivalent Method (FEM) monitors located in Pennsylvania and New Jersey. (See the December 28, 2007 letter from the Pennsylvania Department of Environmental Protection to EPA, received on January 3, 2008 and the December 18, 2007 letter from the New Jersey Department of Environmental Protection to EPA.)

In December 2007, the State of Delaware recommended that New Castle County be designated as "nonattainment" for the 2006 24-hour $PM_{2.5}$ standard based on air quality data from 2004-2006. However, the State of Delaware requested that New Castle County be a separate nonattainment area, and not included in the Philadelphia-Wilmington area. This recommendation deviates from the previously established nonattainment boundaries for the 1997 $PM_{2.5}$ NAAQS. These data are from FRM and FEM monitors located in the state. (See the December 18, 2007 letter from Ruth Ann Minner, Governor of Delaware to EPA, received on December 19, 2008.)

Air quality monitoring data on the composition of fine particle mass are available from the EPA Chemical Speciation Network and the IMPROVE monitoring network. Analysis of these data indicates that the days with the highest fine particle concentrations occur in both the cold and warm seasons, but more often in the warm season. Figure 1.1 illustrates average concentrations of $PM_{2.5}$ components for both warm and cold season high $PM_{2.5}$ days.

Figure 1.1. $PM_{2.5}$ Composition Data for the Philadelphia-Wilmington Area



Based on EPA's 9-factor analysis described below, EPA proposes that the same counties as previously designated nonattainment for the 1997 $PM_{2.5}$ NAAQS should be designated nonattainment for the 2006 24-hour $PM_{2.5}$ air-quality standard as part of the Philadelphia-Wilmington nonattainment area, based upon currently available information. These counties are listed in the table below.

Philadelphia-Wilmington Area	State-Recommended Nonattainment Counties	EPA-Recommended Nonattainment Counties
Pennsylvania	Bucks County Chester County Delaware County Montgomery County Philadelphia County	Bucks County Chester County Delaware County Montgomery County Philadelphia County
Delaware	None – see note	New Castle County
Note: The State of Delaware recommended that New Castle County be designated nonattainment as a separate single-county nonattainment area, rather than as part of the Philadelphia nonattainment area.		

The following is a summary of the 9-factor analysis for the EPA Region III portion of the Philadelphia-Wilmington area.

Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties in Pennsylvania; and New Castle County in Delaware were included in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS, along with Camden, Burlington, and Gloucester Counties in New Jersey. These counties (plus additional counties in Delaware, Maryland, and New Jersey) are also included in the Philadelphia-Wilmington-Atlantic City 8-hour ozone nonattainment area. Bucks, Chester, Delaware, Montgomery, Philadelphia, and New Castle Counties were also included in the Philadelphia-Wilmington-Trenton severe 1-hour ozone nonattainment area, which is no longer subject to the 1-hour ozone standard.

Air quality monitors in Philadelphia, Chester, Delaware, and New Castle Counties show violations of the 2006 24-hour $PM_{2.5}$ NAAQS, based on 2005-2007 data. In addition, an air quality monitor in Camden County, NJ shows a violation of the 2006 24-hour $PM_{2.5}$ NAAQS, based on 2005-2007 data. Meteorological data shows that the predominant wind direction in the Philadelphia-Wilmington nonattainment area is from the southwest. This means that pollution from New Castle County, DE; Delaware County, PA; and Chester County, PA, as well as other areas further southwest, contribute to violations at the Philadelphia County, PA and Camden County, NJ air quality monitors, which are downwind, to their northeast.

Bucks, Chester, Delaware, Montgomery, Philadelphia, and New Castle Counties have higher emissions than most other nearby counties. One notable exception is York County, which is part of the York nonattainment area for the 1997 $PM_{2.5}$ NAAQS, and has been recommended for inclusion in that nonattainment area for the 2006 $PM_{2.5}$ NAAQS. Bucks, Chester, Delaware, Montgomery, Philadelphia, and New Castle Counties also contribute to the particulate matter concentrations in the Philadelphia-Wilmington nonattainment area through population-based emissions (e.g., vehicle emissions and other small area sources). These counties (as well as the

New Jersey counties that are part of the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS) have higher populations, population densities, and vehicle miles traveled (VMT) than the other nearby counties. Some exceptions are several counties that are included in other nonattainment areas for the 1997 $PM_{2.5}$ NAAQS and have been recommended for inclusion in those same nonattainment areas for the 2006 $PM_{2.5}$ NAAQS. Bucks, Chester, Delaware, Montgomery, Philadelphia, and New Castle Counties also have considerably more commuters into and within the Philadelphia area than other nearby counties.

In her December 18, 2007 designation recommendation letter, Governor Minner of Delaware recommended that New Castle County be a separate nonattainment area, and not be included in the Philadelphia-Wilmington area. Governor Minner made numerous arguments to justify excluding New Castle County from the Philadelphia-Wilmington area. EPA addresses these arguments in detail in the 9-factor analysis. The following is a brief summary of Delaware's main arguments and EPA's response.

Delaware: Only one of the three monitors in New Castle County shows a violation of the standard, and monitors in Pennsylvania, Maryland, and New Jersey near New Castle County are not monitoring violations.

EPA: Using 2004-2006 data, the monitors near New Castle County did meet the standard. However, considering 2005-2007 data, monitors in Chester and Delaware Counties in Pennsylvania, which border New Castle County, are violating the standard.

Delaware: The nonattainment problem in New Castle County is due to local emissions and long-range transport of pollutants. Furthermore, emissions from New Castle County do not contribute to nonattainment in other parts of the Philadelphia-Wilmington area.

EPA: There is a local component to the nonattainment problem in New Castle County. However, meteorological data indicates that emissions from New Castle County are transported by the prevailing southwesterly winds to the rest of the Philadelphia-Wilmington nonattainment area. Therefore, New Castle County is contributing to the nonattainment problem in the Philadelphia-Wilmington area.

Delaware: By 2012, New Castle County will achieve a 75% reduction in sulfur dioxide (SO_2) emissions and a 62% reduction in nitrogen oxides (NOx) emissions due to state and federal programs. In 2012, the county will have the second highest emissions in the Philadelphia-Wilmington area.

EPA: EPA used 2005 emissions data in this analysis. In 2005, Delaware had the highest emissions of all the counties in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS. In this designation process, EPA is only considering emission controls in place and federally enforceable at the time of designation, i.e., by December 2008. Therefore, planned controls are not being considered in this analysis. However, emissions at the former Motiva facility in New Castle County have been greatly reduced since 2005. Even with this reduction, New Castle County's SO_2 emissions are still the

highest of all the counties in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS.

Delaware: Delaware did not develop a joint air quality plan for the 1997 $PM_{2.5}$ standard, and does not anticipate the need to do so for the 2006 $PM_{2.5}$ standard. The regional planning organizations (RPOs) which include Delaware, Pennsylvania, and New Jersey are already working together regarding visibility planning, and joint efforts among the states would increase the administrative burden.

EPA: New Castle County has historically been part of the Philadelphia nonattainment area for ozone and $PM_{2.5}$. Delaware, Pennsylvania, and New Jersey have a long history of working cooperatively with ozone and PM attainment planning. EPA believes that including New Castle County as part of the Philadelphia-Wilmington nonattainment area for the 2006 $PM_{2.5}$ NAAQS will not be an undue burden on Delaware.

For the above stated reasons, EPA Region III has determined that Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties in Pennsylvania; and New Castle County in Delaware should be included in the Philadelphia-Wilmington nonattainment area for the 2006 $PM_{2.5}$ NAAQS. Details of EPA's technical 9-factor analysis follow.

This technical analysis will focus on the existing Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS and a ring of counties surrounding that area. Therefore, counties that are beyond that ring of counties surrounding the Philadelphia-Wilmington area will be excluded from further analysis. In addition, if a county is part of another existing nonattainment area for the 1997 $PM_{2.5}$ NAAQS and the state has recommended including it in that other nonattainment area for the 2006 $PM_{2.5}$ NAAQS, that county will not be included in this analysis. Accordingly, the following counties will be excluded from further consideration for inclusion in the Philadelphia-Wilmington nonattainment area.

Counties, State	Reasons for Exclusion from Further Analysis
York, PA	York County is part of the York nonattainment area for the 1997 $PM_{2.5}$ NAAQS and has been recommended for inclusion in the York nonattainment area for the 2006 $PM_{2.5}$ NAAQS. In addition, York County is not part of the contiguous ring of counties surrounding the existing Philadelphia-Wilmington nonattainment area.
Lancaster, PA	Lancaster County is part of the Lancaster nonattainment area for the 1997 $PM_{2.5}$ NAAQS and has been recommended for inclusion in the Lancaster nonattainment area for the 2006 $PM_{2.5}$ NAAQS.
Berks, PA	Berks County is part of the Reading nonattainment area for the 1997 $PM_{2.5}$ NAAQS and has been recommended for inclusion in the Reading nonattainment area for the 2006 $PM_{2.5}$ NAAQS.
Harford, MD	Harford County is part of the Baltimore nonattainment area for the 1997 $PM_{2.5}$ NAAQS and has been recommended for inclusion in the Baltimore nonattainment area for the 2006 $PM_{2.5}$ NAAQS. In addition, Harford County is not part of the contiguous ring of counties surrounding the existing Philadelphia-Wilmington nonattainment area.

Mercer, NJ Middlesex, NJ Monmouth, NJ Somerset, NJ	Mercer, Middlesex, Monmouth, and Somerset Counties in New Jersey are part of the New York-New Jersey-Long Island nonattainment area for the 2006 $PM_{2.5}$ NAAQS and have been recommended for inclusion in that nonattainment area for the 2006 $PM_{2.5}$ NAAQS. Furthermore, Middlesex and Somerset Counties are not part of the contiguous ring of counties surrounding the existing Philadelphia-Wilmington nonattainment area.

Data for these counties will be included in the tables for the remaining factors. However, no analysis will be conducted regarding that data.

Factor 1: Emissions Data

For this factor, EPA evaluated county level emission data for the following $PM_{2.5}$ components and precursor pollutants: "$PM_{2.5}$ emissions total," "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other," "SO_2," "NO_x," "VOCs," and "NH_3." "$PM_{2.5}$ emissions total" represents direct emissions of $PM_{2.5}$ and includes: "$PM_{2.5}$ emissions carbon," "$PM_{2.5}$ emissions other," primary sulfate (SO_4), and primary nitrate. (Although primary sulfate and primary nitrate, which are emitted directly from stacks rather than forming in atmospheric reactions with SO_2 and NO_x, are part of "$PM_{2.5}$ emissions total," they are not shown in Table 1.0 as separate items). "$PM_{2.5}$ emissions carbon" represents the sum of organic carbon (OC) and elemental carbon (EC) emissions, and "$PM_{2.5}$ emissions other" represents other inorganic particles (crustal). Emissions of SO_2 and NO_x, which are precursors of the secondary $PM_{2.5}$ components sulfate and nitrate, are also considered. VOCs (volatile organic compounds) and NH_3 (ammonia) are also potential $PM_{2.5}$ precursors and are included for consideration.

Emissions data were derived from the 2005 National Emissions Inventory (NEI), version 1. See http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

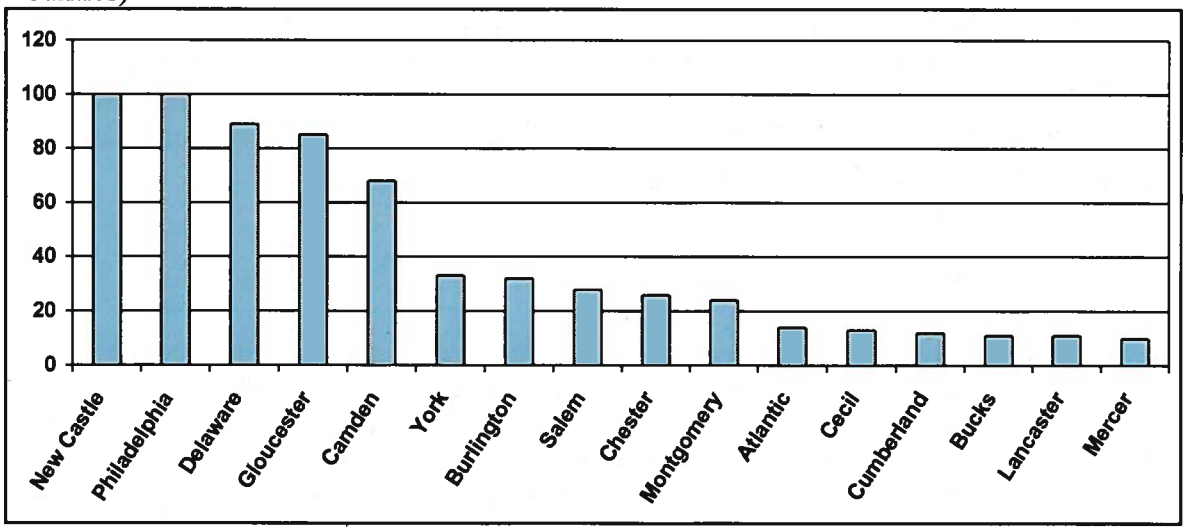
EPA also considered the Contributing Emissions Score (CES) for each county. The CES is a metric that takes into consideration emissions data, meteorological data, and air quality monitoring information to provide a relative ranking of counties in and near an area. Note that this metric is not the exclusive way for consideration of data for these factors. A summary of the CES is included in Enclosure 2, and a more detailed description can be found at: http://www.epa.gov/ttn/naaqs/pm/pm25_2006_techinfo.html.

Table 1.0 shows emissions of $PM_{2.5}$ and precursor pollutants components (given in tons per year) and the CESs for violating and potentially contributing counties in the Philadelphia-Wilmington area. Counties that are part of the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface. Counties are listed in descending order by CES. Figure 1.2 is a graphic representation of the higher CES values set forth in Table 1.0.

Table 1.0. $PM_{2.5}$ Related Emissions and Contributing Emissions Score

County	State Recommended Nonattainment?	CES	$PM_{2.5}$ emissions total (tpy)	$PM_{2.5}$ emissions carbon (tpy)	$PM_{2.5}$ emissions other (tpy)	SO_2 (tpy)	NOx (tpy)	VOCs (tpy)	NH_3 (tpy)
New Castle, DE	**Yes - other area**	**100**	**2,394**	**891**	**1,504**	**50,955**	**28,291**	**19,269**	**1,699**
Philadelphia, PA	**Yes**	**100**	**2,506**	**1,248**	**1,258**	**11,293**	**38,733**	**35,230**	**1,299**
Delaware, PA	**Yes**	**89**	**2,454**	**865**	**1,589**	**20,356**	**32,904**	**20,250**	**956**
Gloucester, NJ	**Yes**	**85**	**1,607**	**677**	**930**	**7,116**	**12,711**	**14,140**	**813**
Camden, NJ	**Yes**	**68**	**971**	**597**	**374**	**1,839**	**13,852**	**14,126**	**780**
Burlington, NJ	**Yes**	**32**	**1,960**	**1,137**	**822**	**3,368**	**15,570**	**20,312**	**980**
Chester, PA	**Yes**	**26**	**2,124**	**799**	**1,325**	**7,990**	**16,507**	**19,666**	**2,563**
Montgomery, PA	**Yes**	**24**	**2,597**	**1,118**	**1,477**	**5,411**	**23,306**	**37,216**	**1,535**
Bucks, PA	**Yes**	**11**	**2,022**	**876**	**1,146**	**3,951**	**16,792**	**26,241**	**1,834**
York, PA	Yes - other area	33	7,614	1,217	6,396	118,621	32,214	18,478	3,913
Salem, NJ	No	28	1,233	314	919	5,947	7,241	4,062	828
Atlantic, NJ	No	14	1,664	1,045	619	752	7,310	19,538	564
Cecil. MD	No	13	870	446	425	1,298	3,962	5,853	749
Cumberland, NJ	No	12	952	440	513	3,196	6,526	6,758	483
Lancaster. PA	Yes - other area	11	3,258	1,159	2,099	4,017	16,396	26,407	16,486
Mercer, NJ	Yes - other area	10	1,658	579	1,079	17,891	17,640	9,278	475
Berks, PA	Yes - other area	9	3,378	922	2,456	18,874	18,086	19,117	4,653
Harford, MD	Yes - other area	9	1,769	879	890	2,307	7,310	10,512	967
Kent, DE	No	7	1,014	435	580	4,478	9,088	6,301	1,803
Ocean, NJ	No	5	1,540	993	547	1,060	9,578	25,720	569
Northampton, PA	Yes - other area	4	5,222	665	4,556	60,396	24,620	10,960	807
Middlesex, NJ	Yes - other area	3	1,549	951	598	3,129	29,172	28,056	1,257
Kent, MD	No	2	443	162	282	471	1,002	2,225	1,050
Lehigh, PA	Yes - other area	2	1,328	501	828	3,749	11,503	13,369	904
Monmouth, NJ	Yes - other area	2	1,506	989	517	1,789	16,771	20,744	1,345
Queen Anne's, MD	No	2	659	261	398	479	2,076	3,290	1,365
Hunterdon, NJ	No	1	769	454	316	556	3,882	5,053	395
Somerset, NJ	Yes - other area	1	801	451	349	577	7,886	9,823	532
Warren, NJ	Yes - other area	0	1,105	588	517	563	5,088	5,468	747

Figure 1.2. CES Values for the Philadelphia-Wilmington Area (Including Non-Contiguous Counties)



As shown above in Table 1.0 and Figure 1.2, both New Castle County, DE and Philadelphia County, PA haves CES values of 100. While in 2005 these counties had similar $PM_{2.5}$ emissions, New Castle had much higher SO_2 emissions. Note that York County, PA has the highest SO_2 emissions, but a moderate CES of 33. In addition, York County is part of the York nonattainment area for the 1997 $PM_{2.5}$ NAAQS and Pennsylvania has recommended that it be included in the York nonattainment area for the 2006 $PM_{2.5}$ NAAQS. Northampton County, PA also has relatively high SO_2 emissions, but a low CES of four. This low CES is due partly to the fact that the prevailing winds in this part of Pennsylvania are from the southwest, and Northampton County is north of the Philadelphia-Wilmington area.

Delaware County, PA and Gloucester County, NJ have the next highest CESs, at eighty-nine and eighty-five, respectively. Delaware County's emissions are considerably higher than Gloucester Counties. However, as shown in Figure 1.0, large point sources are located in Gloucester County, directly upwind of the violating monitors in Camden and Philadelphia Counties.

Camden County has a CES of sixty-eight. Of the counties in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS, Camden County has the lowest emissions. However, it has a violating monitor.

Burlington and Salem Counties in New Jersey and Chester and Montgomery Counties in Pennsylvania have CES values between twenty and thirty-two. Of those four counties, Salem County has the second highest SO_2 emissions, but the lowest $PM_{2.5\text{-total}}$, $PM_{2.5\text{-carbon}}$, NOx, VOC, and NH_3 emissions. Burlington, Chester, and Montgomery Counties are in the Philadelphia-Wilmington nonattainment areas for the 1997 $PM_{2.5}$ NAAQS, and New Jersey and Pennsylvania have recommended that those counties be included in the Philadelphia-Wilmington nonattainment areas for the 2006 $PM_{2.5}$ NAAQS.

Of the remaining counties with CESs greater than ten, Lancaster County, PA and Mercer County, NJ are part of exiting nonattainment areas for the 1997 $PM_{2.5}$ NAAQS, the Lancaster and New York areas, respectively. New Jersey and Pennsylvania have recommended that those counties be included in the same nonattainment areas for the 2006 $PM_{2.5}$ NAAQS.

Cecil County, MD (CES = 13) has lower total $PM_{2.5}$, carbon $PM_{2.5}$, SO_2, NOx, VOC, and NH_3 emissions than the counties in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS. Atlantic County, NJ (CES = 14) has lower SO_2, NOx, and NH_3 emissions than the counties in the 1997 $PM_{2.5}$ NAAQS Philadelphia-Wilmington nonattainment area, but mid-range total $PM_{2.5}$ and VOC emissions, and high carbon $PM_{2.5}$ emissions.

Factor 2: Air Quality Data

This factor considers the 24-hour $PM_{2.5}$ design values (in $\mu g/m^3$) for air quality monitors in counties in the Philadelphia-Wilmington area based on data for the 2005-2007 period. A monitor's design value indicates whether that monitor attains a specified air quality standard. The 24-hour $PM_{2.5}$ standard is met when the 3-year average of a monitor's 98^{th} percentile values is 35 $\mu g/m^3$ or less. A design value is only valid if minimum data completeness criteria are met.

The 24-hour $PM_{2.5}$ design values for violating monitors and potentially contributing counties in the Philadelphia-Wilmington area are shown in Table 2.0. Counties that are part of the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface.

Table 2.0 Air Quality Data

County	State Recommended Nonattainment?	24-hr $PM_{2.5}$ Design Values, 2003-2005 ($\mu g/m^3$)	24-hr $PM_{2.5}$ Design Values, 2004-2006 ($\mu g/m^3$)	24-hr $PM_{2.5}$ Des Values, 2005-2007 ($\mu g/m^3$)
New Castle, DE	**Yes - other area**	**37**	**37**	**37**
Philadelphia, PA	**Yes**	**38**	**36**	**38**
Delaware, PA	**Yes**	**35**	**35**	**36**
Gloucester, NJ	**Yes**	**32**		
Camden, NJ	**Yes**	**39**	**37**	**38**
Burlington, NJ	**Yes**	**No monitor**		
Chester, PA	**Yes**			**37**
Montgomery, PA	**Yes**	**Incomplete data**		
Bucks, PA	**Yes**		**33**	**35**
York, PA	Yes - other area	41	37	37
Salem, NJ	No	No monitor		
Atlantic, NJ	No	No monitor		
Cecil. MD	No	33	30	30
Cumberland, NJ	No	No monitor		
Lancaster. PA	Yes - other area	44	39	40
Mercer, NJ	Yes - other area	36	34	
Berks, PA	Yes - other area	39	37	38
Harford, MD	Yes - other area	34	31	31
Kent, DE	No	32	32	32
Ocean, NJ	No	34	31	
Northampton, PA	Yes - other area	36	37	37
Middlesex, NJ	Yes - other area	38	34	
Kent, MD	No	No monitor		
Lehigh, PA	Yes - other area	36		
Monmouth, NJ	Yes - other area	No monitor		
Queen Anne's, MD	No	No monitor		
Hunterdon, NJ	No	No monitor		
Somerset, NJ	Yes - other area	No monitor		
Warren, NJ	Yes - other area		34	
Note: Design values shown in red represent violations of the standard				

Note: Eligible monitors for providing design value data generally include State and Local Air Monitoring Stations (SLAMS) at population-oriented locations with a FRM or FEM monitor. All data from Special Purpose Monitors (SPM) using an FRM, FEM, or Alternative Reference Method (ARM) which has operated for more than 24 months is eligible for comparison to the relevant NAAQS, subject to the requirements given in the October 17, 2006 Revision to Ambient Air Monitoring Regulations (71 FR 61236). All monitors used to provide data must meet the monitor siting and eligibility requirements given in 71 FR 61236 to 61328 in order to be acceptable for comparison to the 2006 24-hr $PM_{2.5}$ NAAQS for designation purposes.

The data above in Table 2.0 shows that, of the counties already in existing nonattainment areas for the 1997 $PM_{2.5}$ NAAQS and recommended for inclusion in these same nonattainment areas for the 2006 $PM_{2.5}$ NAAQS in EPA Region III, New Castle County in Delaware and

Philadelphia, Chester and Northampton Counties in Pennsylvania show violations of the 2006 24-hour $PM_{2.5}$ standard. Therefore, these counties are candidates for inclusion in the Philadelphia-Wilmington nonattainment area. However, Pennsylvania has recommended that Northampton County be included in the Allentown nonattainment area for the 2006 $PM_{2.5}$ NAAQS. (See Table 2.0.)

The absence of a violating monitor alone is not a sufficient reason to eliminate counties as candidates for nonattainment status. Each county has been evaluated based on the weight of evidence of the nine factors and other relevant information.

The State of Delaware has recommended that New Castle County, which was included in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS, not be included in the Philadelphia-Wilmington nonattainment area for the 2006 $PM_{2.5}$ NAAQS. Delaware's recommendation is based, in part, on monitoring data from counties surrounding New Castle County. In her December 18, 2007 recommendation letter, Governor Minner states that only one of the three monitors in New Castle County, the downtown Wilmington monitor known as the MLK monitor (located on Martin Luther King Boulevard in downtown Wilmington), shows a violation of the standard, and that monitors in Pennsylvania, Maryland, and New Jersey near New Castle County are not monitoring violations. "These other monitors are placed in areas which represent most of the compass, thereby "encircling" the MLK monitor with "clean" ones. Moreover, the closest monitor above the standard is in Center City Philadelphia (Broad Street), which is about 30 miles away from the MLK monitor."

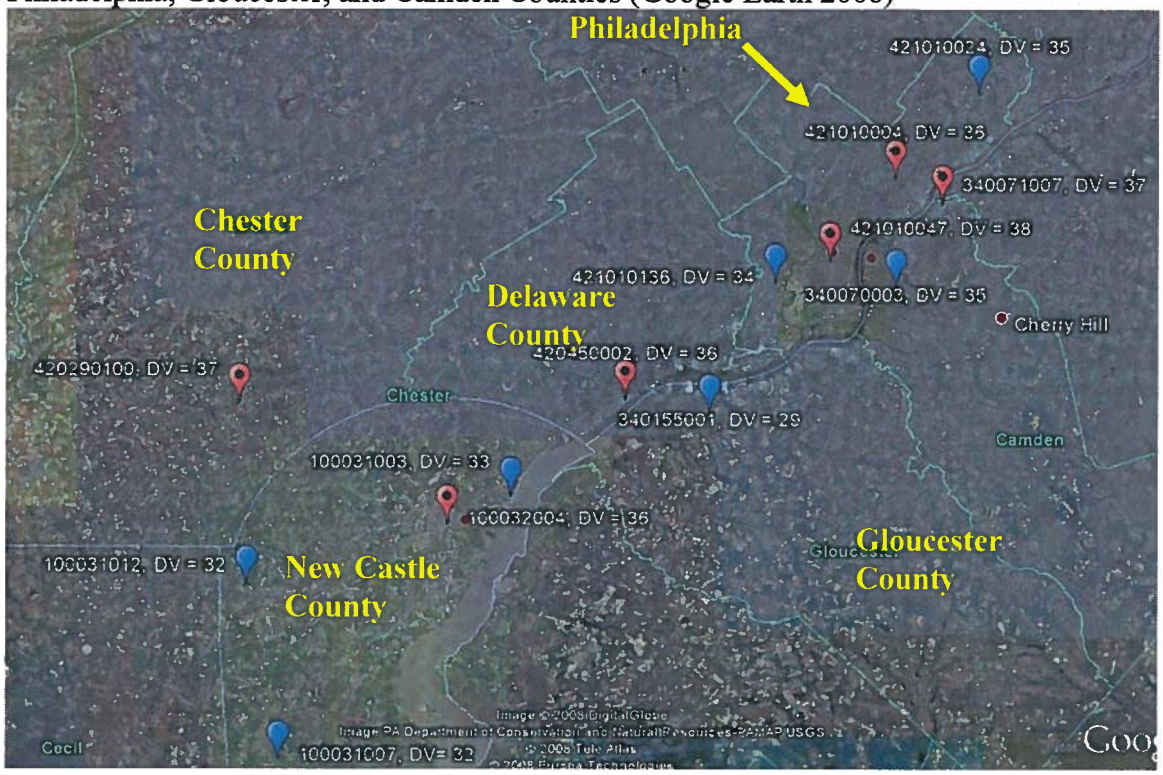
Using 2004-2006 data, the monitors near New Castle County did meet the standard. However, considering 2005-2007 data, monitors in Chester and Delaware Counties in Pennsylvania, which border New Castle County, are violating the standard. Table 2.1 shows the 2004-2006 and 20052007 design values and locations for the air quality monitors in New Castle, Chester, Philadelphia, Gloucester, and Camden Counties. Figure 2.2 maps out the locations of those air quality monitors.

Table 2.1. Design Values in New Castle, Chester, Philadelphia, Gloucester & Camden Counties

County, State	Monitor AQS ID	Location	2004 – 2006 Design Value $\mu g/m^3$	2005 – 2007 Design Value $\mu g/m^3$
New Castle, DE	100031003	River Road Park, Bellefonte	33	33
	100031007	Lums Pond State Park, Lums Pond	32	32
	100031012	Univ. De North Campus, Newark	32	32
	100032004	Mlk Blvd And Justison St., Wilmington	36	36
Chester, PA	420290100	New Garden Airport, Toughkenamon	35	37
Delaware, PA	420450002	Front St & Norris St, Chester	35	36
Philadelphia, PA	421010004	1501 E Lycoming Ave, Philadelphia	36	36
	421010024	Grant Ave & Ashton Rd, Philadelphia	35	35
	421010047	500 South Broad Street, Philadelphia	37	38
	421010136	5917 Elmwood Avenue, Philadelphia	33	34
Camden, NJ	340070003	Copewood & E. Davis Sts, Camden	36	35
	340071007	Morris-Delair Water Treatment Plant, Pennsauken	37	37

Gloucester, NJ	340155001	Gibbstown Municipal Bldg, 5, Gibbstown	29	29
Note: Design values shown in red represent violations of the standard				

Figure 2.0. Air Quality Monitors and 2005-2007 Design Values in New Castle, Chester, Philadelphia, Gloucester, and Camden Counties (Google Earth 2008)



Factor 3: Population Density and Degree of Urbanization (Including Commercial Development)

Table 3.0 shows the 2005 population for each county being evaluated, as well as the population densities for those counties. Population data gives an indication of whether it is likely that population-based emissions might contribute to violations of the 2006 24-hour $PM_{2.5}$ standard.

Table 3.0. Population

County	State Recommended Nonattainment?	2005 Population	2005 Population Density (pop/sq mi)
New Castle, DE	**Yes - other area**	**522,094**	**1077**
Philadelphia, PA	**Yes**	**1,456,350**	**10220**
Delaware, PA	**Yes**	**554,393**	**2910**
Gloucester, NJ	**Yes**	**277,037**	**823**
Camden, NJ	**Yes**	**515,381**	**2272**
Burlington, NJ	**Yes**	**449,148**	**548**
Chester, PA	**Yes**	**473,723**	**624**
Montgomery, PA	**Yes**	**774,666**	**1591**

Bucks, PA	**Yes**	**619,772**	**998**
York, PA	Yes - other area	408,182	449
Salem, NJ	No	66,054	190
Atlantic, NJ	No	270,318	444
Cecil. MD	No	97,474	257
Cumberland, NJ	No	152,905	304
Lancaster. PA	Yes - other area	489,936	499
Mercer, NJ	Yes - other area	366,070	1601
Berks, PA	Yes - other area	396,236	458
Harford, MD	Yes - other area	238,850	519
Kent, DE	No	143,462	240
Ocean, NJ	No	558,170	738
Northampton, PA	Yes - other area	287,334	762
Middlesex, NJ	Yes - other area	789,283	2487
Kent, MD	No	19,908	67
Lehigh, PA	Yes - other area	330,168	948
Monmouth, NJ	Yes - other area	634,841	1308
Queen Anne's, MD	No	45,469	115
Hunterdon, NJ	No	130,042	297
Somerset, NJ	Yes - other area	319,830	1049
Warren, NJ	Yes - other area	110,317	305

In general, the data above in Table 3.0 shows that the counties in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS have higher populations and population densities than the other counties in this analysis. Some exceptions are several counties that were included in other nonattainment areas for the 1997 $PM_{2.5}$ NAAQS and have been recommended for inclusion in those same nonattainment areas for the 2006 $PM_{2.5}$ NAAQS. Other counties with populations comparable to the counties in the existing Philadelphia-Wilmington $PM_{2.5}$ nonattainment area are Lehigh and Northampton Counties in Pennsylvania and Ocean County in New Jersey. Pennsylvania has recommended that Lehigh and Northampton Counties be included in the Allentown-Bethlehem-Easton nonattainment area for the 2006 $PM_{2.5}$ NAAQS.

In the December 18, 2007 recommendation letter, Governor Minner states that in 2006, Philadelphia's population density, 10,729, is almost nine times that of New Castle County, 1,234, and that population density does not necessarily reflect ambient concentrations of $PM_{2.5}$. Governor Minner goes on to compare population density in New Castle County with that of Philadelphia, Delaware, and Montgomery counties where, considering 2004-2006 data, certain monitors were showing attainment. Delaware believes that based on this, population and population density data should not be given much weight in determining nonattainment area boundaries. It is important to note that EPA uses population data as one indicator of population-based emissions (i.e. area sources) that might contribute to nonattainment, including downwind nonattainment. As is clearly demonstrated in Factor 6, below, New Castle County is upwind of monitors in the Philadelphia area that have recorded violations of the 24-hour $PM_{2.5}$ NAAQS.

Factor 4: Traffic and Commuting Patterns

This factor considers the number of commuters in each county who drive to another county within the Philadelphia-Wilmington area the percent of total commuters in each county who commute to other counties within the Philadelphia-Wilmington area, as well as the total Vehicle

Miles Traveled (VMT) for each county in millions of miles (see Table 4.0). A county with numerous commuters is generally an integral part of an urban area and is likely contributing to fine particle concentrations in the area.

The listing of counties on Table 4.0 reflects the number of people commuting to other counties. The counties that are in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS are shown in boldface.

Table 4.0. Traffic and Commuting Patterns

County	State Recommended Nonattainment?	2005 VMT (millions)	Number Commuting to any violating counties	Percent Commuting to any violating counties	Number Commuting into & within statistical area	Percent Commuting into & within statistical area
New Castle, DE	**Yes - other area**	**5,674**	**228,630**	**93**	**237,010**	**97**
Philadelphia, PA	**Yes**	**6,499**	**469,300**	**82**	**558,270**	**98**
Delaware, PA	**Yes**	**4,011**	**216,560**	**85**	**249,130**	**98**
Gloucester, NJ	**Yes**	**2,621**	**42,160**	**35**	**111,620**	**92**
Camden, NJ	**Yes**	**4,669**	**162,290**	**71**	**215,780**	**94**
Burlington, NJ	**Yes**	**4,902**	**46,850**	**23**	**174,000**	**84**
Chester, PA	**Yes**	**4,414**	**184,920**	**85**	**207,990**	**96**
Montgomery, PA	**Yes**	**7,527**	**101,460**	**27**	**365,750**	**96**
Bucks, PA	**Yes**	**5,250**	**44,390**	**15**	**261,390**	**86**
York, PA	Yes - other area	3,333	148,290	77	730	0
Salem, NJ	No	1,013	5,450	19	24,900	87
Atlantic, NJ	No	3,234	4,700	4	8,310	7
Cecil. MD	No	1,193	15,970	38	34,590	83
Cumberland, NJ	No	1,264	2,020	4	6,820	12
Lancaster. PA	Yes - other area	4,392	217,820	94	9,110	4
Mercer, NJ	Yes - other area	2,668	2,700	2	11,100	7
Berks, PA	Yes - other area	3,320	159,000	90	20,450	12
Harford, MD	Yes - other area	2,068	1,920	2	3,030	3
Kent, DE	No	1,435	6,370	11	6,710	11
Ocean, NJ	No	3,367	1,460	1	5,520	3
Northampton, PA	Yes - other area	2,399	99,860	80	3,730	3
Middlesex, NJ	Yes - other area	8,014	970	0	2,250	1
Kent, MD	No	219	680	8	970	11
Lehigh, PA	Yes - other area	3,374	133,030	90	10,210	7
Monmouth, NJ	Yes - other area	6,230	1,190	0	2,410	1
Queen Anne's, MD	No	758	230	1	260	1
Hunterdon, NJ	No	929	840	1	1,710	3
Somerset, NJ	Yes - other area	2,702	450	0	1,050	1
Warren, NJ	Yes - other area	1,342	2,450	5	230	1

Note: The 2005 VMT data used for Tables 4.0 and 5.0 of the 9-factor analysis has been derived using methodology similar to that described in "Documentation for the final 2002 Mobile National Emissions Inventory," Version 3, September 2007, prepared for the Emission Inventory Group, U.S. EPA. This document may be found at: ftp://ftp.epa.gov/EmisInventory/2002finalnei/documentation/mobile/2002_mobile_nei_version_3_report_092807.pdf. The 2005 VMT data were taken from documentation which is still draft, but which should be released in 2008. The United States 2000 Census County-to-County Worker Flow Files can be found at: http://www.cencus.gov/population/www/cen2000/commuting/index.html.

The above data in Table 4.0 indicates that the counties in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS have considerably more commuters into and within the Philadelphia-Wilmington area than all other counties in this analysis. For the most part, those counties also have higher VMT. Some exceptions are several counties that were included in other nonattainment areas for the 1997 $PM_{2.5}$ NAAQS and have been recommended for inclusion in those same nonattainment areas for the 2006 $PM_{2.5}$ NAAQS. Other counties with VMT comparable to the counties in the existing Philadelphia-Wilmington $PM_{2.5}$ nonattainment area are Lehigh and Northampton Counties in Pennsylvania and Atlantic and Ocean Counties in New Jersey. Pennsylvania has recommended that Lehigh and Northampton Counties be included in the Allentown-Bethlehem-Easton nonattainment area for the 2006 $PM_{2.5}$ NAAQS. Atlantic and Ocean Counties have very few commuters into the Philadelphia-Camden-Wilmington MSA. (See Table 4.0)

In her December 18, 2007 recommendation letter, Governor Minner states that in less than one percent of the commuters into Philadelphia-Wilmington area from New Castle County, and that many of these commuters are likely to use public transportation. The Southeastern Pennsylvania Transportation Authority (SEPTA) serves commuters from the Bucks, Chester, Delaware, Montgomery, Philadelphia and New Castle Counties, and brings many of them into Center City Philadelphia. The Port Authority Transit Corporation (PATCO) brings commuters from southern New Jersey into Center City Philadelphia. EPA believes that, as a general matter, it is likely that commuters from most counties in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS rely heavily on public transportation. However, currently available data does not clearly indicate the percentage of commuters from New Castle County to Pennsylvania which commute via SEPTA or other public transportation versus non-public transportation (such as private automobiles).

Governor Minner goes on to compare VMT in New Castle County with that of Philadelphia, stating that VMT are similar, yet New Castle County has three of its four monitors showing attainment. As with population data, EPA considers VMT as one indicator of emissions that might contribute to nonattainment, including downwind nonattainment. As shown in Factor 6, below, New Castle County is directly upwind of monitors in the Philadelphia area that have recorded violations of the 2006 24-hour $PM_{2.5}$ NAAQS.

Factor 5: Growth Rates and Patterns

This factor considers population growth for 2000-2005 and growth in vehicle miles traveled for 1996-2005 for counties in Philadelphia-Wilmington area, as well as patterns of population and VMT growth. A county with rapid population or VMT growth is generally an integral part of an urban area and is likely to be contributing to fine particle concentrations in the area.

Table 5.0 below shows population, population growth, VMT, and VMT growth for counties that are included in the Philadelphia-Wilmington area.

Table 5.0. Population and VMT Values and Percent Change.

Location	Population (2005)	Population % change (2000 - 2005)	2005 VMT (1000s mi)	VMT % change (1996 - 2005)
New Castle, DE	**522,094**	**4**	**5,674**	**25**
Philadelphia, PA	**1,456,350**	**(4)**	**6,499**	**(31)**
Delaware, PA	**554,393**	**1**	**4,011**	**24**
Gloucester, NJ	**277,037**	**8**	**2,621**	**26**
Camden, NJ	**515,381**	**2**	**4,669**	**17**
Burlington, NJ	**449,148**	**6**	**4,902**	**43**
Chester, PA	**473,723**	**9**	**4,414**	**54**
Montgomery, PA	**774,666**	**3**	**7,527**	**73**
Bucks, PA	**619,772**	**3**	**5,250**	**49**
York, PA	408,182	7	3,333	6
Salem, NJ	66,054	3	1,013	50
Atlantic, NJ	270,318	7	3,234	54
Cecil. MD	97,474	13	1,193	10
Cumberland, NJ	152,905	4	1,264	24
Lancaster. PA	489,936	4	4,392	21
Mercer, NJ	366,070	4	2,668	(22)
Berks, PA	396,236	6	3,320	11
Harford, MD	238,850	9	2,068	0
Kent, DE	143,462	13	1,435	5
Ocean, NJ	558,170	9	3,367	5
Northampton, PA	287,334	7	2,399	21
Middlesex, NJ	789,283	5	8,014	56
Kent, MD	19,908	3	219	42
Lehigh, PA	330,168	6	3,374	34
Monmouth, NJ	634,841	3	6,230	37
Queen Anne's, MD	45,469	11	758	81
Hunterdon, NJ	130,042	6	929	(42)
Somerset, NJ	319,830	7	2,702	39
Warren, NJ	110,317	7	1,342	2

The data above in Table 5.0 show that while most counties in this analysis have experienced modest increases in population from 2000 to 2005, only Philadelphia has lost population in that same time period. Philadelphia's population is still much higher than any other county in this analysis. Similarly, most counties saw increased VMT from 1996 to 2005. VMT decreased in only three counties, Philadelphia, Mercer County, NJ and Hunterdon County, NJ. Philadelphia's VMT is still higher than most counties in this analysis.

In Delaware's December 18, 2007 designation recommendation letter, Governor Minner states that New Castle County has a "moderate" population growth rate, and compares that rate to counties such as Gloucester which are monitoring attainment. Governor Minner also compares New Castle County's VMT growth to that of Gloucester County, which is monitoring attainment. While population in Gloucester County has increased at a similar rate to New Castle County from 2002 to 2006, the 2005 population in New Castle County is nearly twice that of Gloucester County. From 2002 to 2005, VMT increased in Gloucester County has by a greater percentage than in New Castle County. However, in 2005, New Castle County's VMT is more than twice that of Gloucester County. (See Tables 5.2 and 5.3, below.)

Table 5.2. Population Growth 2002-2006, from Delaware's 12/18/2007 recommendation letter

County	2006 pop	Pop 02-06 (% change)[14]	Design Value
Chester	482,112	11.2	35
Gloucester	282,031	10.3	28
Burlington	450,627	6.4	Na
New Castle	525,587	5.4	36
Bucks	623,205	4.3	33
Montgomery	775,688	3.6	32
Camden	517,001	1.8	36
Delaware	555,996	0.7	35
Philadelphia	1,448,394	-4.6	38

Table 5.3. VMT Growth 2002-2005, from Delaware's 12/18/2007 recommendation letter

County	2005	2002	02-'05 % Increase
Gloucester	7,431	6,956	6.4%
Burlington	13,365	12,582	5.9%
New Castle	15,286	14,626	4.3%
Delaware	10,181	9,746	4.3%
Philadelphia	16,316	15,775	3.3%
Camden	10,855	10,543	2.9%
Montgomery	19,110	18,675	2.3%
Bucks	13,696	13,487	1.5%
Chester	11,832	11,653	1.5%

Factor 6: Meteorology (Weather/Transport Patterns)

For this factor, EPA considered data from National Weather Service instruments in the area. Wind direction and wind speed data for 2004-2006 were analyzed, with an emphasis on "high $PM_{2.5}$ days" for each of two seasons (an October-April "cold" season and a May-September "warm" season). These high $PM_{2.5}$ days are defined as days where any FRM or FEM air quality monitors had 24-hour $PM_{2.5}$ concentrations above 95% on a frequency distribution curve of $PM_{2.5}$ 24-hour values.

Meteorology data is also considered in each county's Contributing Emissions Score (CES) because the method for deriving the CES included an analysis of trajectories of air masses for high $PM_{2.5}$ days. See Factor 1 (Emissions data), above.

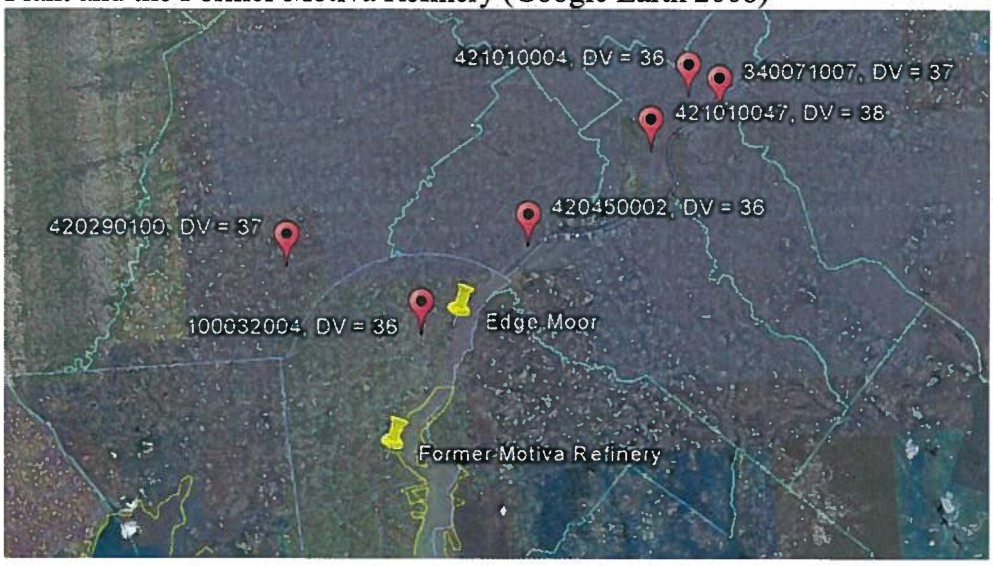
For each air quality monitoring site, EPA developed a pollution trajectory plot (or "pollution rose") to understand the prevailing wind direction and wind speed on the days with highest fine particle concentrations. Figures 6.1 – 6.7 identify 24-hour $PM_{2.5}$ values by colored icons and days exceeding 35 $\mu g/m^3$ are denoted with a red or black icon. These icons are either dots or triangles. A dot indicates the day occurred in the warm season and a triangle indicates the day

occurred in the cool season. The center of the figures indicate the location of the air quality monitoring site, and the location of each icon in relation to the center indicates the direction from which the wind was blowing on that day. An icon that is close to the center indicates a low average wind speed on that day. Higher wind speeds are indicated when the icon is further away from the center.

In Delaware's December 18, 2007 designation recommendation letter, Governor Minner stated that wind roses show Philadelphia's upwind sources come from southern New Castle County, where one significant source (the former Motiva refinery) has been controlled. (See Factor 9) Governor Minner also stated that the Delaware Department of Natural Resources and Environmental Protection (DNREC) believes that the monitored nonattainment at the New Castle, Camden, and Philadelphia monitors is due to long range transport and local sources, and not transport within the Philadelphia MSA. In other words, it is the State of Delaware's position that emissions from New Castle County do not contribute to nonattainment in other parts of the Philadelphia-Wilmington area.

Figure 6.0 shows the six violating monitors in the Philadelphia-Wilmington area, and includes two sources of SO_2 and NOx in New Castle County: the former Motiva refinery in Delaware City and the Edge Moor power plant in Wilmington. As shown in Factor 9, emissions from the former Motiva refinery have been greatly reduced since 2005, but in 2007 the facility still emitted close to 3000 tons of SO_2 and 3000 tons NO_2. The Edge Moor power plant had nearly 8000 tons of SO_2 emissions and over 2,200 tons of NOx emissions in 2006.

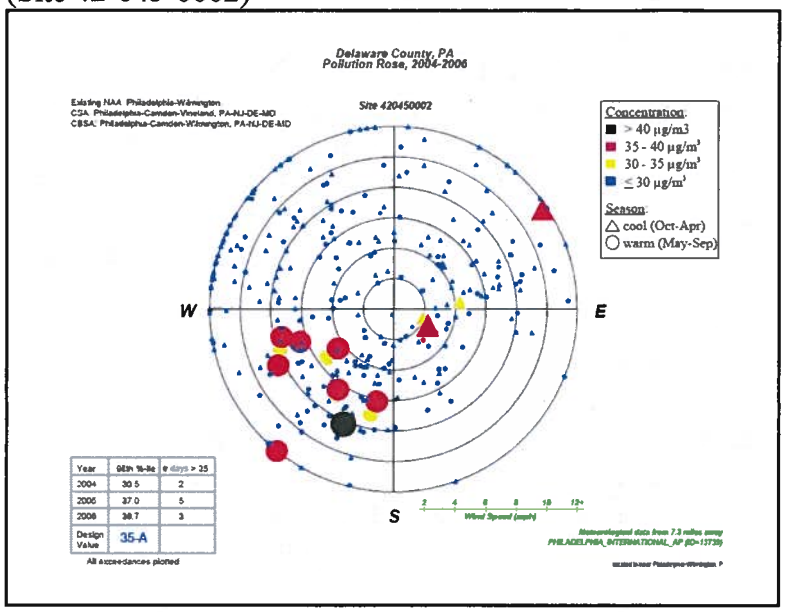
Figure 6.0. Violating Monitors in the Philadelphia-Wilmington Area and the Edge Moor Power Plant and the Former Motiva Refinery (Google Earth 2008)



The pollution roses below for Delaware, Chester, Camden, and Philadelphia Counties show that, on high $PM_{2.5}$ days (days with monitored $PM_{2.5}$ values greater than 35 $\mu g/m^3$), winds are generally from the southwest. These pollution roses indicate that violating monitors in the Philadelphia-Wilmington area are downwind of both northern and southern New Castle County. (See Figures 6.1 through 6.7)

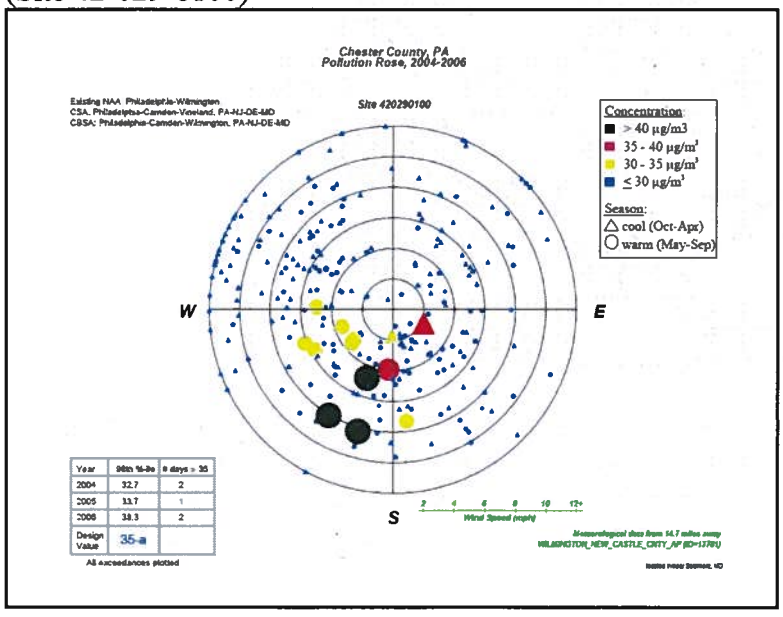
The pollution rose below for the Delaware County monitor, Figure 6.1, indicates that for most high $PM_{2.5}$ days, winds are from the southwest, demonstrating an influence from northern New Castle County and other areas further southwest. Occasional high days show winds from the east and northeast.

Figure 6.1. Pollution Trajectory Plot for Delaware County, PA (Site 42-045-0002)



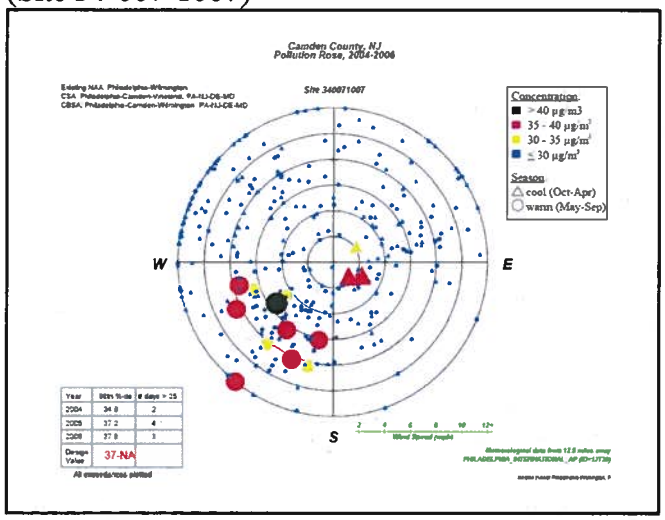
High $PM_{2.5}$ days at the Chester County monitor are from the south and south-southwest and occasionally from the east-southeast. Winds from the east-southeast would pass through New Castle County. (See Figure 6.2.)

Figure 6.2. Pollution Trajectory Plot for Chester County, PA (Site 42-029-0100)



The following pollution rose, Figure 6.3, shows that high $PM_{2.5}$ days at the Camden County monitor are from the predominantly from the southwest, indicating that Philadelphia, Delaware, and New Castle Counties and other areas further southwest are impacting this monitor. Occasional high days show winds from the east.

Figure 6.3. Pollution Trajectory Plot for Camden County, NJ
(Site 34-007-1007)



The two Philadelphia monitors below show winds from the southwest on most high $PM_{2.5}$ days. However, the Center City Philadelphia monitor (421010047, 500 South Broad Street) shows occasional high days from the east. The monitor further north in Philadelphia (421010004, 1501 E Lycoming Ave.) shows occasional high days with winds from the west. (See Figures 6.4 and 6.5.)

Figure 6.4. Pollution Trajectory Plot for Philadelphia County, PA
(Site 42-101-0047)

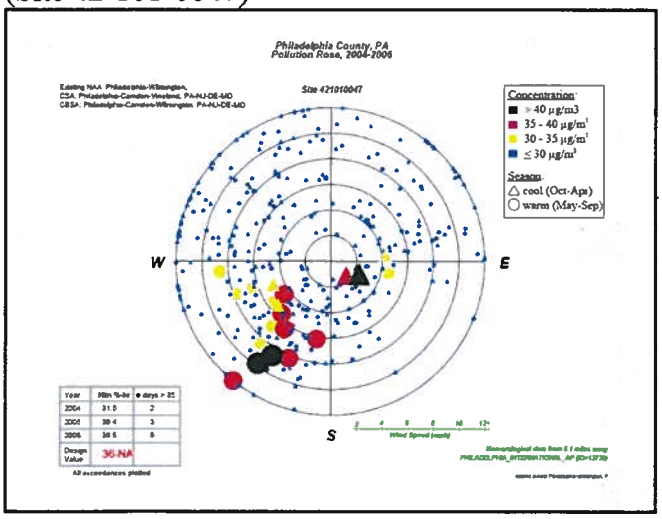
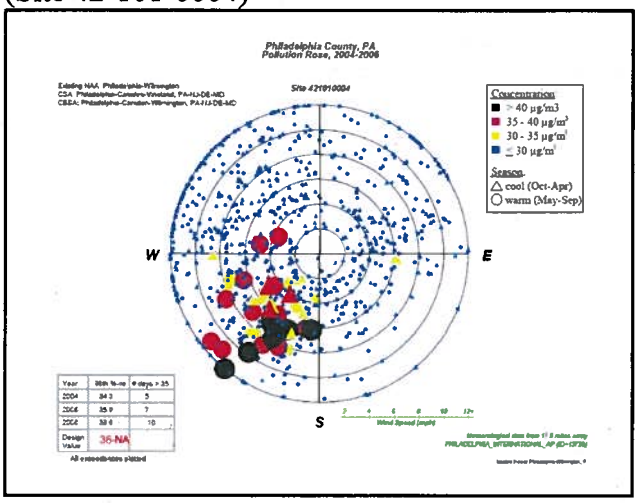


Figure 6.5. Pollution Trajectory Plot for Philadelphia County, PA (Site 42-101-0004)



In her December 18, 2007 designation recommendation letter, Governor Minner of Delaware stated that nonattainment in New Castle County is a localized issue, within the county itself. Local mobile source emissions near the downtown Wilmington monitor (the MLK monitor), including traffic on MLK Boulevard and Interstate I-95, a large bus depot, and the CSX/Norfolk Southern Railroad, are cited the cause of the nonattainment problem. (See Figure 6.6.) A local component is evident in the pollution rose for the downtown Wilmington monitor, which shows some high $PM_{2.5}$ days with low to moderate speed winds from all points of the compass. (See Figure 6.7.)

However, the similar local emission sources can be cited for the violating monitors in Philadelphia, Chester, and Camden Counties, which are also located near interstate highways. The Philadelphia monitors are located in highly urbanized areas, with traffic congestion. Furthermore, Figure 6.7 also shows prevailing southwesterly winds, which are typical in the Philadelphia-Wilmington area and also imply that this air quality monitor is also affected by regional transport.

Figure 6.6. Photo of the Downtown Wilmington Monitor from Delaware's December 18, 2007 designation recommendation letter

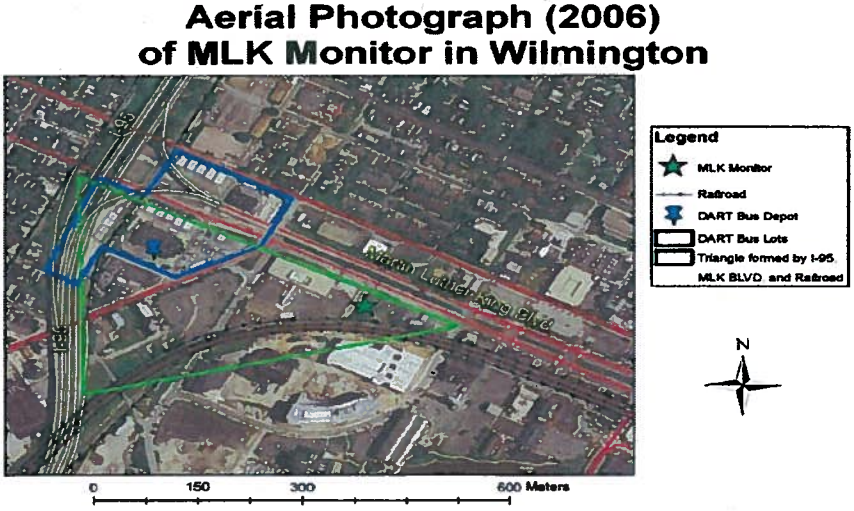
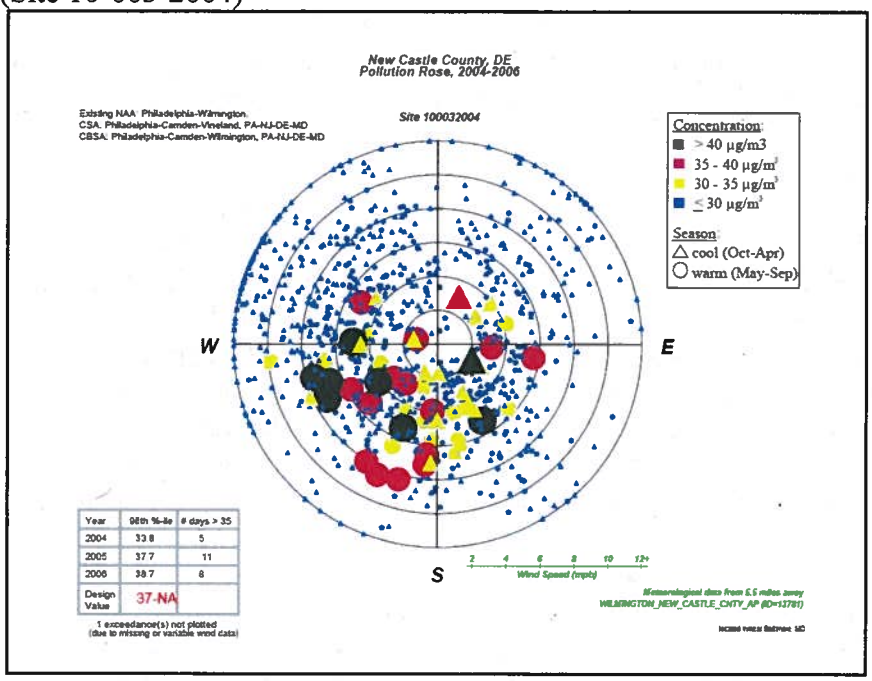


Figure 6.7. Pollution Trajectory Plot for Wilmington, New Castle County, DE (Site 10-003-2004)



In her recommendation letter, Governor Minner also stated that studies indicate that long range interstate transport of power plants sulfate emissions is the most significant contributor to $PM_{2.5}$ concentrations in Delaware and the Philadelphia MSA, and that emissions from the entire state of Delaware contribute little to concentrations in the Philadelphia area. EPA agrees that power plant emissions are a major contributor. In fact, there is a large power plant in New Castle County. In 2006, the Edge Moor facility in New Castle County had SO_2 emissions of nearly 8,000 tons and NOx emissions of over 2,200 tons.

Considering all the information set out above, EPA has determined that New Castle County contributes to the nonattainment problem at downwind monitors in the Philadelphia-Wilmington area.

Factor 7: Geography/Topography (Mountain Ranges or Other Air Basin Boundaries)

The geography/topography analysis looks at physical features of the land that might have an effect on the air shed and, therefore, on the distribution of $PM_{2.5}$ over the Philadelphia-Wilmington area.

The Philadelphia-Wilmington area does not have any geographical or topographical barriers significantly limiting air-pollution transport within its air shed. Therefore, this factor did not play a significant role in the decision-making process.

Factor 8: Jurisdictional Boundaries (e.g., Existing PM and Ozone Areas)

In evaluating the jurisdictional boundary factor, consideration is being given to existing boundaries and organizations that may facilitate air quality planning and the implementation of control measures to attain the standard. Areas designated as nonattainment (e.g., for $PM_{2.5}$ or 8-hour ozone standard) represent important boundaries for state air quality planning.

From an EPA Region III perspective, the major jurisdictional boundaries in the Philadelphia-Wilmington area are the state lines between Pennsylvania, Delaware, and New Jersey. Air-quality monitors that violate the 2006 $PM_{2.5}$ NAAQS in the Philadelphia-Wilmington area are located in Pennsylvania, Delaware, and New Jersey. However, the Delaware Valley Regional Planning Commission (DVRPC), the metropolitan planning organization (MPO) in the Philadelphia area, serves Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties in Pennsylvania, and Burlington, Camden, Gloucester, and Mercer Counties in New Jersey. New Castle County, DE is in a separate MPO, the Wilmington Area Planning Council (WILMAPCO). WILMAPCO is the Metropolitan Planning Organization for New Castle County, Delaware and Cecil County, Maryland.

On the other hand, areas designated as 8-hour ozone nonattainment areas are also important boundaries for state air quality planning. Bucks, Chester, Delaware, Montgomery, and Philadelphia Counties in Pennsylvania; New Castle, Kent, and Sussex Counties in Delaware; Cecil County, Maryland; and Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Mercer, Ocean, and Salem Counties in New Jersey were included in the Philadelphia-Wilmington-Atlantic City 8-hour ozone nonattainment area. Furthermore, Bucks, Chester, Delaware, Montgomery, Philadelphia, and New Castle Counties (plus additional counties in Delaware, Maryland, and New Jersey) were also included in the Philadelphia-Wilmington-Trenton severe 1-hour ozone nonattainment area, which is no longer subject to the 1-hour ozone standard. Other counties included in this 9-factor analysis are also designated as 8-hour and 1-hour ozone nonattainment areas, but are not associated with the Philadelphia-Wilmington area. A goal in designating $PM_{2.5}$ nonattainment areas is to achieve a degree of consistency with ozone nonattainment areas. In EPA Region III, comparison of ozone areas with potential $PM_{2.5}$ nonattainment areas, therefore, gives added weight to inclusion of New Castle County, DE in the Philadelphia-Wilmington nonattainment area.

In her December 18, 2007 designation recommendation letter, Governor Minner of Delaware states that New Castle County should be a nonattainment area separate from the Philadelphia area because Delaware did not develop a joint air quality plan for the 1997 $PM_{2.5}$ standard, and does not anticipate the need to do so for the 2006 $PM_{2.5}$ standard. Furthermore, Governor Minner states the regional planning organizations (RPOs) which include Delaware, Pennsylvania, and New Jersey are already working together regarding visibility planning (regional haze) to reduce SO_2, NOx, and PM, and that joint efforts among the states would increase the administrative burden. Finally, Governor Minner states that Delaware will continue to actively interact with EPA and its RPOs, the Ozone Transport Commission (OTC), and the Mid-Atlantic/Northeast Visibility Union (MANE-VU).

New Castle County has historically been part of the Philadelphia nonattainment area for ozone (1-hour and 8-hour) and $PM_{2.5}$. Delaware, Pennsylvania, and New Jersey have a long history of working cooperatively through the OTC and with ozone attainment planning. Therefore, EPA does not anticipate that including New Castle County as part of the Philadelphia nonattainment area for the 2006 $PM_{2.5}$ NAAQS will be an undue burden on Delaware.

Factor 9: Level of Control of Emission Sources

This factor considers emission controls currently implemented for major sources in the Philadelphia-Wilmington area.

The emission estimates on Table 1.0 (under Factor 1) reflect implementation of control strategies implemented by the states in the Philadelphia-Wilmington area before or during 2005 that may influence emissions of any component of $PM_{2.5}$ emissions (i.e., total carbon, SO_2, NOx, and crustal $PM_{2.5}$).

In her December 18, 2007 recommendation letter, Governor Minner of Delaware stated that between 2000 and 2012, New Castle County will achieve a 75% reduction in SO_2 emissions and a 62% reduction in NOx emissions due to state and federal programs, and projects that in 2012 the county will have the second highest emissions in the Philadelphia-Wilmington area. However, EPA is only considering controls in place and federally enforceable at the time of designation, i.e., by 2008. Therefore, these planned controls are not being considered in this analysis.

In New Castle County, DE, the former Motiva Enterprises' Delaware City Refinery has reduced its emissions since 2005. (See Table 9.0.) Under a 2001 consent decree (CD), Motiva Enterprises' Delaware City Refinery was required to install emission controls on two if its processes, a fluid catalytic cracking unit, which breaks apart petroleum molecules so they can be refined into fuels, and the fluid coker unit, which then captures dirty, heavier materials for secondary processing into products like asphalt. Scrubbers were required on both units to reduce SO_2 emissions. The CD required Motiva to have the controls in place by 2006. Regenerative wet gas scrubbers are currently operating on the fluid catalytic cracking unit and fluid coker unit.

Note: In 2004, Premcor Inc. purchased the Delaware City refining complex from Motiva Enterprises LLC. In 2005, Valero Energy Corporation purchased Premcor, Inc.

Table 9.0. Former Motiva Refinery Emissions, 2002 to 2007

Year	SO_2	NO_2	PM-Con	$PM_{2.5}$-Fil	PM_{10}-Fil	CO	VOC	NH_3
2002	34,096.5	3,534.8	89.9	1,218.2	1,291.3	3,857.9	829.9	43.0
2003	34,149.7	3,403.8	94.7	1,008.3	1,037.5	6,448.1	596.3	19.9
2004	27,533.8	3,459.6	417.3	5.6	1,187.1	9,692.6	698.1	102.4
2005	26,476.1	2,954.3	430.2	32.9	640.4	4,021.4	662.9	28.1
2006	25,988.6	2,921.6	91.2	0.4	849.6	3,048.2	334.5	7.8
2007	2,937.9	2,838.9	98.7	-	399.5	2,612.4	266.8	17.4

Note: Data was rounded to the nearest tenth
Source: This data was obtained from the following letters, which DNREC supplied to EPA.
- 5/6/2003 letter from Franklin R. Wheeler, Refinery Manager, Motiva Enterprises LLC to the DNREC

Air Quality Management Section, transmitting the Annual Emissions Inventory for 2002 summarizing emissions from the Motiva Enterprises' Delaware City Refinery, modified by letter dated 1/8/2004 from E.M, Piovoso, Motiva Enterprises LLC

- 10/26/2004 letter from Berta Molina, Manager, Regulatory Affairs, Motiva Enterprises LLC to the DNREC Air Quality Management Section, transmitting the Annual Emissions Inventory for 2003 summarizing emissions from the former Motiva Enterprises' Delaware City Refinery
- 4/27/2005 letter from Cathe Kalisz, Environmental Manager, Premcor Refining Group, Inc., to the DNREC Air Quality Management Section, transmitting the 2004 Annual Air Emissions Inventory and Emissions Statement Report for the Premcor Refining Group Inc. – Delaware City Refinery and modified by hand on 9/8/2005 per "Data Base"
- 5/31/2006 letter from Cathe Kalisz, Staff Environmental Engineer, Valero Delaware City Refinery, to the DNREC Air Quality Management Section, transmitting the 2005 Annual Air Emissions Inventory and Emissions Statement Report for the Premcor Refining Group Inc. – Delaware City Refinery
- 4/30/2007 letter from Scott Mesavitz, Associate Environmental Engineer, Valero Delaware City Refinery, to the DNREC Air Quality Management Section, transmitting the 2006 Annual Air Emissions Inventory and Emissions Statement Report for the Premcor Refining Group Inc. – Delaware City Refinery
- 4/29/2008 letter from Cathe Kalisz, Staff Environmental Engineer, Valero Delaware City Refinery, to the DNREC Air Quality Management Section, transmitting the 2007 Annual Air Emissions Inventory and Emissions Statement Report for the Premcor Refining Group Inc. – Delaware City Refinery

As shown above in Table 9.0, SO_2 emissions at the former Motiva refinery were reduced from 26,476.1 tons in 2005 to 2,937.9 tons in 2007. This 23,538.2 ton reduction brings the New Castle County emissions in Table 1.0 (Factor 1) from 50,955 tons to 27,417 tons. Thus, even with this reduction, New Castle County's SO_2 emissions are still the highest of all the counties in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS. Furthermore, in 2007, the former Motiva refinery still emitted had 2,937.9 tons of SO_2 emissions (more than all of Camden County) and 2,838.9 tons of NO_2.

Table 9.1, below, shows emissions and controls (current and projected) for EGUs with SO_2 plus NO_x emissions greater than 5000 tons. Data was obtained from the 2006 National Electric Energy Data System (NEEDS) database. With the exception of the Brunner Island facility in York County, which has a projected date of 2008 for a scrubber on one of its three units, none of the EGUs in the counties in the Philadelphia-Wilmington nonattainment area for the 1997 $PM_{2.5}$ NAAQS put control in place between 2005 and 2008. Therefore, the level of control of EGUs is not a major factor in this analysis.

Table 9.1. EGUs with SO_2 plus NO_x emissions > 5000 tons, from the 2006 NEEDS EGU database

County	Plant Name	Plant Type	Unique ID Final	2006 SO_2	2006 NOx	Scrubber Online Year	Scrubber Efficiency	SCR Online Year	Capacity MW
New Castle, DE	Edge Moor	Coal Steam	593_B_4	5,671	1,485				174.0
			593_B_3	2,072	600				86.0
			593_B_5	239	179				445.0
Philadelphia, PA	Schuylkill Generating Station	Oil/Gas Steam	3169_B_1	95	43				166.0
Delaware, PA	Chester Operations	Coal Steam	50410_B_10						
	Eddystone	Coal	3161_B_2	2,811	2,519		91.6		36.0

County	Plant Name	Plant Type	Unique ID Final	2006 SO_2	2006 NOx	Scrubber Online Year	Scrubber Efficiency	SCR Online Year	Capacity MW
	Generating Station	Steam	3161_B_1	3,240	2,701	1983	93.2		309.0
			3161_B_3	217	101	1982	93.2		279.0
			3161_B_4	186	88				380.0
Gloucester, NJ	Logan Generating Plant	Coal Steam	10043_B_B01	0	1,169	1994	93.0	2000	219.0
Chester, PA	Cromby Generating Station	Coal Steam	3159_B_1	3,435	1,581	1982	93.8		48.0
			3159_B_2	178	112				201.0
			3159_B_FB1	3,435	1,581		89.0		48.0
			3159_B_FB2	3,435	1,581		89.0		48.0
York, PA	P H Glatfelter	Coal Steam	50397_B_5PB036				91.6		36.1
	PPL Brunner Island	Coal Steam	3140_B_3	45,447	6,288	2008	95.0		749.0
			3140_B_2	26,606	3,600	2009	95.0		378.0
			3140_B_1	21,492	2,866	2009	95.0		321.0
Salem, NJ	Chambers Cogeneration LP	Coal Steam	10566_B_BOIL2	0	771	1994	87.6	1994	131.0
			10566_B_BOIL1	0	758	1994	93.0	1994	131.0
	Deepwater	Coal Steam	2384_B_8	1,503	732				80.0
		Oil/Gas Steam	2384_B_1	0	18				86.0
Mercer, NJ	PSEG Mercer Generating Station	Coal Steam	2408_B_1	7,520	1,695	2010	90.0	2004	315.3
			2408_B_2	6,997	2,196	2010	90.0	2004	309.9
Berks, PA	Titus	Coal Steam	3115_B_3	4,718	708				81.0
			3115_B_1	4,666	699				81.0
			3115_B_2	3,954	589				81.0
Kent, DE	McKee Run	Oil/Gas Steam	599_B_3	51	40				103.0
Northampton, PA	Northampton Generating Company	Coal Steam	50888_B_BLR1	0	422		91.6		112.0
	Portland	Coal Steam	3113_B_2	18,187	2,207				243.0
			3113_B_1	12,497	1,144				157.0
	PPL Martins Creek	Oil/Gas Steam	3148_B_3	502	434				850.0
			3148_B_4	351	261				820.0
	Foster Wheeler Mt Carmel Cogen	Coal Steam	10343_B_SG-101	492	246	1990	88.0		43.0
Middlesex, NJ	PSEG Sewaren Generating Station	Oil/Gas Steam	2411_B_4	29	66				116.0
			2411_B_3	26	33				105.0
			2411_B_2	13	17				101.0
			2411_B_1	12	9				95.0

In considering county-level emissions, EPA considered 2005 emissions data from the National Emissions Inventory. EPA recognizes that certain power plants or large sources of emissions in this potential nonattainment area may have installed emission controls or otherwise significantly reduced emissions since 2005 and that this information may not be reflected in this analysis. EPA will consider additional information on emission controls in making final designation decisions. In cases where specific plants already have installed emission controls subsequent to 2005 or plan to install such controls in the near future, EPA requests additional information on:

- the plant name, city, county, and township/tax district,
- identification of emission units at the plant, fuel use, and megawatt capacity,
- identification of emission units on which controls will be installed, and units on which controls will not be installed,
- identification of the type of emission control that has been or will be installed on each unit, the date on which the control device became / will become operational, and the emission reduction efficiency of the control device,
- the estimated pollutant emissions for each unit before and after implementation of emission controls, and
- whether the requirement to operate the emission control device will be federally enforceable by December 2008, and the instrument by which federal enforceability will be ensured (e.g. through source-specific SIP revision, operating permit requirement, consent decree).

Attachments to the EPA Technical Analysis for the Philadelphia-Wilmington Area

- 5/6/2003 letter from Franklin R. Wheeler, Refinery Manager, Motiva Enterprises LLC to the DNREC Air Quality Management Section, transmitting the Annual Emissions Inventory for 2002 summarizing emissions from the Motiva Enterprises' Delaware City Refinery, modified by letter dated 1/8/2004 from E.M. Piovoso, Motiva Enterprises LLC

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- 4/30/2007 letter from Scott Mesavitz, Associate Environmental Engineer, Valero Delaware City Refinery, to the DNREC Air Quality Management Section, transmitting the 2006 Annual Air Emissions Inventory and Emissions Statement Report for the Premcor Refining Group Inc. – Delaware City Refinery

- 4/29/2008 letter from Cathe Kalisz, Staff Environmental Engineer, Valero Delaware City Refinery, to the DNREC Air Quality Management Section, transmitting the 2007 Annual Air Emissions Inventory and Emissions Statement Report for the Premcor Refining Group Inc. – Delaware City Refinery

Franklin R. Wheeler
Refinery Manager

MOTIVA
ENTERPRISES LLC

MAY 0 9 2003
1463

May 6, 2003
CMRRR# 7000 0600 0029 2933 6645

The Air Quality Management Section, DNREC
Attn: Emission Inventory Department
156 S. State St.
Dover, Delaware 19901

Dear Sirs/Madams:

This submittal represents the Annual Emission Inventory for 2002 summarizing emissions from Motiva Enterprises' Delaware City Refinery. Included, as part of the submittal, is one disk labeled as follows:

- Motiva Enterprises – Delaware City Refinery - Emission Inventory 2002, Tanks and Water8

Attachment 1 is a summary of the facility emissions including the signed certification statement.

Starting in 1999, the Department requested that HAP emissions be included as part of the Annual Emission Inventory. This type of information is reported as part of the TRI submittal for the Delaware City refinery. The TRI must be submitted by July 1, 2003 for the year 2002. When the HAP emissions estimates are completed for TRI reporting this information will also be supplied to you.

The following comments are offered regarding the 2002 submittal;

Flaring emissions – The refinery flare gas system is equipped with two flare gas recovery compressors. Gases that are vented to the flare system are recovered and returned to the refinery fuel gas system. When the amount of material vented to the flare system exceeds the capacity of the flare gas recovery compressors, a flaring event occurs. Emissions from the pilot gases on the flares are included under the process "Flare". Emissions associated with the gases flared are included under the process "Accidental Releases"

NO_X Controls on the Repowering Combustion Turbines (CTs) – The method of controlling NO_X on the CTs is dependent on the type of fuel combusted. Steam injection is used for NO_X control for operation on low sulfur diesel. Nitrogen quench is used for NO_X control for syn gas operation.

Ammonia Emissions – The major sources of ammonia emissions are the Fluid Coker and the Fluid Catalytic Cracker. Although these emissions have been reported in the TRI for previous years, ammonia emissions are included for the first time in the 2002 emission inventory.

Several additional potential sources of ammonia emissions were reviewed and were not included because they are relatively insignificant. The Precombustor combusts waste gas ammonia. It is equipped with SNCR controls. The exhaust from the Precombustor goes to process heater 21-H-701. Based on in-house technical guidance for combustion equipment, a combustion efficiency of 99% is applied to this process heater. Potential ammonia emissions are estimated to be approximately 25 pounds per year.

Evaporative ammonia emissions at the Waste Water Treatment Plant (WWTP) were also evaluated. These emissions are estimated to be approximately 18 pounds per year. Due to the low level of these ammonia emissions, neither source was included in the emission inventory.

Ammonia is injected into Crude Unit distillation column 21-C-2, and into various heat exchangers for pH control. The condensate containing ammonia is treated in the foul water system. There are no air emissions associated with this process.

Emission Factors - It appears that the emission factors used by the i-Steps software for the automatic calculation of pollutants for certain sources have changed from those used in past years. For VOC, PT, and CO emissions, these updated factors are 2 to 3 times greater than past factors. Motiva is concerned that the use of these revised factors may result in perceived non-compliances with annual permit limits for some sources due purely to a change in the method of calculation. Until this matter can be fully evaluated, Motiva will continue to use emission factors consistent with past emission inventory submittals.

Constant Information in i-Steps - Most information is erased by the Department each year prior to releasing the i-Steps software to reporting facilities. Some information such as tank capacities does not change from year to year. If this information were left intact, it would result in a substantial time saving.

If you have any questions regarding this information, please contact Ms. Betty Piovoso at (302) 834-6305.

Sincerely,

Franklin R. Wheeler
Refinery Manager

EMP/
Attachments

MOTIVA
ENTERPRISES LLC

January 8, 2004
CMRRR# 7003 0500 0000 8487 0330

The Air Quality Management Section, DNREC
Attn: Emission Inventory Department
156 S. State St.
Dover, Delaware 19901

Dear Sirs/Madams:

Motiva Enterprises submitted the Annual Emission Inventory for 2002 in a letter to you dated May 6, 2003. Based on a review of emissions associated with the power plant boilers 1, 2, 3 and 4, revised SO_2 emissions are provided as follows;

	Boiler 1	Boiler 2	Boiler 3	Boiler 4
SO_2 Emissions, tons				
Gas	0.9 334.7	0.9	0.9	0.8
Oil	641.2 646	0	621.2	972.0
Fuel Usage				
Gas, MMSCF	2140	2150	2035	1933
Oil, Mgallons	9014	0	8706	13726
Fuel Wt % Sulfur				
Gas	0.0009	0.0009	0.0009	0.0009
Oil	0.89	0.89	0.89	0.89
Emission Factors				
Gas	950*Wt % Sulfur			
Oil	159.3*Wt % Sulfur			

If you have any questions regarding this information, please contact me at (302) 834-6305.

Sincerely,

E. M. Piovoso

EMP/

Delaware City Refinery 2000 Wrangle Hill Road Delaware City, DE 19706 Phone: (302) 834-6000 Fax: (302) 834-6498

Attachment 1

05/05/2003 2002 ANNUAL AIR EMISSION INVENTORY AND EMISSIONS STATEMENT REPORT

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES, LLC - DELAWARE CITY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM	PM10	PM25	NH3
001	COKER W/O COB W/ INCINRTR	5.4	13.7	65.9	1133.3	69.2	69.2		
002	FLUID COKER CO BOLER 22H3	91.4368	610.1	1142.96	18327.6	236.8	111.1		3.3
003	HEATER 22-H-2	0.1442	7.21	1.8025	0.04892	0.1545	0.1545		
004	COKE HANDLING EQUIPMENT					37.5			
005	CRUDE UNIT								
006	HEATER #1 FOR UNIT 21-H-1								
007	HEATER #2 FOR UNIT 21-H-2	2.1224	87.6	0.9	0.7201	2.274	2.274		
008	FOUL WATER TREATMENT SYS.								
009	2 SOLUTIZER PLANTS								
010	COKER GASOLINE MEROX PLT				13.1				
011	CRACKER W/O CO BOILER								
012	CRACKER CO BOILER	121.886	738.8	1523.58	11420.4	1019.42	765.022		4.2
013	TETRA HEATER 32-H-101	0.3682	15.2	4.6025	0.12492	0.3945	0.3945		
014	TETRA HEATER 32-H-102								
015	TETRA HEATER 32-H-103								
016	ALKYLATION FEED MEROX PLT				113.9				
017	POLYMERIZATION MEROX PLT				74.5				
018	ALKY & POLY UNITS								
019	REFORMER, HEATER 25-H-1A								
020	REFORMER, HEATER 25-H-1B								
021	CATALYTIC REFORMER UNIT								
022	EMERGENCY TAIL GAS TREATR								
023	NAPHTHALENE PLANT								
024	NAPTHALENE PLT HTR 33-H-1								
025	NAPTHALENE PLT HTR 33-H-2								
027	SULFUR RECOVERY UNIT 1	0.1	4.5	1.1	20.9864	0.6	0.6		
028	SULFUR RECOVERY UNIT 2	0.1	4.8	1.2	26.8106	0.7	0.7		
029	HYDROCRACKER								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES, LLC - DELAWARE CITY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM	PM10	PM25	NH3
030	HYDROCRACKER HTR 36-H-1	0.3682	18.41	4.6025	0.12492	0.3945	0.3945		
031	HYDROCRACKER HTR 36-H-3	0.2058	10.29	2.5725	0.06982	0.2205	0.2205		
032	HYDROCRACKER HTR 36-H-2	0.133	6.65	1.6625	0.04512	0.1425	0.1425		
033	HYDROCRACKER HYDROGEN PLT								
✓034	HYDROCRACKER H2 HTR 37-H1	3.2676	79.3	13.7	1.10865	3.501	3.501		
040	TOLUENE FACILITY								
043	BENZENE EXTRACTION FAC.								
044	AROMATICS FACT. FACILITY								
050	CPI&API SEPARATOR, TANKS	199.5							
051	WASTEWATER TREATMNT PLANT	820.1 4.2	3.7	0.9					
052	OIL RECOVERY SYSTEM								
066	TRASH INCINERATOR								
067	BOILER 4	6.61512	418.9	46.9	973.792	82.2943	61.5299		
068	BOILER 1	0.1	369.8	7.5	1147.3	48.2	65.8		
069	BOILER 2	3	204.9	NC	1.4	3.8	8.2		
070	BOILER 3		341.7	0.5	1108.1	55.5	61.3		
071	METHANOL PLANT								
✓072	METHANOL PLT HTR 41-H-1	0.4	NC 1/15	4.5	0.12207	0.4	0.3855		
073	NEW CCR REFORMER #1								
✓074	NEW CCR REF. HTR 42-H-1	1.6394	82.2	0.4	0.55622	1.7565	1.7565		
✓075	NEW CCR REF. HTR 42-H-2	1.5792	79.2	0.4	0.5358	1.692	1.692		
✓076	NEW CCR REF. HTR 42-H-3	0.6846	34.3	0.2	0.23227	0.7335	0.7335		
077	NEW CCR REF. HTR 42-H-7	0.6216	25.6	0.3	0.2109	0.666	0.666		
078	OLEFINS PLANT								
080	FLARE SYSTEM	0.3	2.6	18.9					
081	BARGE LOADING	9.0715	5.2	13.2					
082	LAND TREATMENT (TSDF)								
083	VALVE MAINTENANCE	41.1							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES, LLC - DELAWARE CITY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM	PM10	PM25	NH3
084	HYDROD TRAIN HTR 29-H-101	0.4	23.5	6	0.13775	0.4	0.435		
085	HYDRODS. TRAIN HTR 29-H-8	0.6	24.5	1.5	0.20045	0.6	0.633		
086	HYDRODS. TRAIN HTR 29-H-1								
088	HYDRODESULFURIZER TRAIN 1								
089	HYDRODESULFURIZER TRAIN 2								
090	HYDRODS. TRAIN HTR 29-H-2	0.4242	21.21	5.3025	0.14392	0.4545	0.4545		
091	HYDRODS. TRAIN HTR 29-H-3	0.0728	3.64	0.91	0.0247	0.078	0.078		
092	HYDRODS. TRAIN HTR 29-H-9	0.2212	11.06	2.765	0.07505	0.237	0.237		
093	HYDRODESULFURIZER TRAIN 3								
094	HYDRODESULFURIZER TRAIN 4								
095	HYDRODS. TRAIN HTR 29-H-4	0.1834	11.8	0.3	0.06222	0.1965	0.1965		
096	HYDRODS. TRAIN HTR 29-H-7	0.2002	10.01	2.5025	0.06792	0.2145	0.2145		
097	HYDRODESULFURIZER TRAIN 5								
098	HYDRODS. TRAIN HTR 29-H-5	0.35	22.1	1.5	0.11875	0.375	0.375		
099	HYDRODS. TRAIN HTR 29-H-6	0.3598	10.7	45.4	0.12207	0.3855	0.3855		
100	STACK GAS SCRUBBER								
101	H2 CARBON DRUM VENT								
102	NAPHTHA TREATER				201.5				
105	CRUDE UNIT HEATR 21-H-701	0.9	73.1		23.2189	18.4	18.4		
106	HTR FOR COKER SHU UNIT	0.4606	23.03	5.7575	0.15627	0.4935	0.4935		
110	CRACKER REGEN BYPASS								
125	CNHTU HEATR 25-H-401		1.97	0.052	0.06555	0.315	0.315		
126	CNHTU HTR 25-H-402	0.01	3.24		0.14012	0.56	0.56		
130	ACID PLANT								
135	PROD TANK #135	2.24							
136	PROD TANK #136	2.38							
137	PROD TANK #137	2.28							
139	PROD TANK #139	1.64							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES, LLC - DELAWARE CITY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM	PM10	PM25	NH3
145	PROD TANK #145	2.16							
146	PROD TANK #146	2.36							
147	PROD TANK #147	2.72							
149	PROD TANK #149	1.22							
150	PROD TANK #150	2.7							
161	PROD TANK #161	2.85							
162	PROD TANK #162	2.84							
163	PROD TANK #163	3.03							
165	PROD TANK #165	1.89							
166	PROD TANK #166	2.95							
167	PROD TANK #167	1.38							
181	PROD TANK #181	2.65							
182	PROD TANK #182	2.73							
183	PROD TANK #183	3.85							
185	PROD TANK #185	1.88							
186	PROD TANK #186	0.51							
187	PROD TANK #187	1.5							
201	PROD TANK #203	2.15							
202	PROD TANK #202	0.12							
203	PROD TANK #203								
204	PROD TANK #204	1.2							
205	PROD TANK #205	0.17							
206	PROD TANK #206	0.49							
223	PROD TANK #223	2.21							
224	PROD TANK #224	1.77							
225	PROD TANK #225	0.42							
227	PROD TANK #227	0.1							
241	PROD TANK #241	0.38							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES, LLC - DELAWARE CITY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM	PM10	PM25	NH3
242	PROD TANK #242	0.35							
243	PROD TANK #243	0.24							
244	PROD TANK #244	3.27							
245	PROD TANK #245	1.67							
246	PROD TANK #246	4.61							
248	PROD TANK #248	0.13							
250	HYDROGEN PLANT VENT	22.4							
261	PROD TANK #261	0.29							
262	PROD TANK #262								
263	PROD TANK #263								
264	PROD TANK #264	2.75							
265	PROD TANK #265	1.78							
266	PROD TANK #266	0.67							
268	PROD TANK #268	0.15							
281	PROD TANK #281	0.03							
282	PROD TANK #282	0.04							
283	PROD TANK #283	0.22							
284	PROD TANK #284	0.25							
285	PROD TANK #285	0.16							
286	PROD TANK #286	0.16							
331	BENZENE TANK T 331								
332	BENZENE TANK T 332								
401	TOLUENE TANK #401								
402	TOLUENE TANK #402								
405	TANK #405	0.01							
406	TANK #406	0.01							
407	TANK #407	0.2							
408	TANK #408								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES, LLC - DELAWARE CITY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM	PM10	PM25	NH3
470	TANK #470								
471	TANK #471								
481	TANK #481								
500	TANK #500								
502	TANK #502								
503	TANK #503								
504	TANK #504								
505	TANK #505								
520	PROPANE PIT FLARE	0.2	0.2	1.6					
521	RFG COOLING TOWER	0.1				2.8	2.8		
523	REPOWERING COOLING TOW					2.23	2.23		
527	REPOWERING CT1	4.31	63.2	5.7	46.2	5.82	5.82		
528	REPOWERING CT2	1.79	34	1.3	15.1	2.38	2.38		
530	REPOWER - RAW GAS FLARE		2.1	112.4	222.5				
532	REPOWER - CLEAN GAS FLARE		202	798.3	15.5				
550	TANK #550								
551	TANK #551								
552	TANK #552								
553	TANK #553								
560	TANK #560	1.72							
561	TANK #561								
562	TANK #562								
563	TANK #563	0.08							
564	TANK #564								
565	TANK #565								
566	TANK #566	0.04							
570	BENZENE TANK T 570								
571	AROMATICS TANK T 571								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES, LLC - DELAWARE CITY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM	PM10	PM25	NH3
572	AROMATICS TANK T 572								
580	TANK #580	0.57							
581	TANK #581	1.31							
582	TANK #582	0.1							
583	TANK #583	0.09							
584	TANK #584	0.42							
901	CRUDE TANK #1 F-SS	1.07							
902	CRUDE TANK #2 F-SS	1.85							
903	CRUDE TANK #3 F-SS	1.72							
904	CRUDE TANK #4 F-SS	1.58							
905	CRUDE TANK #5 F-SS	1.7							
906	CRUDE TANK #6 F-SS	1.96							
907	CRUDE TANK #7 F-SS	1.69							
908	CRUDE TANK #8 F-SS	1.39							
909	CRUDE TANK #9 F-DS	1.56							
910	CRUDE TANK #10 F-SS	2.25							
911	CRUDE TANK #11	2.11							
912	CRUDE TANK #12	2.36							
944	INTER. TANK #44	0.87							
945	INTER. TANK #45	8.73							
947	INTER. TANK # 47	0.21							
948	INTER. TANK #48	0.47							
950	INTER. TANK #50	0.5							
951	INTER. TANK #51	0.39							
960	INTER. TANK #60	0.02							
961	INTER. TANK #61								
962	INTER. TANK #62	0.01							
965	INTER. TANK #65	0.02							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES, LLC - DELAWARE CITY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM	PM10	PM25	NH3
966	INTER. TANK #66	12.1							
971	INTER. TANK #71								
972	INTER. TANK #72	1.15							
973	INTER. TANK #73	0.48							
974	INTER. TANK #74								
975	INTER. TANK #75	0.02							
976	INTER. TANK #76	0.01							
977	INTER. TANK #77	0.06							
978	INTER. TANK #78	0.08							
999	ACCIDENTAL RELEASES		9.1		18.7				
	Grp 530 + 532		+ 223	+910.4					

GROUP LEVEL AIR EMISSION INVENTORY SUMMARY

	VOC	NO2	CO	SO2	PT	PM10	PM25	NH3
Total Emissions	651.7758	~~3511.02~~ 3533.32*	~~2938.879~~ 3849.579*	34909.12	1602.283	1191.774		7.5

Pursuant to Regulation No. 30, I, the undersigned, am a Responsible Official and I have personally examined and am familiar with the information submitted in this document and all of its attachments. I certify, based on information and belief formed after reasonable inquiry the statements and information in the document are true, accurate and complete.

Responsible Official: F.R. WHEELER (Please Print)

Title: REFINERY MANAGER

Signature: F.R. Wheeler Date 5/6/03

* See facility letter 6/9/03

Data Base Final

VOC	NO2	CO	SO2	PM-CON
829.909 (+178.212)	3534.82	3857.94	3496.48	89.917

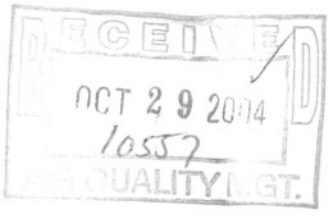
Waste Water Treatment

PM10-FIL	PM25-FIL	NH3
1291.343	1218.249	43.017

Bert Molina
Manager - Regulatory Affairs

MOTIVA
ENTERPRISES LLC

Certified Mail 7002 3150 0004 6783 4547
Return Receipt Requested



October 26, 2004

Air Quality Management Section, DNREC
156 S. State St.
Dover, Delaware 19901

Attn: Emission Inventory Department

This submittal represents the Annual Emission Inventory for 2003 summarizing emissions from the former Motiva Enterprises LLC Delaware City Refinery.

Included as part of the submittal are:

- ❑ I-Steps summary report of the facility emissions including the signed certification statement
- ❑ Disk labeled Motiva Enterprises LLC– Delaware City Refinery - Emission Inventory 2003 - Tanks
- ❑ HAP emissions summary. Table 1 summarizes speciation data for emissions from non-combustion sources. Table 2 summarizes all TRI air emissions.
- ❑ Summary of emission factors and calculation methodologies

Please note the following:

Flaring emissions – The refinery flare gas system is equipped with two flare gas recovery compressors. Gases that are vented to the flare system are recovered and returned to the refinery fuel gas system. When the amount of material vented to the flare system exceeds the capacity of the flare gas recovery compressors, a flaring event occurs. Emissions from the pilot gases on the flares are included under the process group "Flare". Emissions associated with the gases flared are included under the process group "Accidental Releases"

Particulate Emissions – The condensable and filterable portions of PM-10 emissions were reported where data was available from stack testing. No data is available on PM2.5 emissions. SCC factors used for estimating particulate emissions from combustion sources were assumed to be PM-10 filterable material.

If you have any questions regarding this information, please contact me at (713) 546-8485.

Bert Molina

Enclosures

P.O. Box 4540 Houston, Texas 77210-4540 Phone: (713) 277-8000

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES LLC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
031	HYDROCRACKER HTR 36-H-3	0.17	8.72	2.18	0.04		0.1875		
032	HYDROCRACKER HTR 36-H-2	0.09849	4.9245	1.23112	0.02		0.10552		
033	HYDROCRACKER HYDROGEN PLT								
034	HYDROCRACKER H2 HTR 37-H1	2.44606	70.57	10.46	0.51		2.62078		
040	TOLUENE FACILITY								
043	BENZENE EXTRACTION FAC.								
044	AROMATICS FACT. FACILITY								
050	CPI&API SEPARATOR, TANKS	209.1							0.01
051	WASTEWATER TREATMNT PLANT	4.14	3.66	0.91					
052	OIL RECOVERY SYSTEM	0.21							
066	TRASH INCINERATOR								
067	BOILER 4	2.97858	208.03	31.71	293.01		20.4346		
068	BOILER 1	0.14	269	7.86	234.84	19.33	12.98		
069	BOILER 2	3.69	220.33	0.02	0.76	6.7	3.45		
070	BOILER 3	0.04	249.18	0.27	294.84	24.38	10.88		
071	METHANOL PLANT								
072	METHANOL PLT HTR 41-H-1								
073	NEW CCR REFORMER #1								
074	NEW CCR REF. HTR 42-H-1	1.45759	69.99	0.37	0.3		1.56171		
075	NEW CCR REF. HTR 42-H-2	1.39478	66.97	0.36	0.29		1.49441		
076	NEW CCR REF. HTR 42-H-3	0.6524	31.36	0.17	0.14		0.699		
077	NEW CCR REF. HTR 42-H-7	0.52635	22.05	0.22	0.11		0.56394		
078	OLEFINS PLANT								
080	FLARE SYSTEM	0.31	2.66	19.18					
081	BARGE LOADING	7.72989	3.92	9.89					
082	LAND TREATMENT (TSDF)								
083	VALVE MAINTENANCE	31.29							
084	HYDROD TRAIN HTR 29-H-101	0.29	16.83	4.27	0.0612		0.31		

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES LLC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
085	HYDRODS. TRAIN HTR 29-H-8	0.57	24.09	1.46	0.12198		0.61		
086	HYDRODS. TRAIN HTR 29-H-1								
088	HYDRODESULFURIZER TRAIN 1								
089	HYDRODESULFURIZER TRAIN 2								
090	HYDRODS. TRAIN HTR 29-H-2	0.43815	21.9079	5.47699	0.09		0.46945		
091	HYDRODS. TRAIN HTR 29-H-3	0.077	3.86	0.9625	0.02		0.0825		
092	HYDRODS. TRAIN HTR 29-H-9	0.2114	10.55	2.6425	0.04		0.2265		
093	HYDRODESULFURIZER TRAIN 3								
094	HYDRODESULFURIZER TRAIN 4								
095	HYDRODS. TRAIN HTR 29-H-4	0.02948	1.93	0.05	0.01000		0.03158		
096	HYDRODS. TRAIN HTR 29-H-7	0.0392	1.93	0.48	0.01		0.042		
097	HYDRODESULFURIZER TRAIN 5								
098	HYDRODS. TRAIN HTR 29-H-5	0.4298	27.74	1.84	0.09		0.4605		
099	HYDRODS. TRAIN HTR 29-H-6	0.36182	10.98	46.55	0.08		0.38767		
100	STACK GAS SCRUBBER								
101	H2 CARBON DRUM VENT								
102	NAPHTHA TREATER				201.48				
105	CRUDE UNIT HEATR 21-H-701	0.83	75.48		17.97				0.01
106	HTR FOR COKER SHU UNIT	0.3584	17.92	4.48	0.07		0.384		
110	CRACKER REGEN BYPASS								
125	CNHTU HEATR 25-H-401		2.39	0.05	0.04				
126	CNHTU HTR 25-H-402	0.01	4.17		0.05				
130	ACID PLANT								
135	PROD TANK #135	2.2							
136	PROD TANK #136	2.6							
137	PROD TANK #137	2.5							
139	PROD TANK #139	1							
145	PROD TANK #145	2.3							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES LLC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
146	PROD TANK #146	2.4							
147	PROD TANK #147	2.3							
149	PROD TANK #149	1.2							
150	PROD TANK #150	2.5							
161	PROD TANK #161	2.45							
162	PROD TANK #162	3							
163	PROD TANK #163	3.79							
165	PROD TANK #165	1.8							
166	PROD TANK #166	2.8							
167	PROD TANK #167	1.6							
181	PROD TANK #181	3.4							
182	PROD TANK #182	2.5							
183	PROD TANK #183	3.3							
185	PROD TANK #185	2.58							
186	PROD TANK #186	0.5							
187	PROD TANK #187	1.3							
201	PROD TANK #203	3.07							
202	PROD TANK #202	0.1							
203	PROD TANK #203								
204	PROD TANK #204	1							
205	PROD TANK #205	0.2							
206	PROD TANK #206	0.4							
223	PROD TANK #223	2.19							
224	PROD TANK #224	2.03							
225	PROD TANK #225	0.5							
227	PROD TANK #227								
241	PROD TANK #241	0.9							
242	PROD TANK #242	0.3							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES LLC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
243	PROD TANK #243	0.22							
244	PROD TANK #244	2.13							
245	PROD TANK #245	2.24							
246	PROD TANK #246	2.5							
248	PROD TANK #248	0.2							
250	HYDROGEN PLANT VENT	14.57							
261	PROD TANK #261	0.3							
262	PROD TANK #262								
263	PROD TANK #263	0.1							
264	PROD TANK #264	2.5							
265	PROD TANK #265	1.5							
266	PROD TANK #266	0.7							
268	PROD TANK #268	0.17							
281	PROD TANK #281								
282	PROD TANK #282	0.1							
283	PROD TANK #283	0.2							
284	PROD TANK #284	0.2							
285	PROD TANK #285	0.2							
286	PROD TANK #286	0.2							
331	BENZENE TANK T 331								
332	BENZENE TANK T 332								
401	TOLUENE TANK #401								
402	TOLUENE TANK #402								
405	TANK #405								
406	TANK #406								
407	TANK #407	0.2							
408	TANK #408								
470	TANK #470	0.023							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES LLC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
580	TANK #580	0.6							
581	TANK #581	1.2							
582	TANK #582	0.1							
583	TANK #583	0.1							
584	TANK #584	0.4							
901	CRUDE TANK #1 F-SS	1.75							
902	CRUDE TANK #2 F-SS	1.9							
903	CRUDE TANK #3 F-SS	1.73							
904	CRUDE TANK #4 F-SS	1.4							
905	CRUDE TANK #5 F-SS	2							
906	CRUDE TANK #6 F-SS	1.9							
907	CRUDE TANK #7 F-SS	1.7							
908	CRUDE TANK #8 F-SS	1.3							
909	CRUDE TANK #9 F-DS	1.54							
910	CRUDE TANK #10 F-SS	1.9							
911	CRUDE TANK #11	1.5							
912	CRUDE TANK #12	1.8							
944	INTER. TANK #44	0.7							
945	INTER. TANK #45	7.4							
947	INTER. TANK # 47	0.2							
948	INTER. TANK #48	0.4							
950	INTER. TANK #50	0.8							
951	INTER. TANK #51	0.3							
960	INTER. TANK #60								
961	INTER. TANK #61								
962	INTER. TANK #62								
965	INTER. TANK #65								
966	INTER. TANK #66	10.9							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES LLC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
471	TANK #471	0.005							
481	TANK #481								
500	TANK #500								
502	TANK #502								
503	TANK #503								
504	TANK #504								
505	TANK #505								
520	PROPANE PIT FLARE	1.09	1.06	7.64					
521	RFG COOLING TOWER	4.15					1.12		
523	REPOWERING COOLING TOW						0.55		
527	REPOWERING CT1	0.38	52	5	65				
528	REPOWERING CT2	0.5	80	6	81				
530	REPOWER - RAW GAS FLARE		1.03	40.7	282.6				
532	REPOWER - CLEAN GAS FLARE		12.7	501.8	26.9				
550	TANK #550								
551	TANK #551								
552	TANK #552								
553	TANK #553								
560	TANK #560	1.7							
561	TANK #561								
562	TANK #562								
563	TANK #563	0.1							
564	TANK #564								
565	TANK #565								
566	TANK #566								
570	BENZENE TANK T 570								
571	AROMATICS TANK T 571								
572	AROMATICS TANK T 572								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: MOTIVA ENTERPRISES LLC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
971	INTER. TANK #71								
972	INTER. TANK #72	1.2							
973	INTER. TANK #73	0.36							
974	INTER. TANK #74								
975	INTER. TANK #75								
976	INTER. TANK #76								
977	INTER. TANK #77	0.06							
978	INTER. TANK #78	0.1							
998	TANK FUGITIVE								
999	ACCIDENTAL RELEASES	0.25	0.36	2842.58	155.17				2.44

GROUP LEVEL AIR EMISSION INVENTORY SUMMARY Page 8

	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
Total Emissions	596.251	3403.77	6448.084	34149.66	~~71.67~~ 9466	~~948.5885~~ 1037.51	1008.32	19.87

Pursuant to Regulation No. 30, I, the undersigned, am a Responsible Official and I have personally examined and am familiar with the information submitted in this document and all of its attachments. I certify, based on information and belief formed after reasonable inquiry the statements and information in the document are true, accurate and complete.

Responsible Official: Humberto Molina, Sr. (Please Print)

Title: Manager Regulatory Affairs - Motiva

Signature: 

Date 10/26/04

Premcor

Premier People,
Products and Service

The Premcor Refining Group, Inc.
Delaware City Refinery
P.O. Box 7000
Delaware City, DE 19706-7000
302/834-6000

CMRRR# 7003 3110 0002 6805 5661

April 27, 2005

Attn: Emission Inventory Department
Air Quality Management Section
DNREC
156 S. State St.
Dover, Delaware 19901

RE: 2004 Annual Air Emission Inventory and Emissions Statement Report
The Premcor Refining Group Inc. – Delaware City Refinery

Dear Sir or Madam:

Enclosed is the 2004 Annual Air Emission Inventory and Emissions Statement Report for The Premcor Refining Group Inc.'s (Premcor) Delaware City Refinery. Because Premcor purchased the facility from Motiva Enterprises LLC (Motiva) on May 1, 2004, the I-STEPS Summary Report includes separate certification statements for the Motiva and Premcor periods of operation. Emissions data were filed online using the Satellite I-STEPS software through the DNREC Air Quality Management Emissions Inventory Development Terminal Server.

As requested by the Emissions Inventory Department, this submittal also includes the following:

- A disk containing 2004 storage tank emissions information in TANKS 4.0 output format.
- A document summarizing emission factors and calculation methodologies. The condensable and filterable portions of PM-10 emissions were reported where data was available from stack testing. No data is available on PM2.5 emissions. SCC factors used for estimating particulate emissions from combustion sources were assumed to be PM-10 filterable material

If you have any questions regarding this submittal, please contact me at (302) 834-6408.

Sincerely,

Cathe Kalisz

Cathe Kalisz
Environmental Engineer

Enclosures

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
001	COKER W/O COB W/ INCINRTR	8.49	55.79	106.16	1315.11		114.28		0.5
002	FLUID COKER CO BOLER 22H3	90.13	616.59	1126.72	15693.8		106.56		5.96
003	HEATER 22-H-2	0.13	6.34	1.59	0.05		0.14		
004	COKE HANDLING EQUIPMENT								
005	CRUDE UNIT								
006	HEATER #1 FOR UNIT 21-H-1								
007	HEATER #2 FOR UNIT 21-H-2	1.83	88.56	0.78	0.73		1.96		
008	FOUL WATER TREATMENT SYS.								
009	2 SOLUTIZER PLANTS								
010	COKER GASOLINE MEROX PLT				13.1				
011	CRACKER W/O CO BOILER – DOWN	10.25	89.84	33.5	974.75	35.68	100.83		0.91
012	CRACKER CO BOILER	92.59	903.93	966.99	8152.24	298.34	822.22		8.92
013	TETRA HEATER 32-H-101	0.36	13.93	4.47	0.14		0.38		
014	TETRA HEATER 32-H-102								
015	TETRA HEATER 32-H-103								
016	ALKYLATION FEED MEROX PLT				109.06				
017	POLYMERIZATION MEROX PLT				63.38				
018	ALKY & POLY UNITS								
019	REFORMER, HEATER 25-H-1A								
020	REFORMER, HEATER 25-H-1B								
021	CATALYTIC REFORMER UNIT								
022	EMERGENCY TAIL GAS TREATR								
023	NAPHTHALENE PLANT								
024	NAPTHALENE PLT HTR 33-H-1								
025	NAPTHALENE PLT HTR 33-H-2								
027	SULFUR RECOVERY UNIT 1	0.12	2.6	0.12	111.25	6.62	2.48		
028	SULFUR RECOVERY UNIT 2	0.13	2.79	0.13	80.45	7.1	2.65		
029	HYDROCRACKER								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
030	HYDROCRACKER HTR 36-H-1	0.41	20.71	5.18	0.16		0.44		
031	HYDROCRACKER HTR 36-H-3	0.23	11.38	2.84	0.09		0.24		
032	HYDROCRACKER HTR 36-H-2	0.16	8.07	2.02	0.06		0.17		
033	HYDROCRACKER HYDROGEN PLT								
034	HYDROCRACKER H2 HTR 37-H1	3.51	102.36	14.84	1.4		3.76		
040	TOLUENE FACILITY								
043	BENZENE EXTRACTION FAC.								
044	AROMATICS FACT. FACILITY								
050	CPI&API SEPARATOR, TANKS	245.97							0.16
051	WASTEWATER TREATMNT PLANT	4.19	6.14	1.54					
052	OIL RECOVERY SYSTEM	0.21							
066	TRASH INCINERATOR								
067	BOILER 4	3.71	211.82	31.45	36.09				
068	BOILER 1	0.13	201.95	7.89	31.89				
069	BOILER 2	1.42	96.23	5.92	12.72				
070	BOILER 3	0.05	193.69		63.63				
071	METHANOL PLANT								
072	METHANOL PLT HTR 41-H-1								
073	NEW CCR REFORMER #1								
074	NEW CCR REF. HTR 42-H-1	1.59	66.46	0.4	0.63		1.7		
075	NEW CCR REF. HTR 42-H-2	1.66	69.6	0.42	0.66		1.78		
076	NEW CCR REF. HTR 42-H-3	0.61	25.66	0.16	0.24		0.66		
077	NEW CCR REF. HTR 42-H-7	0.62	25.59	0.26	0.25		0.66		
078	OLEFINS PLANT								
080	FLARE SYSTEM	0.31	2.66	19.23	0.06				
081	BARGE LOADING	7.71	3.27	8.73					
082	LAND TREATMENT (TSDF)								
083	VALVE MAINTENANCE	32.68							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
084	HYDROD TRAIN HTR 29-H-101	0.25	14.83	3.76	0.1		0.27		
085	HYDRODS. TRAIN HTR 29-H-8	0.71	29.8	1.81	0.28		0.76		
086	HYDRODS. TRAIN HTR 29-H-1								
088	HYDRODESULFURIZER TRAIN 1								
089	HYDRODESULFURIZER TRAIN 2								
090	HYDRODS. TRAIN HTR 29-H-2	0.42	21.02	5.26	0.17		0.45		
091	HYDRODS. TRAIN HTR 29-H-3	0.09	4.31	1.08	0.03		0.09		
092	HYDRODS. TRAIN HTR 29-H-9	0.21	10.26	2.57	0.08		0.22		
093	HYDRODESULFURIZER TRAIN 3								
094	HYDRODESULFURIZER TRAIN 4								
095	HYDRODS. TRAIN HTR 29-H-4	0.03	1.64	0.04	0.01		0.03		
096	HYDRODS. TRAIN HTR 29-H-7	0.04	2.09	0.52	0.02		0.04		
097	HYDRODESULFURIZER TRAIN 5								
098	HYDRODS. TRAIN HTR 29-H-5	0.44	28.41	1.88	0.18		0.48		
099	HYDRODS. TRAIN HTR 29-H-6	0.39	11.84	50.18	0.16		0.42		
100	STACK GAS SCRUBBER								
101	H2 CARBON DRUM VENT								
102	NAPHTHA TREATER				173.41				
105	CRUDE UNIT HEATR 21-H-701	0.85	81.58	1.7	38.28	19.26	2.83		0.02
106	HTR FOR COKER SHU UNIT	0.48	23.76	5.94	0.19		0.51		
110	CRACKER REGEN BYPASS								
125	CNHTU HEATR 25-H-401		0.28	0.03	0.05				
126	CNHTU HTR 25-H-402	0.01	1.27		0.11				
130	ACID PLANT								
135	PROD TANK #135	2.28							
136	PROD TANK #136	2.71							
137	PROD TANK #137	2.8							
139	PROD TANK #139	1.67							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
145	PROD TANK #145	1.67							
146	PROD TANK #146	2.78							
147	PROD TANK #147	2.9							
149	PROD TANK #149	1.52							
150	PROD TANK #150	2.79							
161	PROD TANK #161	2.12							
162	PROD TANK #162	3.35							
163	PROD TANK #163	4.12							
165	PROD TANK #165	1.4							
166	PROD TANK #166	1.51							
167	PROD TANK #167	1.08							
181	PROD TANK #181	2.23							
182	PROD TANK #182	3.18							
183	PROD TANK #183	4.09							
185	PROD TANK #185	1.63							
186	PROD TANK #186	0.16							
187	PROD TANK #187	1.23							
201	PROD TANK #203								
202	PROD TANK #202	0.1							
203	PROD TANK #203	2.22							
204	PROD TANK #204	1.07							
205	PROD TANK #205	0.35							
206	PROD TANK #206	0.53							
223	PROD TANK #223	2							
224	PROD TANK #224	1.57							
225	PROD TANK #225	0.28							
227	PROD TANK #227	0.14							
241	PROD TANK #241	0.17							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
242	PROD TANK #242	0.32							
243	PROD TANK #243	0.23							
244	PROD TANK #244	3.94							
245	PROD TANK #245	2.08							
246	PROD TANK #246	4.06							
248	PROD TANK #248	0.14							
250	HYDROGEN PLANT VENT	3.31							
261	PROD TANK #261	0.15							
262	PROD TANK #262								
263	PROD TANK #263	0.05							
264	PROD TANK #264	2.97							
265	PROD TANK #265	2.06							
266	PROD TANK #266	0.61							
268	PROD TANK #268	0.14							
281	PROD TANK #281	0.09							
282	PROD TANK #282	0.16							
283	PROD TANK #283	0.25							
284	PROD TANK #284	0.16							
285	PROD TANK #285	0.16							
286	PROD TANK #286	0.09							
331	BENZENE TANK T 331								
332	BENZENE TANK T 332								
401	TOLUENE TANK #401								
402	TOLUENE TANK #402								
405	TANK #405	0.18							
406	TANK #406	0.24							
407	TANK #407	0.39							
408	TANK #408								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
470	TANK #470	0.026							
471	TANK #471	0.013							
481	TANK #481								
500	TANK #500								
502	TANK #502								
503	TANK #503								
504	TANK #504								
505	TANK #505								
520	PROPANE PIT FLARE	1.08	1.05	7.53					
521	RFG COOLING TOWER	0.37					0.72		
523	REPOWERING COOLING TOW						0.55		
527	REPOWERING CT1	0.63	76.39	15.65	142.87				
528	REPOWERING CT2	0.41	50.61	3	63.41				
530	REPOWER - RAW GAS FLARE		1.28	54.18	257.39				
532	REPOWER - CLEAN GAS FLARE		10.01	422.21	8.94				
550	TANK #550								
551	TANK #551								
552	TANK #552								
553	TANK #553								
560	TANK #560								
561	TANK #561								
562	TANK #562								
563	TANK #563								
564	TANK #564								
565	TANK #565								
566	TANK #566	0.04							
570	BENZENE TANK T 570								
571	AROMATICS TANK T 571								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
572	AROMATICS TANK T 572								
580	TANK #580	0.57							
581	TANK #581	1.71							
582	TANK #582	0.07							
583	TANK #583	0.07							
584	TANK #584	0.44							
901	CRUDE TANK #1 F-SS	1.51							
902	CRUDE TANK #2 F-SS	1.48							
903	CRUDE TANK #3 F-SS	1.4							
904	CRUDE TANK #4 F-SS	1.38							
905	CRUDE TANK #5 F-SS	1.4							
906	CRUDE TANK #6 F-SS	1.43							
907	CRUDE TANK #7 F-SS	0.08							
908	CRUDE TANK #8 F-SS	0.85							
909	CRUDE TANK #9 F-DS	1.77							
910	CRUDE TANK #10 F-SS	1.46							
911	CRUDE TANK #11	1.49							
912	CRUDE TANK #12	1.38							
944	INTER. TANK #44	1.03							
945	INTER. TANK #45	8.5							
947	INTER. TANK # 47	0.42							
948	INTER. TANK #48	0.41							
950	INTER. TANK #50	0.65							
951	INTER. TANK #51	0.29							
960	INTER. TANK #60	0.04							
961	INTER. TANK #61								
962	INTER. TANK #62	0.01							
965	INTER. TANK #65	0.01							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
966	INTER. TANK #66	11.01							
971	INTER. TANK #71	0.01							
972	INTER. TANK #72	0.97							
973	INTER. TANK #73	0.9							
974	INTER. TANK #74								
975	INTER. TANK #75	0.04							
976	INTER. TANK #76	0.03							
977	INTER. TANK #77	0.06							
978	INTER. TANK #78	0.09							
998	TANK FUGITIVE								
999	ACCIDENTAL RELEASES	58.42	0.38	6706.6	206.13				85.93

GROUP LEVEL AIR EMISSION INVENTORY SUMMARY

Page 8

	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
Total Emissions	694.499	3196.77	9625.28	27553.75	367	1168.28		102.4
9/8/05 Data Base	698.085	3459.55	9692.56	27553.81	417.299	1187.11	5.63	102.4

Pursuant to Regulation No. 30, I, the undersigned, am a Responsible Official and I have personally examined and am familiar with the information submitted in this document and all of its attachments. I certify, based on information and belief formed after reasonable inquiry the statements and information in the document are true, accurate and complete.

Responsible Official: _____ (Please Print)

Title: _____

Signature: _____ Date ____/____/____

See attachments

FACILITY ID NO. 00016
DELWARE CITY REFINERY

EMISSIONS FOR THE OPERATING PERIOD 1/1/04 – 4/30/04
MOTIVA ENTERPRISES LLC

Pursuant to Regulation No. 30, I, the undersigned, am a Responsible Official and I have personally examined and am familiar with the information submitted in this document and all of its attachments. I certify, based on information and belief formed after reasonable inquiry, that the statements and information in the document are true, accurate, and complete.

Responsible Official: Bert Molina (Please Print)

Title: Regulatory Affairs Manager

Signature: _____ Date: 4 / 27 / 05

FACILITY ID NO. 00016
DELWARE CITY REFINERY

EMISSIONS FOR THE OPERATING PERIOD 5/1/04 – 12/31/04
THE PREMCOR REFINING GROUP INC.

Pursuant to Regulation No. 30, I, the undersigned, am a Responsible Official and I have personally examined and am familiar with the information submitted in this document and all of its attachments. I certify, based on information and belief formed after reasonable inquiry, that the statements and information in the document are true, accurate, and complete.

Responsible Official: Michael J. Pollauf (Please Print)

Title: Refinery Manager

Signature: [signature] Date: 04/27/05

VALERO
DELAWARE CITY REFINERY
4550 Wrangle Hill Road • Delaware City, Delaware 19706-7000

JUN 0 2 2006
2370

CMRRR# 7005 1160 0004 2622 2255

HAND DELIVERED

May 31, 2006

Attn: Emission Inventory Department
Air Quality Management Section
DNREC
156 S. State St.
Dover, Delaware 19901

RE: 2005 Annual Air Emission Inventory and Emissions Statement Report
The Premcor Refining Group Inc. – Delaware City Refinery

Dear Sir or Madam:

Enclosed is the 2005 Annual Air Emission Inventory and Emissions Statement Report for The Premcor Refining Group Inc.'s (Premcor) Delaware City Refinery. Emissions data were filed online using the DNREC I-STEPS software. The electronic data submitted included carbon dioxide, nitrous oxide, and methane greenhouse gas emissions.

As requested by the Emissions Inventory Department, this submittal also includes the following:

- A disk containing 2005 storage tank emissions information in TANKS 4.09 output format.
- Tanks 4.09 printouts for a refinery fixed roof, internal floating roof and external floating roof tank. This is to document that the in the refinery's OpsEnvironmental software, which uses AP-42, Chapter 7 tank emissions equations, provides results consistent with Tank 4.09 software.
- A document summarizing emission factors and calculation methodologies. The condensible and filterable portions of PM-10 emissions were reported where data was available from stack testing. SCC factors used for estimating particulate emissions from refinery heaters were assumed to be PM-10 and PM-2.5 filterable material, in accordance with the draft proposed revisions to AP-42 emission factors for estimating PM2.5 emissions from gas-fired combustion units. The draft revisions indicate that all PM emissions from gas-fired combustion units are assumed to be PM2.5 and that condensible PM from gas-fired combustion units is negligible.

If you have any questions regarding this submittal, please contact me at (302) 834-6408.

Sincerely,

Cathe Kalisz

Cathe Kalisz
Staff Environmental Engineer

Enclosures

RECEIVED
JUN 01 2006
2474
STATE OF DELAWARE
AIR QUALITY MGMT.
NEW CASTLE OFFICE

bcc: Andrew Kenner
Gerry Forstell
Pat Covert
Heather Chelpaty
Mary Jen Beach

FILE: 110(k)-1-R-5

V:\env\Emission Inventory\2005\DNREC Submittal\2005 EI Transmittal Letter.doc

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
001	COKER INCINERATOR STACK	2.63	36.94	32.82	346.16		22.22		0.16
002	FLUID COKER CO BOLER 22H3	82.19	576.4	613.91	14671.9		90.18		4.89
003	HEATER 22-H-2	0.1	6	1.5	0.1		0.1	0.1	
004	COKE HANDLING EQUIPMENT						31.78		
005	CRUDE UNIT								
007	HEATER #2 FOR UNIT 21-H-2	2.1	101.1	0.9	2		2.2	2.2	
008	FOUL WATER TREATMENT SYS.								
010	COKER GASOLINE MEROX PLT				13.14				
011	CRACKER BYPASS STACK	4.57	45.14	15.01	394.18	14.43	19.33		0.46
012	CRACKER CO BOILER MAIN ST	107.59	900.18	716.74	9683.19	354.4	446.01		11.19
013	TETRA HEATER 32-H-101	0.3	11.9	4.1	0.3		0.4	0.4	
014	TETRA HEATER 32-H-102								
015	TETRA HEATER 32-H-103								
016	ALKYLATION FEED MEROX PLT				113.88				
017	POLYMERIZATION MEROX PLT				74.46				
018	ALKY & POLY UNITS								
020	REFORMER, HEATER 25-H-1B								
021	CATALYTIC REFORMER UNIT								
024	NAPTHALENE PLT HTR 33-H-1								
025	NAPTHALENE PLT HTR 33-H-2								
027	SULFUR RECOVERY UNIT 1	0.2	1.5		33	3.94	0.3	4.2	
028	SULFUR RECOVERY UNIT 2	0.2	4.1	0.1	119.4	2.95	0.16	3.1	
029	HYDROCRACKER								
030	HYDROCRACKER HTR 36-H-1	0.3	16.9	4.2	0.2		0.4	0.4	
031	HYDROCRACKER HTR 36-H-3	0.2	8.3	2.1	0.1		0.2	0.2	
032	HYDROCRACKER HTR 36-H-2	0.1	5.3	1.3			0.1	0.1	
033	HYDROCRACKER HYDROGEN PLT	2.44							
034	HYDROCRACKER H2 HTR 37-H1	2.6	72.2	11	0.9		2.8	2.8	

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
040	CLOSED TOLUENE FACILITY								
043	BENZENE EXTRACTION FAC.								
044	AROMATICS FACT. FACILITY								
050	CPI&API SEPARATOR, TANKS	243.74							
051	WASTEWATER TREATMNT PLANT	4.2	6.35	1.59					0.15
052	OIL RECOVERY SYSTEM								
066	CLOSED TRASH INCINERATOR								
067	BOILER 4	1.63	174.85	25.18	46.31	2.63	0.87		
068	BOILER 1	0.13	189.11	7.66	25.14	10.54	3.5		
069	BOILER 2	0.5	28.23	1.02	4.77	2.88	0.95		
070	BOILER 3	0.04	186.81		56.75	5.65	1.87		
071	CLOSED METHANOL PLANT								
072	CLOSED METHANOL PLT HTR 4								
073	NEW CCR REFORMER #1								
074	NEW CCR REF. HTR 42-H-1	1.6	74.5	0.4	1.6		1.7	1.7	
075	NEW CCR REF. HTR 42-H-2	1.7	76.9	0.4	1.7		1.8	1.8	
076	NEW CCR REF. HTR 42-H-3	0.8	37.7	0.2	0.8		0.9	0.9	
077	NEW CCR REF. HTR 42-H-7	0.6	23.8	0.2	0.6		0.6	0.6	
078	OLEFINS PLANT								
080	FLARE SYSTEM	8.9	4.32	23.52	0.16				
081	BARGE LOADING	8.16	2.92	7.84					
082	CLOSED LAND TREATMENT (TS								
083	VALVE MAINTENANCE	32.3							
084	HYDROD TRAIN HTR 29-H-101	0.4	23.9	6.1	0.6		0.5	0.5	
085	HYDRODS. TRAIN HTR 29-H-8	0.6	23.9	1.4	0.5		0.6	0.6	
086	HYDRODS. TRAIN HTR 29-H-1								
088	HYDRODESULFURIZER TRAIN 1								
089	HYDRODESULFURIZER TRAIN 2								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
090	HYDRODS. TRAIN HTR 29-H-2	0.5	23.7	5.9	0.4		0.5	0.5	
091	HYDRODS. TRAIN HTR 29-H-3	0.1	5.1	1.3	0.1		0.1	0.1	
092	HYDRODS. TRAIN HTR 29-H-9	0.2	10.9	2.7	0.2		0.2	0.2	
093	HYDRODESULFURIZER TRAIN 3								
094	HYDRODESULFURIZER TRAIN 4								
095	HYDRODS. TRAIN HTR 29-H-4		1.6						
096	HYDRODS. TRAIN HTR 29-H-7		2.2	0.5					
097	HYDRODESULFURIZER TRAIN 5								
098	HYDRODS. TRAIN HTR 29-H-5	0.3	17.6	1.2	0.1		0.3	0.3	
099	HYDRODS. TRAIN HTR 29-H-6	0.3	9.9	41.9	0.2		0.3	0.3	
100	CLOSED STACK GAS SCRUBBER								
101	H2 CARBON DRUM VENT								
102	NAPHTHA TREATER				191.54				
105	CRUDE UNIT HEATR 21-H-701	0.1	78.8	1.8	30.5	9.9	0.61	10.5	0.02
106	HTR FOR COKER SHU UNIT		21.6	5.4	0.2		0.5	0.5	
125	CNHTU HEATR 25-H-401		2.8	0.1	0.1		0.4	0.4	
126	CNHTU HTR 25-H-402		4.3		0.1		0.5	0.5	
130	CLOSED ACID PLANT								
135	PROD TANK #135	2.06							
136	PROD TANK #136	2.45							
137	PROD TANK #137	4.13							
139	PROD TANK #139	1.75							
145	PROD TANK #145	2.17							
146	PROD TANK #146	2.63							
147	PROD TANK #147	2.39							
149	PROD TANK #149	1.33							
150	PROD TANK #150	2.9							
161	PROD TANK #161	2							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
162	PROD TANK #162	3.27							
163	PROD TANK #163	4.3							
165	PROD TANK #165	1.49							
166	PROD TANK #166	4.54							
167	PROD TANK #167	0.72							
181	PROD TANK #181	2.59							
182	PROD TANK #182	3							
183	PROD TANK #183	4.13							
185	PROD TANK #185	1.84							
186	PROD TANK #186	0.18							
187	PROD TANK #187	1.47							
201	PROD TANK #203								
202	PROD TANK #202	0.09							
203	PROD TANK #203	2.24							
204	PROD TANK #204	0.59							
205	PROD TANK #205	0.41							
206	PROD TANK #206	0.48							
223	PROD TANK #223	2.2							
224	PROD TANK #224	1.76							
225	PROD TANK #225	0.2							
227	PROD TANK #227	0.21							
241	PROD TANK #241	0.42							
242	PROD TANK #242	0.39							
243	PROD TANK #243	0.26							
244	PROD TANK #244	3.44							
245	PROD TANK #245	2.06							
246	PROD TANK #246	1.55							
248	PROD TANK #248	0.12							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
250	HYDROGEN PLANT VENT								
261	PROD TANK #261	0.24							
262	PROD TANK #262								
263	PROD TANK #263	0.1							
264	PROD TANK #264	2.63							
265	PROD TANK #265	2.15							
266	PROD TANK #266	1.01							
268	PROD TANK #268	0.18							
281	PROD TANK #281	0.33							
282	PROD TANK #282	0.18							
283	PROD TANK #283	0.18							
284	PROD TANK #284	0.1							
285	PROD TANK #285	0.17							
286	PROD TANK #286	0.13							
331	BENZENE TANK T 331								
332	BENZENE TANK T 332								
401	TOLUENE TANK #401								
402	TOLUENE TANK #402								
405	TANK #405	0.06							
406	TANK #406	0.06							
407	TANK #407	0.16							
408	TANK #408								
470	TANK #470	0.02							
471	TANK #471	0.01							
481	TANK #481								
500	TANK #500								
502	TANK #502								
503	TANK #503								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
504	TANK #504								
505	TANK #505								
520	PROPANE PIT FLARE	1.08	1.04	7.51					
521	RFG COOLING TOWER								
523	REPOWERING COOLING TOW						1.77		
527	REPOWERING CT1	1.25	51.76	14.87	155.97	11.07	2.87		
528	REPOWERING CT2	1.19	69.09	10.92	45.88	11.76	2.91		
530	REPOWER - RAW GAS FLARE								
532	REPOWER SYNGAS FLARE		14.39	613.68	435.5				
550	TANK #550								
551	TANK #551								
552	TANK #552								
553	TANK #553								
560	TANK #560								
561	TANK #561								
562	TANK #562								
563	TANK #563								
564	TANK #564								
565	TANK #565								
566	TANK #566								
570	BENZENE TANK T 570								
571	AROMATICS TANK T 571								
572	AROMATICS TANK T 572								
580	TANK #580								
581	TANK #581								
582	TANK #582								
583	TANK #583								
584	TANK #584								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
901	CRUDE TANK #1 F-SS	1.16							
902	CRUDE TANK #2 F-SS	1.57							
903	CRUDE TANK #3 F-SS	1.5							
904	CRUDE TANK #4 F-SS	1.51							
905	CRUDE TANK #5 F-SS	1.28							
906	CRUDE TANK #6 F-SS	1.47							
907	CRUDE TANK #7 F-SS	0.4							
908	CRUDE TANK #8 F-SS	1.13							
909	CRUDE TANK #9 F-DS	1.87							
910	CRUDE TANK #10 F-SS	1.63							
911	CRUDE TANK #11	1.63							
912	CRUDE TANK #12	1.52							
944	INTER. TANK #44	0.97							
945	INTER. TANK #45	7.68							
947	INTER. TANK # 47	0.53							
948	INTER. TANK #48	0.15							
950	INTER. TANK #50	0.53							
951	INTER. TANK #51	0.38							
960	INTER. TANK #60	0.05							
961	INTER. TANK #61	0.04							
962	INTER. TANK #62	0.02							
965	INTER. TANK #65	0.89							
966	INTER. TANK #66	11.85							
971	INTER. TANK #71	0.06							
972	INTER. TANK #72	1.27							
973	INTER. TANK #73	0.63							
974	INTER. TANK #74								
975	INTER. TANK #75	0.08							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: THE PREMCOR REFINING GROUP INC

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
976	INTER. TANK #76	0.02							
977	INTER. TANK #77	3.83							
978	INTER. TANK #78	0.07							
998	TANK FUGITIVE								
999	ACCIDENTAL RELEASES	25.86	0.27	1834.39	23.46				11.19

GROUP LEVEL AIR EMISSION INVENTORY SUMMARY

	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
Total Emissions	662.89	2954.3	4021.36	26476.09	430.15	640.43	32.9	28.06

Pursuant to Regulation No. 30, I, the undersigned, am a Responsible Official and I have personally examined and am familiar with the information submitted in this document and all of its attachments I certify, based on information and belief formed after reasonable inquiry the statements and information in the document are true, accurate and complete.

Responsible Official: Andrew Kenner (Please Print)

Title: Vice President & General Manager

Signature: Andrew Kenner **Date** 5/31/06

2005 EMISSION FACTOR SUMMARY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
105	21-H-701 FUEL GAS	1/1-9/30/05: SCC Factor: 950 x Wt % S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	NOx CEMS	0.001 lb/MMBTU 4/26 -4/27/05 stack test	0.0001 lb/MMBTU 4/26 -4/27/05 stack test	0.00597 lb/MMBTU PM10-PRI PM10 primary from 4/26-27/05 stack test.	
	21-H-701 AMMONIA	SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S in ammonia stream from sour water stripper design data.					Precombustor design efficiency and estimated NH3 combustion efficiency of 21-H-701
7	21-H-2 GAS	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	NOx CEMS	0.001 lb/MMBTU 1993 source test	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
2	COKER COB FUEL GAS	SO2 CEMS and stack flow monitor	NOx CEMS and stack flow monitor	SCC Factor: 35 lb. CO /MMSCF through 4/30/05; CO CEMS 5/1/05 forward	SCC Factor: 2.8 lb. VOC/MMSCF	Use of 1992 stack test factor, ratioed for actual feed rate to stack test feed rate, less fuel gas emissions. 46.8% of TSP is PM-10.	
	COKER COB PROCESS GAS			SCC Factor: 35 lb. CO /MMSCF through 4/30/05; CO CEMS 5/1/05 forward	SCC Factor: 2.8 lb. VOC/MMSCF		Based on 4/04 process data
1	COKER INCINERATOR - FURL GAS	1/1-9/30/05: SCC Factor: 950 x Wt % S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
	COKER INCINERATOR - PROCESS GAS	Total SO2 emissions (presumed at monthly average for COB operation) less SO2 emissions from fuel gas	Total NOx emissions presumed at monthly average rate for COB operation	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	6/5/95 test data. 0.0074 lb/hr per BPD FF	
3	COKER SEALAS	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
12	FCCU COB MAIN STACK - GAS	SO2 CEMS and stack flow monitor	NOx CEMS and stack flow monitor	CO CEMS and stack flow monitor	SCC Factor: 2.8 lb. VOC/MMSCF	February and March 2005 stack test results for filterable fraction; SO3 and H2SO4 condensibles estimated from SO2 emissions.	
	FCCU COB MAIN STACK - PROCESS GAS				SCC Factor: 2.8 lb. VOC/MMSCF		Based on 4/04 process data
11	FCCU BYPASS STACK - PROCESS GAS	Total SO2 emissions presumed at monthly average rate for COB operation	Total NOx emissions presumed at monthly average rate for COB operation	Total CO emissions presumed at monthly average rate for COB operation	SCC Factor: 2.8 lb. VOC/MMSCF	February and March 2005 stack test results for filterable fraction; SO3 and H2SO4 condensibles estimated from SO2 emissions.	
84	29-H-101	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	0.138 lb/ MMBTU 1993 stack test factor	0.035 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
85	29-H-8	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	0.099 lb/ MMBTU 1993 stack test factor	0.006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
13	32-H-101	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	0.087 lb/ MMBTU 8/31/05 stack test factor	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
90	29-H-2	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	

2005 EMISSION FACTOR SUMMARY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
91	29-H-3	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
92	29-H-9	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
95	29-H-4	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	0.15 lb/ MMBTU 1993 stack test factor	0.004 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
96	29-H-7	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
98	29-H-5	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	0.15 lb/ MMBTU 1993 stack test factor	0.01 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
99	29-H-6	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	0.07 lb/ MMBTU 1993 stack test factor	0.301 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
34	H2 PLANT 37-H-1	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	NOx CEMS	0.01 lb/ MMBTU 1994 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
30	36-H-1	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
32	36-H-2	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
31	36-H-3	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
27	SRU I	SO2 CERMS	0.015 lb/ MMBTU 8/1-2/05 testing	0.0004 lb/ MMBTU 8/1-2/05 testing	0.002 lb/ MMBTU 8/1-2/05 testing	0.0430 lb/MMBTU PM-10 8/1-2/05 testing 93% of PM-PRI is condensable	
28	SRU II	SO2 CERMS	0.0240 lb/ MMBTU 8/1-2/05 testing	0.0005 lb/ MMBTU 8/1-2/05 testing	0.001 lb/ MMBTU 8/1-2/05 testing	0.018 lb/MMBTU PM-10 8/1-2/05 testing 95% of PM-PRI is condensable	
74	42-H-1	SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS.	NOx CEMS	0.0006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
75	42-H-2	SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS.	NOx CEMS	0.0006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
76	42-H-3	SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS.	NOx CEMS	0.0006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	

2005 EMISSION FACTOR SUMMARY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
77	42-H-7	SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS.	0.10 lb/ MMBTU 2001 stack test factor	0.001 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
80	FLARE PILOT/PURGE GAS	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	0.068 lb/MMBTU AP-42 Factor for Industrial Flares	0.37 lb/MMBTU AP-42 Factor for Industrial Flares	0.14 lb/MMBTU AP-42 Factor for Industrial Flares	N/A	
68	DCPP 1 GAS	SO2 CEMS	NOx CEMS	0.006 lb/MMBTU October 2001 stack test factor	0.0001 lb/MMBTU October 2001 stack test factor	0.011 lb/MMBTU July and Sept. 2004 stack tests	
69	DCPP 2 GAS	SO2 CEMS	NOx CEMS	CO CEMS	0.0003 lb/MMBTU 6/15/04 stack test	0.0023 lb/MMBTU 6/15/04 stack test	
70	DCPP 3 GAS	SO2 CEMS	NOx CEMS	0.000 lb/MMBTU October 2001 stack test factor	0.00003 lb/MMBTU October 2001 stack test factor	0.0056 lb/MMBTU October 2001 stack test factor	
67	DCPP 4 GAS	SO2 CEMS	NOx CEMS	0.02 lb/MMBTU 1993 stack test factor	SCC Factor: 1.4 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
106	COKER SHU HTR	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
125	25-H-401	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	0.0028 lb/ MMBTU 3/30/05 stack test factor	0.075 lb/ MMSCF 2/01 stack test factor	0.0 lb/ MMSCF 2/01 stack test factor	4.56 lb/ MMSCF 2/01 stack test factor	
126	25-H-402	1/1-9/30/05: SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S data from H2S CEMS. Starting 10/1 - material balance using TRS from fuel gas CEMS.	0.027 lb/ MMBTU 3/29/05 stack test factor	0.0 lb/ MMSCF 2/01 stack test factor	0.07 lb/ MMSCF 2/01 stack test factor	3.82 lb/ MMSCF 2/01 stack test factor	
4	COKER BAG HOUSE	N/A	N/A	N/A	N/A	Emission Factor 0.2 Grains/SCF. Design flow of 5000 SCF/MIN. TSP not PM-10.	
51	WWTP	N/A	N/A	N/A	1992 estimate of VOC emissions following NESHAPS controls	N/A	Estimate - amount evaporated from wastewater
	WWTP VCU	N/A	Permit Factor: 12.8 lb NOx /M Gal	Permit Factor: 3.2 lb. CO / Mgal	Permit Factor: 0.26 lb VOC /Mgal	N/A	
50	WWTP DOWNSTREAM (CPI @ API SEP. TANKS)	N/A	N/A	N/A	WATER 9 model	N/A	
520	PROPANE PIT FLARE PILOT	N/A	4.089 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	29.5 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	4.23 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	N/A	
	PROPANE PIT FLARE PRODUCT	N/A	4.089 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	29.5 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	4.23 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	N/A	

2005 EMISSION FACTOR SUMMARY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
52	OIL RECOVERY SYS	N/A	N/A	N/A	Permit limit	N/A	
17	POLY MEROX	17 lb/hr limit from air permit	N/A	N/A	N/A	N/A	
16	ALKY MEROX	26 lb/hr limit from air permit	N/A	N/A	N/A	N/A	
10	COKER MEROX	3 lb/hr limit from air permit	N/A	N/A	N/A	N/A	
102	NAPHTHA TREATER	46 lb/hr limit from air permit	N/A	N/A	N/A	N/A	
83	FUGITIVES (VALVE MAINTENANCE)	N/A	N/A	N/A	Use of EPA correlation equations and monitoring data	N/A	
81	BARGE LOADING GASOLINE	N/A	0.000581 lb/BBL 10/24/04 source testing	0.00156 lb/BBL 10/24/04 source testing	0.000646 lb/BBL 10/24/04 source testing	N/A	
81	BARGE LOADING METHANOL	N/A	2002 source testing	2002 source testing	2002 source testing	N/A	
81	BARGE LOADING DISTILLATE	N/A	N/A	N/A	AP-42 factor: 0.012 lb/1000 Gal Loaded	N/A	
999	ACCIDENTAL RELEASES	Varies depending on type of release.	Varies depending on type of release.	Varies depending on type of release.	Varies depending on type of release.	Varies depending on type of release.	Varies depending on type of release.
Various	TANK FARM	N/A	N/A	N/A	EPA AP-42 Equations	0.0	
521	RFG COOLING TOWER	N/A	N/A	N/A	Periodic sampling of VOC concentrations in influent/recycle/effluent streams	Periodic sampling of TDS in influent	
527	REPOWERING CT 1 SYNGAS	SO2 CEMS	NOx CEMS	CO CEMS	0.0002 lb/MMBTU - w/out duct firing 0.0031 lb/MMBTU with duct firing 2003 stack testing	0.0094 lb/MMBTU - w/out duct firing 0.0125 lb/MMBTU with duct firing 2003 stack testing	
	REPOWERING CT 1 LSDF	SO2 CEMS	NOx CEMS	CO CEMS	0.0002 lb/MMBTU - w/out duct firing 0.0036 lb/MMBTU with duct firing 2003 stack testing	0.0176 lb/MMBTU - w/out duct firing 0.0165 lb/MMBTU with duct firing 2003 stack testing	

2005 EMISSION FACTOR SUMMARY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
528	REPOWERING CT 2 SYNGAS	SO2 CEMS	NOx CEMS	CO CEMS	0.0002 lb/MMBTU - w/out duct firing 0.0031 lb/MMBTU with duct firing 2003 stack testing	0.0094 lb/MMBTU - w/out duct firing 0.0125 lb/MMBTU with duct firing 2003 stack testing	
	REPOWERING CT 2 LSDF	SO2 CEMS	NOx CEMS	CO CEMS	0.0002 lb/MMBTU - w/out duct firing 0.0036 lb/MMBTU with duct firing 2003 stack testing	0.0065 lb/MMBTU - w/out duct firing 0.0165 lb/MMBTU with duct firing 2003 stack testing	
523	REPOWERING COOLING TOWER	N/A	N/A	N/A	N/A	Calculated from flow and TSS concentration	
530	REPOWERING RAW GAS FLARE	Material balance based on sulfur content	Prorated emissions from design feed rate and AP-42 emission factor - 0.068 lb/MMBTU	Prorated emissions from design feed rate and design CO destruction effciency of 98%.	N/A	N/A	
532	REPOWERING CLEAN GAS FLARE	Material balance based on sulfur content	Prorated emissions from design feed rate and AP-42 emission factor - 0.068 lb/MMBTU	Prorated emissions from design feed rate and design CO destruction effciency of 98%.	N/A	N/A	
250	HYDROGEN PLANT VENT - DEAERATOR	N/A	N/A	N/A	6/3/04 source test	N/A	
250	HYDROGEN PLANT VENT - CO2 VENTED	N/A	N/A	N/A	6/3/04 source test	N/A	

VALERO
DELAWARE CITY REFINERY
4550 Wrangle Hill Road • Delaware City, Delaware 19706-7000

April 30, 2007
CMRRR# 7006 3450 0003 6308 4582

Attn: Emission Inventory Department
Air Quality Management Section
DNREC
156 S. State St.
Dover, DE 19901

RE: 2006 Annual Air Emission Inventory and Emissions Statement Report
The Premcor Refining Group, Inc. – Delaware City Refinery

Dear Sir or Madam:

Enclosed is the 2006 Annual Air Emission Inventory and Emissions Statement Report for The Premcor Refining Group Inc.'s (Premcor) Delaware City Refinery. Emissions data were filed online using the DNREC i-STEPS software. The electronic data submitted included greenhouse gas emissions calculated using SANGEA software and hazardous air pollutants (HAPs) of interest by the Department.

Also enclosed is a summary of emission factors and calculation methodologies for criteria pollutants (including criteria pollutant precursors). Please note that Premcor has not conducted any stack testing for source-specific PM2.5 factors. PM10 condensibles have been reported as PM2.5-PRI where PM10 breakdowns were available from actual stack testing data.

Should you have any questions, please call me at (302) 836-6652.

Sincerely,

Scott Mesavitz
Associate Environmental Engineer

\Enclosures

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
001	COKER INCINERATOR STACK	3.4	131.6	41.9	2817.5		143.22		0.049
002	FLUID COKER CO BOLER 22H3	13.1	501.5	426.6	13348.5		81.21		0.546
003	HEATER 22-H-2	0.1	7.3	1.8	0.7		0.2		0.0181
004	COKE HANDLING EQUIPMENT						37.5		
005	CRUDE UNIT								
007	HEATER #2 FOR UNIT 21-H-2	2.3	115.8	0.9	11.1		2.5		0.287
008	FOUL WATER TREATMENT SYS.								
010	COKER GASOLINE MEROX PLT								
011	CRACKER BYPASS STACK	6.7	28.7	21.5	593.3	1.24	25.67		0.078
012	CRACKER CO BOILER MAIN ST	104.7	740.3	466.6	7993.7	25.34	517.65		1.1169
013	TETRA HEATER 32-H-101	0.3	6.5	4.3	1.6		0.4		0.0427
014	TETRA HEATER 32-H-102								
015	TETRA HEATER 32-H-103								
016	ALKYLATION FEED MEROX PLT								
017	POLYMERIZATION MEROX PLT								
018	ALKY & POLY UNITS								
020	REFORMER, HEATER 25-H-1B								
021	CATALYTIC REFORMER UNIT								
024	NAPTHALENE PLT HTR 33-H-1								
025	NAPTHALENE PLT HTR 33-H-2								
027	SULFUR RECOVERY UNIT 1	0.1	4.6	1.1	66.3	1.27	4		0.0478
028	SULFUR RECOVERY UNIT 2		2.4	0.7	89.5	0.87	0.43		0.0379
029	HYDROCRACKER								
030	HYDROCRACKER HTR 36-H-1	0.4	17.7	4.4	1.7		0.4		0.0437
031	HYDROCRACKER HTR 36-H-3	0.2	12	3	1.1		0.3		0.0296
032	HYDROCRACKER HTR 36-H-2	0.1	4.9	1.2	0.5		0.1		0.012
033	HYDROCRACKER HYDROGEN PLT								
034	HYDROCRACKER H2 HTR 37-H1	3.1	96.7	12.1	14.9		3.3		0.383

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
040	CLOSED TOLUENE FACILITY								
043	BENZENE EXTRACTION FAC.								
044	AROMATICS FACT. FACILITY								
050	CPI&API SEPARATOR, TANKS	2.64							2.59
051	WASTEWATER TREATMNT PLANT	4.3	6.3	1.6					
052	OIL RECOVERY SYSTEM								
066	CLOSED TRASH INCINERATOR								
067	BOILER 4	1.7	185.6	26	54.5	2.72	0.9		
068	BOILER 1	0.1	178.7	7.4	39	10.25	3.4		
069	BOILER 2	0.5	29.2	2.6	5.6	2.63	0.87		
070	BOILER 3		157.7		46.7	5	1.66		
071	CLOSED METHANOL PLANT								
072	CLOSED METHANOL PLT HTR 4								
073	NEW CCR REFORMER #1								
074	NEW CCR REF. HTR 42-H-1	1.8	71.2	0.4	8.4		1.9		0.218
075	NEW CCR REF. HTR 42-H-2	2	78.9	0.5	9.3		2.1		0.242
076	NEW CCR REF. HTR 42-H-3	0.9	37.1	0.2	4.4		1		0.114
077	NEW CCR REF. HTR 42-H-7	0.6	22.6	0.2	2.8		0.6		0.0729
078	OLEFINS PLANT								
080	FLARE SYSTEM	8.4	4.1	22.2	0.7				
081	BARGE LOADING	6.2	2.1	2.7					
082	CLOSED LAND TREATMENT (TS								
083	VALVE MAINTENANCE	25.3							
084	HYDROD TRAIN HTR 29-H-101	0.5	27	6.8	2.4		0.5		0.0616
085	HYDRODS. TRAIN HTR 29-H-8	0.6	22	1.3	2.7		0.6		0.0705
086	HYDRODS. TRAIN HTR 29-H-1								
088	HYDRODESULFURIZER TRAIN 1								
089	HYDRODESULFURIZER TRAIN 2								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
090	HYDRODS. TRAIN HTR 29-H-2	0.5	25.7	6.4	2.5		0.6		0.0635
091	HYDRODS. TRAIN HTR 29-H-3	0.1	6.6	1.7	0.7		0.1		0.0163
092	HYDRODS. TRAIN HTR 29-H-9	0.2	11.3	2.8	1.1		0.2		0.028
093	HYDRODESULFURIZER TRAIN 3								
094	HYDRODESULFURIZER TRAIN 4								
095	HYDRODS. TRAIN HTR 29-H-4		1.9		0.2				0.00392
096	HYDRODS. TRAIN HTR 29-H-7		1.8	0.4	0.2				0.00433
097	HYDRODESULFURIZER TRAIN 5								
098	HYDRODS. TRAIN HTR 29-H-5	0.4	21.7	1.4	1.7		0.4		0.046
099	HYDRODS. TRAIN HTR 29-H-6	0.4	12.2	51.6	2.1		0.5		0.0541
100	CLOSED STACK GAS SCRUBBER								
101	H2 CARBON DRUM VENT								
102	NAPHTHA TREATER								
105	CRUDE UNIT HEATR 21-H-701		74.3		18.9	5.05	4.51	0.3987	0.013
106	HTR FOR COKER SHU UNIT	0.5	24.6	6.2	2.4		0.5		0.0608
125	CNHTU HEATR 25-H-401		2.5		1.3				0.0349
126	CNHTU HTR 25-H-402		6		2.7		0.1		0.0704
130	CLOSED ACID PLANT								
135	PROD TANK #135	1.89							
136	PROD TANK #136	1.9							
137	PROD TANK #137	1.7							
139	PROD TANK #139	1.68							
145	PROD TANK #145	1.75							
146	PROD TANK #146	1.92							
147	PROD TANK #147	1.82							
149	PROD TANK #149	1.27							
150	PROD TANK #150	3.19							
161	PROD TANK #161	2.04							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
162	PROD TANK #162	2.46							
163	PROD TANK #163	2.83							
165	PROD TANK #165	1.31							
166	PROD TANK #166	3.28							
167	PROD TANK #167	1.07							
181	PROD TANK #181	2.03							
182	PROD TANK #182	1.77							
183	PROD TANK #183	2.99							
185	PROD TANK #185	2.48							
186	PROD TANK #186	0.33							
187	PROD TANK #187	1.35							
201	PROD TANK #203	2.09							
202	PROD TANK #202	0.1							
203	PROD TANK #203								
204	PROD TANK #204	1.77							
205	PROD TANK #205	1.73							
206	PROD TANK #206	0.42							
223	PROD TANK #223	1.59							
224	PROD TANK #224	1.67							
225	PROD TANK #225	1.22							
227	PROD TANK #227	0.21							
241	PROD TANK #241	2.58							
242	PROD TANK #242	0.38							
243	PROD TANK #243	0.14							
244	PROD TANK #244	3.26							
245	PROD TANK #245	1.85							
246	PROD TANK #246	2.27							
248	PROD TANK #248	0.06							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
250	HYDROGEN PLANT VENT	0.6							
261	PROD TANK #261	1.25							
262	PROD TANK #262								
263	PROD TANK #263	0.14							
264	PROD TANK #264	2.1							
265	PROD TANK #265	2.18							
266	PROD TANK #266	0.61							
268	PROD TANK #268	0.18							
281	PROD TANK #281	0.05							
282	PROD TANK #282	0.18							
283	PROD TANK #283	0.26							
284	PROD TANK #284	0.2							
285	PROD TANK #285	0.23							
286	PROD TANK #286	0.12							
331	BENZENE TANK T 331								
332	BENZENE TANK T 332								
401	TOLUENE TANK #401								
402	TOLUENE TANK #402								
405	TANK #405								
406	TANK #406								
407	TANK #407	0.13							
408	TANK #408								
470	TANK #470								
471	TANK #471								
481	TANK #481								
500	TANK #500								
502	TANK #502								
503	TANK #503								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
504	TANK #504								
505	TANK #505								
520	PROPANE PIT FLARE	1.1	1	7.5					
521	RFG COOLING TOWER						1.2		
523	REPOWERING COOLING TOW								
527	REPOWERING CT1	0.43	96.1	10	154	16.08	4.68		
528	REPOWERING CT2	0.57	130.65	7.33	229.24	20.81	6.39		
530	REPOWER - RAW GAS FLARE								
532	REPOWER SYNGAS FLARE		12.6	545.1	374.4				
550	TANK #550								
551	TANK #551								
552	TANK #552								
553	TANK #553								
560	TANK #560								
561	TANK #561								
562	TANK #562								
563	TANK #563								
564	TANK #564								
565	TANK #565								
566	TANK #566								
570	BENZENE TANK T 570								
571	AROMATICS TANK T 571								
572	AROMATICS TANK T 572								
580	TANK #580								
581	TANK #581								
582	TANK #582								
583	TANK #583								
584	TANK #584								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
901	CRUDE TANK #1 F-SS	1.33							
902	CRUDE TANK #2 F-SS	0.42							
903	CRUDE TANK #3 F-SS	1.31							
904	CRUDE TANK #4 F-SS	1.41							
905	CRUDE TANK #5 F-SS	1.38							
906	CRUDE TANK #6 F-SS	1.31							
907	CRUDE TANK #7 F-SS	1.44							
908	CRUDE TANK #8 F-SS	1.44							
909	CRUDE TANK #9 F-DS	1.74							
910	CRUDE TANK #10 F-SS	1.59							
911	CRUDE TANK #11	1.57							
912	CRUDE TANK #12	1.5							
944	INTER. TANK #44	0.88							
945	INTER. TANK #45	7.64							
947	INTER. TANK # 47	0.35							
948	INTER. TANK #48	0.53							
950	INTER. TANK #50	0.91							
951	INTER. TANK #51	0.36							
960	INTER. TANK #60	0.21							
961	INTER. TANK #61	0.03							
962	INTER. TANK #62	0.02							
965	INTER. TANK #65	1.03							
966	INTER. TANK #66	2.55							
971	INTER. TANK #71	0.07							
972	INTER. TANK #72	0.96							
973	INTER. TANK #73	0.63							
974	INTER. TANK #74								
975	INTER. TANK #75	0.09							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
976	INTER. TANK #76	0.01							
977	INTER. TANK #77	4.75							
978	INTER. TANK #78	8.84							
998	TANK FUGITIVE								
999	ACCIDENTAL RELEASES	23.3	0.1	1349.8	80.3				1.3

GROUP LEVEL AIR EMISSION INVENTORY SUMMARY

	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
Total Emissions	334.47	2921.55	3048.23	25988.64	91.26	849.59	0.3987	7.75595

Pursuant to Regulation No. 30, I, the undersigned, am a Responsible Official and I have personally examined and am familiar with the information submitted in this document and all of its attachments. I certify, based on information and belief formed after reasonable inquiry the statements and information in the document are true, accurate and complete.

Responsible Official: Andrew Kenner (Please Print)

Title: Vice President and General Manager

Signature: Andrew Kenner **Date** 4/30/07

2006 EMISSION FACTOR SUMMARY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
105	21-H-701 FUEL GAS	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.000 lb/MMBTU 3/06 stack test	0.000 lb/MMBTU 3/06 stack test	0.006 lb/MMBTU PM10-PRI PM10 primary from 3/06 stack test.	
	21-H-701 AMMONIA	SCC Factor: 950 x Wt.% S Lb. SOx /MMSCF fuel. Wt.% S in ammonia stream from sour water stripper design data.					Precombustor design efficiency and estimated NH3 combustion efficiency of 21-H-701
7	21-H-2 GAS	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.001 lb/MMBTU 1993 source test	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
2	COKER COB FUEL GAS	SO2 CEMS and stack flow monitor	NOx CEMS and stack flow monitor	CO CEMS and stack flow monitor	Pre-WGS: SCC Factor: 2.8 lb. VOC/MMSCF Post-WGS: 1/18/07 stack testing	Use of 1995 stack test factor, ratioed for actual feed rate to stack test feed rate, less fuel gas emissions. 46.8% of TSP is PM-10.	Pre-WGS: 5/25/06 stack testing Post-WGS: 1/18/07 stack testing
	COKER COB PROCESS GAS				Pre-WGS: SCC Factor: 2.8 lb. VOC/MMSCF Post-WGS: 1/18/07 stack testing		
1	COKER INCINERATOR - FUEL GAS	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
	COKER INCINERATOR - PROCESS GAS	Total SO2 emissions (presumed at monthly average for COB operation) less SO2 emissions from fuel gas	Total NOx emissions presumed at monthly average rate for COB operation	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	6/5/95 test data 0.0074 lb/hr per BPD FF	Based on 4/04 process data
3	COKER SEALAS	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
12	FCCU COB MAIN STACK - GAS	SO2 CEMS and stack flow monitor	NOx CEMS and stack flow monitor	CO CEMS and stack flow monitor	SCC Factor: 2.8 lb. VOC/MMSCF		
	FCCU COB MAIN STACK - PROCESS GAS				SCC Factor: 2.8 lb. VOC/MMSCF	Pre-WGS: 7/19-20/06 stack test Post-WGS: limit from air permit	Based on 4/04 process data
11	FCCU BYPASS STACK - PROCESS GAS	Total SO2 emissions presumed at monthly average rate for COB operation	Total NOx emissions presumed at monthly average rate for COB operation	SCC Factor: 13700 lb/MBBL FF with applied control efficiency of 99.7%	SCC Factor: 2.8 lb. VOC/MMSCF	February and March 2005 stack test results for filterable fraction; SO3 and H2SO4 condensibles estimated from SO2 emissions.	
84	29-H-101	Material balance using TRS from fuel gas CEMS.	0.138 lb/ MMBTU 1993 stack test factor	0.035 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
85	29-H-8	Material balance using TRS from fuel gas CEMS.	0.099 lb/ MMBTU 1993 stack test factor	0.006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
13	32-H-101	Material balance using TRS from fuel gas CEMS.	0.048 lb/ MMBTU 10/16/06 stack test factor	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
90	29-H-2	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06

2006 EMISSION FACTOR SUMMARY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
91	29-H-3	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
92	29-H-9	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
95	29-H-4	Material balance using TRS from fuel gas CEMS.	0.15 lb/ MMBTU 1993 stack test factor	0.004 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
96	29-H-7	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
98	29-H-5	Material balance using TRS from fuel gas CEMS.	0.15 lb/ MMBTU 1993 stack test factor	0.01 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
99	29-H-6	Material balance using TRS from fuel gas CEMS.	0.07 lb/ MMBTU 1993 stack test factor	0.301 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
34	H2 PLANT 37-H-1	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.01 lb/ MMBTU 1994 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
30	36-H-1	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
32	36-H-2	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
31	36-H-3	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
27	SRU I	SO2 CERMS	0.03 lb/ MMBTU 10/17-19/06 testing	0.0071 lb/ MMBTU 10/17-19/06 testing	0.0005 lb/ MMBTU 10/17-19/06 testing	1.33 lb/hr PM-10 10/17-19/06 testing 24% of PM-PRI is condensable	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
28	SRU II	SO2 CERMS	0.02 lb/ MMBTU 10/17-19/06 testing	0.006 lb/ MMBTU 10/17-19/06 testing	0.0003 lb/ MMBTU 10/17-19/06 testing	0.32 lb/hr PM-10 10/17-19/06 testing 67% of PM-PRI is condensable	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
74	42-H-1	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.0006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
75	42-H-2	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.0006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
76	42-H-3	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.0006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06

2006 EMISSION FACTOR SUMMARY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
77	42-H-7	Material balance using TRS from fuel gas CEMS.	0.10 lb/ MMBTU 2001 stack test factor	0.001 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
80	FLARE PILOT/PURGE GAS	Material balance using TRS from fuel gas CEMS.	0.068 lb/MMBTU AP-42 Factor for Industrial Flares	0.37 lb/MMBTU AP-42 Factor for Industrial Flares	0.14 lb/MMBTU AP-42 Factor for Industrial Flares	N/A	
68	DCPP 1 GAS	SO2 CEMS	NOx CEMS	0.006 lb/MMBTU October 2001 stack test factor	0.0001 lb/MMBTU October 2001 stack test factor	0.011 lb/MMBTU July and Sept. 2004 stack tests	
69	DCPP 2 GAS	SO2 CEMS	NOx CEMS	CO CEMS	0.0003 lb/MMBTU 6/15/04 stack test	0.0023 lb/MMBTU 6/15/04 stack test	
70	DCPP 3 GAS	SO2 CEMS	NOx CEMS	0.000 lb/MMBTU October 2001 stack test factor	0.00003 lb/MMBTU October 2001 stack test factor	0.0056 lb/MMBTU October 2001 stack test factor	
67	DCPP 4 GAS	SO2 CEMS	NOx CEMS	0.02 lb/MMBTU 1993 stack test factor	SCC Factor: 1.4 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
106	COKER SHU HTR	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
125	25-H-401	Material balance using TRS from fuel gas CEMS.	0.023 lb/ MMBTU 3/14/06 stack test factor	0.0571 lb/ MMSCF 2/01 stack test factor	0.0 lb/ MMSCF 2/01 stack test factor	0.359 lb/ MMSCF 2/01 stack test factor	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
126	25-H-402	Material balance using TRS from fuel gas CEMS.	0.027 lb/ MMBTU 3/15/06 stack test factor	0.0 lb/ MMSCF 2/01 stack test factor	0.002 lb/ MMSCF 2/01 stack test factor	0.301 lb/ MMSCF 2/01 stack test factor	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
4	COKER BAG HOUSE	N/A	N/A	N/A	N/A	Emission Factor 0.2 Grains/SCF. Design flow of 5000 SCF/MIN. TSP not PM-10.	
51	WWTP	N/A	N/A	N/A	1992 estimate of VOC emissions following NESHAPS controls	N/A	Estimate - amount evaporated from wastewater
	WWTP VCU	N/A	Permit Factor: 12.8 lb NOx /M Gal	Permit Factor: 3.2 lb. CO / Mgal	Permit Factor: 0.26 lb VOC /Mgal	N/A	
50	WWTP DOWNSTREAM (CPI @ API SEP. TANKS)	N/A	N/A	N/A	WATER 9 model	N/A	WATER 9 model
520	PROPANE PIT FLARE PILOT	N/A	4.089 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	29.5 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	4.23 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	N/A	
	PROPANE PIT FLARE PRODUCT	N/A	4.089 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	29.5 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	4.23 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	N/A	

2006 EMISSION FACTOR SUMMARY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
52	OIL RECOVERY SYS	N/A	N/A	N/A	Permit limit	N/A	
17	POLY MEROX	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	
16	ALKY MEROX	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	
10	COKER MEROX	61.9 ppmv from analytical data	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
102	NAPHTHA TREATER	0.026 lb/MMBTU - based on max. 162 ppmv H2S	0.035 lb. NOx/MMBTU	0.074 lb. CO /MMBTU - Current permit limit in APC-95/0570 - CON (Amend 2)	0.003 lb. VOC/MMBTU - Current permit limit in APC-95/0570 - CON (Amend 2)	SCC Factor: 3 lb PM-10/MMSCF	
83	FUGITIVES (VALVE MAINTENANCE)	N/A	N/A	N/A	Use of EPA correlation equations and monitoring data	N/A	
81	BARGE LOADING GASOLINE	N/A	0.000617 lb/BBL 10/31-11/2/06 source testing	0.000803 lb/BBL 10/31-11/2/06 source testing	0.00023 lb/BBL 10/31-11/2/06 source testing	N/A	
81	BARGE LOADING METHANOL	N/A	2002 source testing	2002 source testing	2002 source testing	N/A	
81	BARGE LOADING DISTILLATE	N/A	N/A	N/A	AP-42 factor: 0.012 lb/1000 Gal. Loaded	N/A	
999	ACCIDENTAL RELEASES	Varies depending on type of release.	Varies depending on type of release.	Varies depending on type of release.	Varies depending on type of release.	Varies depending on type of release.	Varies depending on type of release.
Various	TANK FARM	N/A	N/A	N/A	EPA AP-42 Equations	0.0	
521	RFG COOLING TOWER	N/A	N/A	N/A	Periodic sampling of VOC concentrations in influent/recycle/effluent streams	Periodic sampling of TDS in influent	
521	ETHER PLANT COOLING TOWER	N/A	N/A	N/A	Used same analytical data as RFG cooling tower	Used same analytical data as RFG cooling tower	
527	REPOWERING CT 1 SYNGAS	SO2 CEMS	NOx CEMS	CO CEMS	0.0002 lb/MMBTU - w/out duct firing 0.0031 lb/MMBTU with duct firing 2003 stack testing	0.0094 lb/MMBTU - w/out duct firing 0.0125 lb/MMBTU with duct firing 2003 stack testing	
	REPOWERING CT 1 LSDF	SO2 CEMS	NOx CEMS	CO CEMS	0.0002 lb/MMBTU - w/out duct firing 0.0036 lb/MMBTU with duct firing 2003 stack testing	0.0176 lb/MMBTU - w/out duct firing 0.0165 lb/MMBTU with duct firing 2003 stack testing	

2006 EMISSION FACTOR SUMMARY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
528	REPOWERING CT 2 SYNGAS	SO2 CEMS	NOx CEMS	CO CEMS	0.0002 lb/MMBTU - w/out duct firing 0.0031 lb/MMBTU with duct firing 2003 stack testing	0.0094 lb/MMBTU - w/out duct firing 0.0125 lb/MMBTU with duct firing 2003 stack testing	
	REPOWERING CT 2 LSDF	SO2 CEMS	NOx CEMS	CO CEMS	0.0002 lb/MMBTU - w/out duct firing 0.0036 lb/MMBTU with duct firing 2003 stack testing	0.0065 lb/MMBTU - w/out duct firing 0.0165 lb/MMBTU with duct firing 2003 stack testing	
523	REPOWERING COOLING TOWER	N/A	N/A	N/A	N/A	Calculated from flow and TSS concentration	
530	REPOWERING RAW GAS FLARE	Material balance based on sulfur content	Prorated emissions from design feed rate and AP-42 emission factor - 0.068 lb/MMBTU	Prorated emissions from design feed rate and design CO destruction effciency of 98%.	N/A	N/A	
532	REPOWERING CLEAN GAS FLARE	Material balance based on sulfur content	Prorated emissions from design feed rate and AP-42 emission factor - 0.068 lb/MMBTU	Prorated emissions from design feed rate and design CO destruction effciency of 98%.	N/A	N/A	
250	HYDROGEN PLANT VENT - DEAERATOR	N/A	N/A	N/A	1/24-25/06 source test	N/A	
250	HYDROGEN PLANT VENT - CO2 VENTED	N/A	N/A	N/A	1/24-25/06 source test	N/A	

VALERO
DELAWARE CITY REFINERY
4550 Wrangle Hill Road • Delaware City, Delaware 19706-7000

CMRRR# 7006 3450 0003 6313 4973

April 29, 2008

Air Quality Management Section, DNREC
Emission Inventory Development Program
156 South State St.
Dover, DE 19901

RE: 2007 Annual Air Emission Inventory and Emissions Statement Report
The Premcor Refining Group, Inc. – Delaware City Refinery

Dear Sir or Madam:

Enclosed are the following documents for the Premcor Refining Group Inc.'s Delaware City Refinery:

- 2007 Annual Air Emission Inventory and Emissions Statement Summary Report
- CD containing a copy of the Detail Emissions Report and a signed Optical Media Certification Form
- A summary of emission factors and calculation methodologies for criteria pollutants

The electronic data submitted included greenhouse gas emissions and hazardous air pollutants (HAPs) of interest by the Department. If you have any questions or need additional information, please contact me at (302) 834-6408.

Sincerely,

Cathe Kalisz

Cathe Kalisz
Staff Environmental Engineer

\Enclosures

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
001	COKER INCINERATOR STACK	4.73	52.21	59.2	847.93		60.94		0.05
002	FLUID COKER CO BOLER 22H3	3.06	526.68	121.45	75.17	10.51	128.82		0.17
003	HEATER 22-H-2	0.14	7.03	1.76	1.27		0.15		0.018
004	COKE HANDLING EQUIPMENT						37.54		
005	CRUDE UNIT								
007	HEATER #2 FOR UNIT 21-H-2	2.21	97.37	0.9	20.7		2.37		0.283
008	FOUL WATER TREATMENT SYS.								
010	COKER GASOLINE MEROX PLT								
011	CRACKER BYPASS STACK	0.4	21.06	18.44	404.97	1.11	22.94		0.312
012	FCCU COB WGS STACK	10.02	629.31	375.8	101.25	10.67	62.68		7.8
013	TETRA HEATER 32-H-101	0.34	12.13	4.23	3.24		0.36		0.0434
014	TETRA HEATER 32-H-102								
015	TETRA HEATER 32-H-103								
016	ALKYLATION FEED MEROX PLT								
017	POLYMERIZATION MEROX PLT								
018	ALKY & POLY UNITS								
020	REFORMER, HEATER 25-H-1B								
021	CATALYTIC REFORMER UNIT								
024	NAPTHALENE PLT HTR 33-H-1								
025	NAPTHALENE PLT HTR 33-H-2								
027	SULFUR RECOVERY UNIT 1	0.07	4.46	1.05	71.09	1.39	4.38		0.0471
028	SULFUR RECOVERY UNIT 2	0.03	2.21	0.67	94.11	0.8	0.4		0.0348
029	HYDROCRACKER								
030	HYDROCRACKER HTR 36-H-1	0.33	16.41	4.1	3.42		0.35		0.0421
031	HYDROCRACKER HTR 36-H-3	0.21	10.26	2.57	2.1		0.22		0.0263
032	HYDROCRACKER HTR 36-H-2	0.1	5.09	1.27	1.06		0.11		0.0131
033	HYDROCRACKER HYDROGEN PLT								
034	HYDROCRACKER H2 HTR 37-H1	3.3	105.76	13.45	31.81		3.53		0.423
040	CLOSED TOLUENE FACILITY								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
043	BENZENE EXTRACTION FAC.								
044	AROMATICS FACT. FACILITY								
050	CPI&API SEPARATOR, TANKS	22.08							0.03
051	WASTEWATER TREATMNT PLANT	4.2	6.35	1.59					
052	OIL RECOVERY SYSTEM								
066	CLOSED TRASH INCINERATOR								
067	BOILER 4	1.42	176.91	23.87	65.65	2.29	0.76		0.36
068	BOILER 1	1.27	216.12	15.44	59.27	9.21	2.12		0.426
069	BOILER 2	0.6	38.38	2.01	25.63	9.01	6.06		0.455
070	BOILER 3	0.97	200.62	1.81	61.13	2.76	7.45		0.424
071	CLOSED METHANOL PLANT								
072	CLOSED METHANOL PLT HTR 4								
073	NEW CCR REFORMER #1								
074	NEW CCR REF. HTR 42-H-1	1.53	64.21	0.37	15.09		1.64		0.196
075	NEW CCR REF. HTR 42-H-2	1.71	71.86	0.42	17.04		1.83		0.22
076	NEW CCR REF. HTR 42-H-3	0.87	36.57	0.21	8.55		0.93		0.112
077	NEW CCR REF. HTR 42-H-7	0.52	20.75	0.21	5.08		0.56		0.0666
078	OLEFINS PLANT								
080	FLARE SYSTEM	8.74	4.24	23.09	1.45				
081	BARGE LOADING	10.23	1.15	1.5					
082	CLOSED LAND TREATMENT (TS								
083	VALVE MAINTENANCE	33.7							
084	HYDROD TRAIN HTR 29-H-101	0.36	20.32	5.15	4.13		0.38		0.0461
085	HYDRODS. TRAIN HTR 29-H-8	0.58	23.22	1.41	5.5		0.62		0.0738
086	HYDRODS. TRAIN HTR 29-H-1								
088	HYDRODESULFURIZER TRAIN 1								
089	HYDRODESULFURIZER TRAIN 2								
090	HYDRODS. TRAIN HTR 29-H-2	0.51	25.29	6.32	4.67		0.54		0.0649
091	HYDRODS. TRAIN HTR 29-H-3	0.12	5.84	1.46	1.21		0.13		0.015

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
092	HYDRODS. TRAIN HTR 29-H-9	0.23	11.36	2.84	2.13		0.24		0.0292
093	HYDRODESULFURIZER TRAIN 3								
094	HYDRODESULFURIZER TRAIN 4								
095	HYDRODS. TRAIN HTR 29-H-4	0.04	2.6	0.07	0.39		0.05		0.00539
096	HYDRODS. TRAIN HTR 29-H-7	0.04	1.78	0.44	0.35		0.04		0.00457
097	HYDRODESULFURIZER TRAIN 5								
098	HYDRODS. TRAIN HTR 29-H-5	0.37	22.88	1.52	3.55		0.4		0.0477
099	HYDRODS. TRAIN HTR 29-H-6	0.38	11.02	46.7	3.62		0.41		0.0488
100	CLOSED STACK GAS SCRUBBER								
101	H2 CARBON DRUM VENT								
102	NAPHTHA TREATER			0.01					
105	CRUDE UNIT HEATR 21-H-701		55.23		35.24	4.89	4.36		0.486
106	HTR FOR COKER SHU UNIT	0.44	22.04	5.51	4.1		0.47		0.0566
125	CNHTU HEATR 25-H-401		2.41	0.01	2.88		0.04		0.0399
126	CNHTU HTR 25-H-402		6.01		5.05		0.06		0.0702
130	CLOSED ACID PLANT								
134	PROD TANK FARM HAPS								
135	PROD TANK #135	1.66							
136	PROD TANK #136	1.83							
137	PROD TANK #137	1.41							
139	PROD TANK #139	1.59							
145	PROD TANK #145	1.81							
146	PROD TANK #146	2							
147	PROD TANK #147	1.82							
149	PROD TANK #149	1.21							
150	PROD TANK #150	2.25							
161	PROD TANK #161	2.3							
162	PROD TANK #162	2.39							
163	PROD TANK #163	3.02							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
165	PROD TANK #165	0.89							
166	PROD TANK #166	1.12							
167	PROD TANK #167	1.39							
181	PROD TANK #181	2.35							
182	PROD TANK #182	2.44							
183	PROD TANK #183	3.11							
185	PROD TANK #185	0.83							
186	PROD TANK #186	0.32							
187	PROD TANK #187	1.29							
201	PROD TANK #203	2.47							
202	PROD TANK #202	0.1							
203	PROD TANK #203								
204	PROD TANK #204	1.82							
205	PROD TANK #205	1.62							
206	PROD TANK #206	0.38							
223	PROD TANK #223	2.17							
224	PROD TANK #224	1.68							
225	PROD TANK #225	0.93							
227	PROD TANK #227	0.17							
241	PROD TANK #241	0.96							
242	PROD TANK #242	0.39							
243	PROD TANK #243	0.19							
244	PROD TANK #244	2.41							
245	PROD TANK #245	2.11							
246	PROD TANK #246	2.2							
248	PROD TANK #248	0.08							
250	HYDROGEN PLANT VENT	1.98							
261	PROD TANK #261	0.98							
262	PROD TANK #262								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
263	PROD TANK #263	0.07							
264	PROD TANK #264	2.01							
265	PROD TANK #265	1.89							
266	PROD TANK #266	0.69							
268	PROD TANK #268	0.17							
281	PROD TANK #281	0.05							
282	PROD TANK #282	0.17							
283	PROD TANK #283	0.26							
284	PROD TANK #284	0.21							
285	PROD TANK #285	0.14							
286	PROD TANK #286	0.11							
331	BENZENE TANK T 331								
332	BENZENE TANK T 332								
401	TOLUENE TANK #401								
402	TOLUENE TANK #402								
405	TANK #405								
406	TANK #406								
407	TANK #407	0.17							
408	TANK #408								
470	TANK #470	0.02							
471	TANK #471	0.01							
481	TANK #481								
500	TANK #500								
502	TANK #502								
503	TANK #503								
504	TANK #504								
505	TANK #505								
520	PROPANE PIT FLARE	0.17	0.17	1.21					
521	RFG COOLING TOWER						2.5		

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
523	REPOWERING COOLING TOW						2.17		
527	REPOWERING CT1	1.62	136.17	14.35	233.37	25.84	16.65		
528	REPOWERING CT2	2	157.01	10.66	309.7	20.23	24.31		
530	REPOWER - RAW GAS FLARE								
532	REPOWER SYNGAS FLARE		8.3	356.87	242.71				
550	TANK #550								
551	TANK #551								
552	TANK #552								
553	TANK #553								
560	TANK #560								
561	TANK #561								
562	TANK #562								
563	TANK #563								
564	TANK #564								
565	TANK #565								
566	TANK #566								
570	BENZENE TANK T 570								
571	AROMATICS TANK T 571								
572	AROMATICS TANK T 572								
580	TANK #580								
581	TANK #581								
582	TANK #582								
583	TANK #583								
584	TANK #584								
900	CRUDE TANK FARM HAPS								
901	CRUDE TANK #1 F-SS	1.52							
902	CRUDE TANK #2 F-SS	0.44							
903	CRUDE TANK #3 F-SS	1.48							
904	CRUDE TANK #4 F-SS	1.49							

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
905	CRUDE TANK #5 F-SS	1.44							
906	CRUDE TANK #6 F-SS	1.56							
907	CRUDE TANK #7 F-SS	1.38							
908	CRUDE TANK #8 F-SS	1.54							
909	CRUDE TANK #9 F-DS	1.56							
910	CRUDE TANK #10 F-SS	1.49							
911	CRUDE TANK #11	1.46							
912	CRUDE TANK #12	1.51							
943	INTER. TANK FARM HAPS								
944	INTER. TANK #44	0.77							
945	INTER. TANK #45	7.33							
947	INTER. TANK # 47	0.39							
948	INTER. TANK #48	0.45							
950	INTER. TANK #50	0.74							
951	INTER. TANK #51	0.35							
960	INTER. TANK #60	0.13							
961	INTER. TANK #61	0.02							
962	INTER. TANK #62	0.01							
965	INTER. TANK #65	1							
966	INTER. TANK #66	8.61							
971	INTER. TANK #71	0.07							
972	INTER. TANK #72	0.76							
973	INTER. TANK #73	0.62							
974	INTER. TANK #74								
975	INTER. TANK #75	0.09							
976	INTER. TANK #76	0.01							
977	INTER. TANK #77	4.91							
978	INTER. TANK #78	6.19							
998	TANK FUGITIVE								

A Summary of Facility Emissions including Group Level Emissions in Tons /Year

Facility Name: PREMCOR DELAWARE CITY REFINERY

Facility Id: 00016

Group Level Emissions Summary

Group ID#	Group Description	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
999	ACCIDENTAL RELEASES	32.21	0.12	1482.44	162.29				4.87

GROUP LEVEL AIR EMISSION INVENTORY SUMMARY

	VOC	NO2	CO	SO2	PM-CON	PM10-FIL	PM25-FIL	NH3
Total Emissions	266.81	2838.91	2612.38	2937.9	98.71	399.51		17.41056

Pursuant to Regulation No. 30, I, the undersigned, am a Responsible Official and I have personally examined and am familiar with the information submitted in this document and all of its attachments I certify, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.

Responsible Official: Andrew Kenner (Please Print)

Title: Vice President and General Manager

Signature: Andrew Kenner **Date** 4/28/08

Department of Natural Resources and Environmental Control
Division of Air and Waste Management
Air Quality Management Section
156 South State Street
Dover, DE 19901

CLEAN AIR DEPENDS ON YOU
DEPEND ON CLEAN AIR

2007 Annual Air Emission Inventory

Optical Media Certification Form

The requirement of EPA's Cross-Media Electronic Reporting Rule (CROMERR), applies to States that choose to receive reports and documents from facilities through the Internet. The requirements of the rule provide for electronic reporting under authorized state and local government programs, apply to the governmental entities administering the authorized programs, and to facilities that submit data through the Internet to those governmental entities. If on-line reporting is offered by the state, an EPA-approved electronic signature process must be in place. Alternatively, on-line reporting can be followed up by the submission of a certified document (on diskette, compact disk, or digital video disk, or by facsimile, or paper report) containing the same information that was submitted on-line.

Currently, the Air Quality Management Section's (AQMS) on-line reporting system does not have an approved electronic signature system. Therefore, we are required to receive from reporting facilities a certified document in addition to the data submitted on-line. AQMS has created a detailed report that can be easily created in pdf format for use by a facility as the certified document of their on-line submission. The pdf file can be burned to a CD or DVD and sent to AQMS to meet the CROMERR requirements.

AQMS continues to explore the option of developing an electronic signature for the on-line reporting system. In our judgment, however, the creation, administering and maintenance of that system will entail more work for both AQMS and reporting facilities, than submitting the detailed report on a CD/DVD. We would appreciate any feedback you may have on this issue.

By having to submit the detail report on CD or DVD, you can also submit your supporting documentation along with the detailed report. We hope you take advantage of this option.

Please sign the certification statement below and mail this form with the CD or DVD to:

Air Quality Management Section, DNREC
Emission Inventory Development Program
156 South State Street
Dover, Delaware 19901

Pursuant to Regulation No. 30, I, the undersigned, am the Responsible Official and that I have personally examined and am familiar with the information submitted in this document and all of its attachments. I certify, based on information and belief formed after reasonable inquiry, the statements and information in the attached optical media document are true, accurate, and complete.

Facility Name: Premcor Refining Group Inc. – Delaware City Refinery

Responsible Official: Andrew Kenner (Please Print)

Title: Vice President and General Manager

Signature: Andrew Kenner **Date** 4/28/08

Blue Skies Delaware; Clean Air for Life

2007 EMISSION FACTOR SUMMARY - DELAWARE CITY REFINERY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
105	21-H-701	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.000 lb/MMBTU 3/06 stack test	0.000 lb/MMBTU 3/06 stack test	0.006 lb/MMBTU PM10-PRI 3/06 stack test.	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
7	21-H-2	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.001 lb/MMBTU 1993 source test	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
2	COKER COB WGS STACK	SO2 CEMS and stack flow monitor	NOx CEMS and stack flow monitor	CO CEMS and stack flow monitor	6.60 E-8 lb/dscf Average of 1/07 and 4/07 stack test results	3.0003E-6 lb/dscf PM10-PRI 1/07 stack test	3.7E-9 lb/dscf 1/07 stack test
1	COKER INCINERATOR - FUEL GAS	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
	COKER INCINERATOR - PROCESS GAS	SO2 determined from algorithm using Coker fresh feed rate and feed sulfur concentration	Estimated based on historical data for COB NOx prior to SNCR installation	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	0.0074 lb/hr per BPD FF 6/5/95 test data	6.3661E-3 lb/M Lbs coke burn 5/06 stack testing pre-WGS installation
3	COKER SEALAS	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
12	FCCU COB MAIN STACK - GAS	SO2 CEMS and stack flow monitor	NOx CEMS and stack flow monitor	CO CEMS and stack flow monitor	0.043 lb/Mlbs coke burn 4/07 stack test	0.316 lb/Mlbs coke burn - PM10-PRI 4/07 stack test	0.0336 lb/Mlbs coke burn 7/06 stack test
11	FCCU BYPASS STACK - PROCESS GAS	SO2 determined from algorithm using FCCU fresh feed rate and feed sulfur concentration	Estimated from COB NOx emissions at similar feed rates	SCC Factor: 13700 lb/MBBL FF with applied control efficiency of 99.7%	SCC Factor: 2.8 lb. VOC/MMSCF	2.594lb/Mlbs coke burn - PM10-PRI 7/06 stack test	0.0336 lb/Mlbs coke burn 7/06 stack test
84	29-H-101	Material balance using TRS from fuel gas CEMS.	0.138 lb/ MMBTU 1993 stack test factor	0.035 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
85	29-H-8	Material balance using TRS from fuel gas CEMS.	0.099 lb/ MMBTU 1993 stack test factor	0.006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
13	32-H-101	Material balance using TRS from fuel gas CEMS.	0.088 lb/ MMBTU 11/6/07 stack test factor	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
90	29-H-2	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06

2007 EMISSION FACTOR SUMMARY - DELAWARE CITY REFINERY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
91	29-H-3	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
92	29-H-9	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
95	29-H-4	Material balance using TRS from fuel gas CEMS.	0.153 lb/ MMBTU 1993 stack test factor	0.004 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
96	29-H-7	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
98	29-H-5	Material balance using TRS from fuel gas CEMS.	0.151 lb/ MMBTU 1993 stack test factor	0.01 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
99	29-H-6	Material balance using TRS from fuel gas CEMS.	0.07 lb/ MMBTU 1993 stack test factor	0.301 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
34	H2 PLANT 37-H-1	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.01 lb/ MMBTU 1994 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
30	36-H-1	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
32	36-H-2	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
31	36-H-3	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
27	SRU I	SO2 CERMS	0.03 lb/ MMBTU 10/17-19/06 testing	0.0071 lb/ MMBTU 10/17-19/06 testing	0.0005 lb/ MMBTU 10/17-19/06 testing	1.33 lb/hr PM-10 10/17-19/06 testing 24% of PM-PRI is condensable	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
28	SRU II	SO2 CERMS	0.02 lb/ MMBTU 10/17-19/06 testing	0.006 lb/ MMBTU 10/17-19/06 testing	0.0003 lb/ MMBTU 10/17-19/06 testing	0.32 lb/hr PM-10 10/17-19/06 testing 67% of PM-PRI is condensable	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06

2007 EMISSION FACTOR SUMMARY - DELAWARE CITY REFINERY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
74	42-H-1	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.0006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
75	42-H-2	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.0006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
76	42-H-3	Material balance using TRS from fuel gas CEMS.	NOx CEMS	0.0006 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
77	42-H-7	Material balance using TRS from fuel gas CEMS.	0.10 lb/ MMBTU 2001 stack test factor	0.001 lb/ MMBTU 1993 stack test factor	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
80	FLARE PILOT/PURGE GAS	Material balance using TRS from fuel gas CEMS.	0.068 lb/MMBTU AP-42 Factor for Industrial Flares	0.37 lb/MMBTU AP-42 Factor for Industrial Flares	0.14 lb/MMBTU AP-42 Factor for Industrial Flares	N/A	
68	DCPP 1	SO2 CEMS	NOx CEMS	0.0109 lb/MMBTU 6/20/07 stack test factor	0.0009 lb/MMBTU 6/20/07 stack test factor	0.011 lb/MMBTU July and Sept. 2004 stack tests	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
69	DCPP 2	SO2 CEMS	NOx CEMS	CO CEMS	0.0004 lb/MMBTU 6/6/07 stack test	0.01005 lb/MMBTU PM10-PRI 6/5/07 stack test	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
70	DCPP 3	SO2 CEMS	NOx CEMS	0.0012 lb/MMBTU w/syngas 6/8/07 stack test factor	0.0005 lb/MMBTU w/syngas 6/8/07 stack test factor	0.001189 lb/MMBTU w/syngas PM10-PRI 1/10/08 stack test factor	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
67	DCPP 4	SO2 CEMS	NOx CEMS	0.02 lb/MMBTU 1993 stack test factor	SCC Factor: 1.4 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
106	COKER SHU HTR	Material balance using TRS from fuel gas CEMS.	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
125	25-H-401	Material balance using TRS from fuel gas CEMS.	0.019 lb/ MMBTU 4/25/07 stack test factor	0.0571 lb/ MMSCF 2/01 stack test factor	0.0 lb/ MMSCF 2/01 stack test factor	0.359 lb/ MMSCF 2/01 stack test factor	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06
126	25-H-402	Material balance using TRS from fuel gas CEMS.	0.027 lb/ MMBTU 4/25/07 stack test factor	0.0 lb/ MMSCF 2/01 stack test factor	0.002 lb/ MMSCF 2/01 stack test factor	0.301 lb/ MMSCF 2/01 stack test factor	0.000316 lb/MMBTU from Valero heater stack testing 8/31/06

2007 EMISSION FACTOR SUMMARY - DELAWARE CITY REFINERY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
4	COKER BAG HOUSE	N/A	N/A	N/A	N/A	Emission Factor 0.2 Grains/SCF. Design flow of 5000 SCF/MIN. TSP not PM-10.	
51	WWTP	N/A	N/A	N/A	1992 estimate of VOC emissions following NESHAPS controls	N/A	
	WWTP VCU	N/A	Permit Factor: 12.8 lb NOx /M Gal	Permit Factor: 3.2 lb. CO / Mgal	Permit Factor: 0.26 lb VOC /Mgal	N/A	
50	WWTP DOWNSTREAM (CPI @ API SEP. TANKS)	N/A	N/A	N/A	WATER 9 model	N/A	WATER 9 model
520	PROPANE PIT FLARE	N/A	4.089 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	29.5 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	4.23 lb/M Gal - TNRCC guidance document for flares and 99.9% flare efficiency	N/A	
17	POLY MEROX	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	
16	ALKY MEROX	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	Assumed same as Naphtha Treater	
10	COKER (CRUDE) MEROX	61.9 ppmv from analytical data	SCC Factor: 140 lb. NOx/MMSCF	SCC Factor: 35 lb. CO /MMSCF	SCC Factor: 2.8 lb. VOC/MMSCF	SCC Factor: 3 lb PM-10/MMSCF	
102	NAPHTHA TREATER	0.026 lb/MMBTU - based on max. 162 ppmv H2S	0.035 lb. NOx/MMBTU	0.074 lb. CO /MMBTU - Current permit limit in APC-95/0570 - CON (Amend 2)	0.003 lb. VOC/MMBTU - Current permit limit in APC-95/0570 - CON (Amend 2)	SCC Factor: 3 lb PM-10/MMSCF	
83	FUGITIVES (VALVE MAINTENANCE)	N/A	N/A	N/A	Use of EPA correlation equations and monitoring data	N/A	
81	BARGE LOADING GASOLINE	N/A	0.000617 lb/BBL 10/31-11/2/06 source testing	0.000803 lb/BBL 10/31-11/2/06 source testing	0.00023 lb/BBL 10/31-11/2/06 source testing	N/A	
81	BARGE LOADING DISTILLATE and REFORMATE	N/A	N/A	N/A	*Distillate* AP-42 factor: 0.012 lb/1000 Gal *Reformate* - AP-42 5.2 (1/95) - Equation (1)	N/A	

2007 EMISSION FACTOR SUMMARY - DELAWARE CITY REFINERY

Group ID	UNIT	SULFUR DIOXIDE	NITROGEN OXIDE	CARBON MONOXIDE	VOC	TSP / PM10	AMMONIA
999	ACCIDENTAL RELEASES	Varies depending on type of release.	Varies depending on type of release.	Varies depending on type of release	Varies depending on type of release	Varies depending on type of release	Varies depending on type of release
Various	TANK FARM	N/A	N/A	N/A	EPA AP-42 Equations	0.0	
521	RFG COOLING TOWER	N/A	N/A	N/A	Periodic sampling of VOC concentrations in influent/recycle/effluent streams	Periodic sampling of TDS in influent	
527	REPOWERING CT 1 SYNGAS	SO2 CEMS	NOx CEMS	CO CEMS	0.00094 lb/MMBTU - w/out duct firing 8/7/07 stack testing 0.00102 lb/MMBTU - w/duct firing 11/06 stack teseting	0.02588 lb/MMBTU - w/out duct firing 8/7/07 stack testing 0.01645 lb/MMBTU w/duct firing 11/06 stack tetsing	
	REPOWERING CT 1 LSDF	SO2 CEMS	NOx CEMS	CO CEMS	0.00134 lb/MMBTU - w/duct firing 11/06 stack testing	0.00160 lb/MMBTU - w/duct firing 11/06 stack testing	
528	REPOWERING CT 2 SYNGAS	SO2 CEMS	NOx CEMS	CO CEMS	0.0010 lb/MMBTU - w/out duct firing 6/27/07 stack testing 0.00098 lb/MMBTU w/duct firing 11/06 stack testing	0.02105 lb/MMBTU - w/out duct firing 6/27/07 stack testing 0.13848 lb/MMBTU w/duct firing 6/27/07 stack testing	
	REPOWERING CT 2 LSDF	SO2 CEMS	NOx CEMS	CO CEMS	0.00087 lb/MMBTU - w/duct firing 11/06 stack testing	0.00457 lb/MMBTU - w/duct firing 11/06 stack testing	
523	REPOWERING COOLING TOWER	N/A	N/A	N/A	N/A	Calculated from flow and TSS concentration	
530	REPOWERING RAW GAS FLARE	Material balance based on sulfur content	Prorated emissions from design feed rate and AP-42 emission factor - 0.068 lb/MMBTU	Prorated emissions from design feed rate and design CO destruction effciency of 98%.	N/A	N/A	
532	REPOWERING CLEAN GAS FLARE	Material balance based on sulfur content	Prorated emissions from design feed rate and AP-42 emission factor - 0.068 lb/MMBTU	Prorated emissions from design feed rate and design CO destruction effciency of 98%.	N/A	N/A	
250	HYDROGEN PLANT VENT - DEAERATOR	N/A	N/A	N/A	0.288 lb/MMSCF H2 produced 3/8/07 stack test	N/A	
250	HYDROGEN PLANT VENT - CO2 VENTED	N/A	N/A	N/A	0.347 lb/MMSCF H2 produced 3/8/07 stack test	N/A	