



COMMONWEALTH OF PUERTO RICO
Office of the Governor
Environmental Quality Board

September 25, 2007

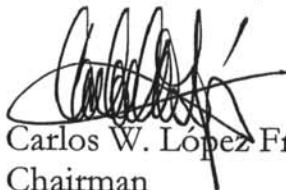
MR ALAN J STEINBERG
REGIONAL ADMINISTRATOR
USEPA REGION 2
290 BROADWAY
NEW YORK NY 10007-1866

Dear Mr. Steinberg:

The Puerto Rico Environmental Quality Board (PREQB), includes the recommendations and designations of areas as attainment of the National Ambient Air Quality Standard (NAAQS) for new revised 24 hours fine particle matter (PM_{2.5}). This designation is based on the three year air quality data collected since 2004 to 2006, as required by the 1990 Clean Air Act.

If you have any questions, please contact me at 787-767-8056 or Mr. Carmelo Vázquez-Fernández, Manager of the Evaluation and Strategic Planning Area at 787-767-8181 ext. 3587.

Cordially,



Carlos W. López Freytes
Chairman

Cc: ✓ Raymond Werner, EPA
Walter Mugdan, DEPP
John Filippelli, EPA
Carl A. Soderberg, CEPD
Luis D. Muñiz Martínez
Mrs. Khan Mazeeda, EPA

**Puerto Rico Area Designation for the Revised 24-Hour Fine Particle
National Ambient Air Quality Standard**



**September 18, 2007
Commonwealth of Puerto Rico
Puerto Rico Environmental Quality Board**

Area Designation for the Revised 24-Hour Fine Particle National Ambient Air Quality Standard

The Environmental Protection Agency (EPA) promulgated a revised National Ambient Air Quality Standard for fine particle (PM_{2.5}) on October 17, 2006¹. The annual PM_{2.5} standard of 15 µg/m³ was retained and the 24-hour PM_{2.5} was revised from 65 µg/m³ to 35 µg/m³. The 24 hour PM_{2.5} standard was revised based on a number of health studies showing that short term exposure to PM_{2.5} is associated with increased mortality and a range of serious health effects, including aggravation of lung disease, asthma attacks, and health problems.

Section 107(d) of the Clean Air Act (CAA) governs the process for area designations following the establishment for a new revised NAAQS. Under this section, States are required to submit recommendations to EPA not later than one year after promulgation of a new or revised standard. The recommendations must be submitted to EPA by December 18, 2007.

As required by section 107(d) the Commonwealth of Puerto Rico (CPR) is submitting the designations and recommendations for the revised 24-hour PM_{2.5}. The Environmental Quality Board is responsible for developing and implementing emission control programs for attaining and maintaining the standard.

As a result of this change EQB includes the designations and recommendations for the new revised 24-hour PM_{2.5} National Ambient Air Quality Standard. The resulting average or the design values is compared to the standard. The EQB evaluated the monitoring data for the most recent three-year period of 2004-2006, and determined that none of the monitors currently violate the PM_{2.5} standard.

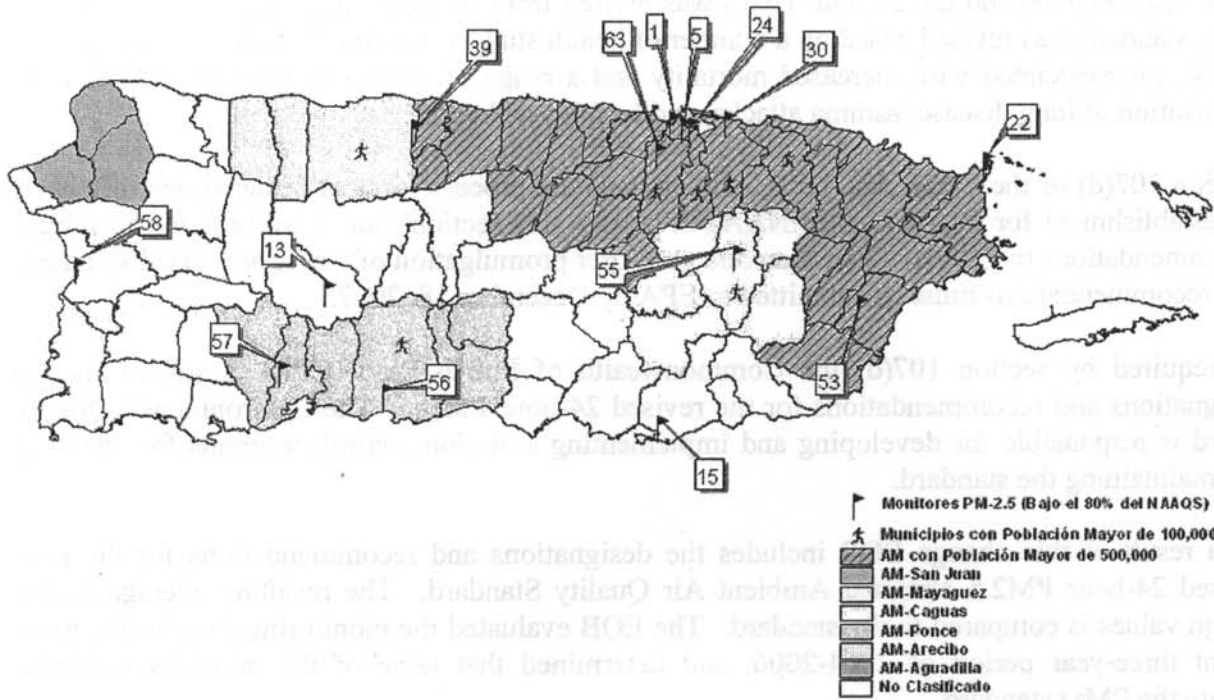
EQB used the statistical definition for Metropolitan Area provided by the Office of Management and Budget and the Census Bureau to design the CPR Monitoring Network. CPR has six Metropolitan Areas, which are: San Juan, Ponce, Mayaguez, Humacao, Guayama and Fajardo.

The CPR Network includes nine monitors for PM_{2.5} which are located as follow: San Juan: 3 monitors; Mayaguez: 1 monitor; Ponce: 2 monitors; Humacao: 1 monitor; Fajardo: 1 monitor (background) and Guayama: 1 monitor.

Metropolitan Area	Number of Monitors
San Juan	3
Mayaguez	1
Ponce	2
Humacao	1
Guayama	1
Fajardo	1

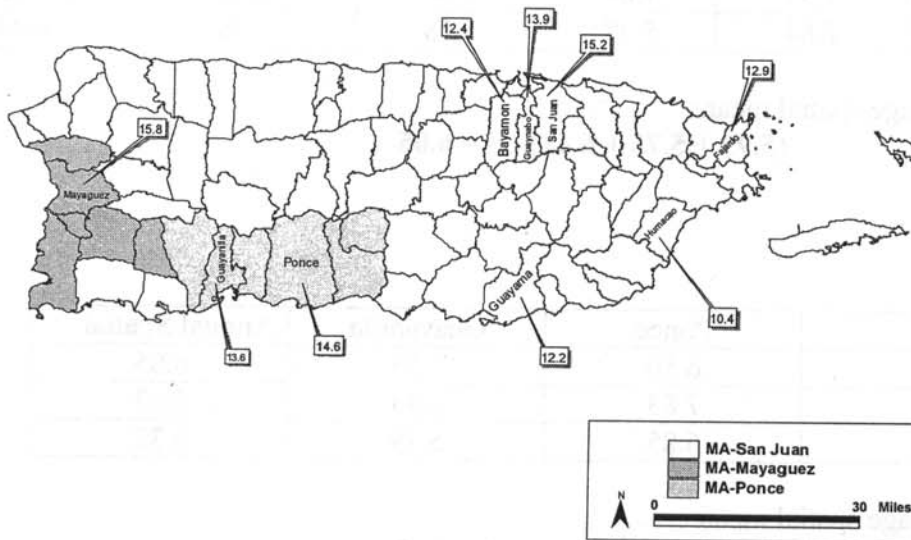
¹ 71 Federal Register 61144

PM_{2.5} Monitoring Network By Population Metropolitan Areas Census 2000



Metropolitan Area	Population
San Juan	1,967,627
Mayaguez	253,347
Ponce	361,094
Caguas	308,365
Arecibo	174,300
Aguadilla	146,424

3-YEARS AVERAGE OF THE 98TH PERCENTILE



Procedure to determine Attainment

The procedure for PM_{2.5} attainment designations is based on the primary standards. The first step in the designation process is to determine attainment with the primary standard. The approach is based on the average for each area. The second step was determine attainment with the secondary standard. The designation is determined by calculating the three years 98th percentile for PM_{2.5}.

The air quality data was used from the EPA Air Quality System to calculate PM_{2.5} design values. The design values shown are calculated in accordance with 40 CFR Part 50 Appendix N. The 3-year average 98th percentile concentration for the 24-hour PM_{2.5} is computed at each monitor by averaging the daily Federal Reference Method (FRM) samples taken in a given year for each of the three years, and then averaging the three averages. Quarters with data capture less than 75 percent were replaced with maximum data values for the same quarter according to the Guideline on Data Handling Conventions for the PM NAAQS.

The data flagged as natural and exceptional events were excluded from the design value calculations.

Calculation of the 3 -Years Average of spatially Averaged Annual Means

San Juan MA

Year	Bayamón	Guaynabo	Fajardo	Humacao	San Juan	Annual Spatial
2004	5.42	7.05	4.94	4.22	8.30	5.99
2005	5.45	7.37	4.01	4.30	7.61	5.75
2006	6.27	7.64	5.27	5.18	7.68	6.41

The three years average spatial mean:

$$(5.99 + 5.75 + 6.41) / 3 = 6.05$$

Ponce MA

Year	Ponce	Guayanilla	Annual Spatial
2004	6.50	5.59	6.05
2005	7.83	5.43	6.63
2006	6.85	5.79	6.32

The three years average spatial mean:

$$(6.05 + 6.63 + 6.32) / 3 = 6.33$$

Mayaguez MA

Year	Mayaguez
2004	6.75
2005	6.85
2006	7.00

The three years average spatial mean:

$$(6.75 + 6.85 + 7.00) / 3 = 6.87$$

Guayama MA

Year	Guayama
2004	5.46
2005	5.29
2006	5.93

The three years average spatial mean:

$$(5.46 + 5.29 + 5.93) / 3 = 5.56$$

Calculation of the 3-Years Average 98th Percentile for PM_{2.5}

MA	Station	2004	2005	2006
San Juan	Bayamón	14.2	10.7	12.4
	Guaynabo	13.0	14.5	14.3
	Humacao	9.4	10.4	11.4
	Fajardo	14.6	9.8	14.4
	San Juan	18.3	14.7	12.6
Ponce	Guayanilla	12.6	16.1	12.2
	Ponce	13.8	17.1	13.0
Mayaguez	Mayaguez	13.6	19.5	14.4
Guayama	Guayama	13.9	10.4	12.2

To find the 3-years average of the 98th percentile to each site is as follows:

Metropolitan Areas	Station	3-Year 98th Percentile
San Juan	Bayamón	12.4
	Guaynabo	13.9
	Humacao	10.4
	Fajardo	12.9
	San Juan	15.2
Ponce	Guayanilla	13.6
	Ponce	14.6
Mayaguez	Mayaguez	15.8
Guayama	Guayama	12.2

2004-2006

2001-2003

%Change 2004-06vs. 2001-03 (24hr.)

<u>Area</u>	<u>Spatial Scale</u>	<u>Objective</u>	<u>Type</u>	<u>Status</u>	<u>Ann DV (15)</u>	<u>24-hr DV (35)</u>	<u>Meets NAAQS</u>	<u>Ann DV (15)</u>	<u>24-hr DV (35)</u>	<u>%Change 2004-06 vs. 2001-03 (24hr.)</u>
Bayamón	Neighborhood	Population Exposure	SLAMS	Attainment	5.7	12	Yes	6.9	17	-27
Fajardo	Neighborhood	General/Background	SLAMS	Attainment	4.7	13	Yes	5.4	15	-14
Guayama	Neighborhood	Population Exposure	SLAMS	Attainment	5.6	12	Yes	6.4	17	-28
Guayanilla	Neighborhood	Population Exposure	SLAMS	Attainment	5.6	14	Yes	6.9	13	5
Guaynabo	Neighborhood	Population Exposure	SLAMS	Attainment	7.4	14	Yes	9.2	19	-27
Humacao	-----	Population Exposure	SLAMS	Attainment	4.6	10	Yes	6.4	17	-39
Mayaguez	Neighborhood	Unknown	SLAMS	Attainment	6.9	16	Yes	8	17	-7
Ponce	Neighborhood	Population Exposure	SLAMS	Attainment	7.1	15	Yes	7.3	14	4
San Juan	Neighborhood	Population Exposure	SLAMS	Attainment	7.9	15	Yes	7.7	22	-31

Conclusion

Based on the technical documentation and to the most recent data presented above all the design value is under the $35\mu\text{g}/\text{m}^3$. The EQB compare the 3 – Year 98th Percentile with the new revised standards and all monitors are in compliance with the $\text{PM}_{2.5}$ 24 – hour standard of $35\mu\text{g}/\text{m}^3$. Therefore, Commonwealth of Puerto Rico is in attainment with the $\text{PM}_{2.5}$ standard.