ESTADO LIBRE ASOCIADO DE PUERTO RICO
OFICINA DEL GOBERNADOR
JUNTA DE CALIDAD AMBIENTAL

PLAN LIMITADO DE MANTENIMIENTO DE LA NORMA NACIONAL AMBIENTAL DE CALIDAD DE AIRE DE MATERIA PARTICULADA (PM_{10}) DE 24 HORAS PARA EL MUNICIPIO DE GUAYNABO ÁREA MODERADA DE NO LOGRO REVISIÓN AL PLAN IMPLEMENTACIÓN ESTATAL

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Acrónimos y Abreviaturas

AIRS - *Aerometric Information Retrieval System*, en inglés
CAA - Ley de Aire Limpio
CFR - Código de Reglamentación Federal
DOTPW - Departamento de Transportación y Obras Públicas
DV - Valor Designado
EPA - Agencia de Protección Ambiental de Estados Unidos de América
LMP - Plan Limitado de Mantenimiento
MOS - Margen de Seguridad
NAAQS - Normas Nacionales de Calidad de Aire
NAMS - Estaciones de Muestreo de Aire Nacionales
JCA - Junta de Calidad Ambiental
RACM - Medidas Razonables de Control Disponibles
RACT - Tecnologías Razonables de Control Disponibles
SIP - Plan de Implementación Estatal
SLAMS - Estaciones de Monitoreo de Aire Locales y Estatales
VMT - Millas Viajadas por Vehículo

1. Resumen Ejecutivo

El municipio de Guayanbo es un área clasificada como área de no logro moderada para la Norma Nacional de Calidad de Aire (NAAQS) de 24 horas para materia particulada con un diámetro menor de 10 micrones (PM_{10}). El 31 de octubre de 1995, la Agencia de Protección Ambiental de Estados Unidos de América (EPA) aprobó el Plan de Implementación Estatal (SIP) que incluyó las estrategias de control en la que se demuestra que el municipio de Guaynabo cumplió con el NAAQS de PM_{10} para la fecha de cumplimiento requerido del 31 de diciembre de 1994.

Basado en los datos obtenidos de calidad de aire del municipio de Guaynabo no se ha registrado ninguna violación del periodo de 24 horas para el NAAQS de PM_{10}, luego de la aprobación del SIP. Por lo tanto, el Estado Libre Asociado de Puerto Rico ha preparado un plan limitado de mantenimiento para la redesignación del municipio de Guaynabo como área de logro de NAAQS de PM_{10}. Este plan es una petición formal a la EPA para la redesignación del municipio de Guaynabo de un área de no logro moderada a un área de logro para NAAQS de PM_{10}.

Esta petición está basada en los requisitos establecidos en el memorando titulado *Limited Maintenance Plan for Moderate PM_{10} Nonattainment Areas* (LMP) publicado por la EPA el 9 de agosto de 2001. Esta política es un proceso simple que establece los criterios y pasos necesarios para la petición de redesignación y plan de mantenimiento para áreas moderadas de no logro de PM_{10} como el municipio de Guaynabo, bajo la sección 107 de la Ley Federal de Aire Limpio (CAA).

La información que se incluye en este plan demuestra que el municipio de Guyanabo cumple con los requisitos establecidos en el CAA para el NAAQS de PM_{10}, cualifica y cumple con los requisitos establecidos en el LMP. Como parte de ésta demostración de logro, este plan de mantenimiento asegura el cumplimiento con el NAAQS de PM_{10} del municipio de Guaynabo por los próximos diez años luego de la redesignación.

2. Trasfondo

La Agencia de Protección Ambiental (EPA) como requisito por la Ley de Aire Limpio (CAA) revisó la Norma Nacional de Calidad de Aire (NAAQS) para partículas suspendidas totales (TSP) a materia particulada con un diámetro menor de 10 micrometros (PM_{10}). El mismo fue revisado para proteger la población y el ambiente.

La norma primaria y secundaria para PM_{10} de 24 horas y el promedio anual desde el 1987 es la siguiente:

Tabla I-Norma Nacional de Calidad de Aire para Materia Particulada			
Contaminante	**Norma Primaria**	**Tiempo Promedio**	**Norma Secundaria**
Materia Particulada (PM_{10})	50 $\mu g/m^3$	Anual (Media Aritmética)	Igual que el Primario
	150 $\mu g/m^3$	24-horas	Igual que el Primario

El CAA enmendado en el 1990, requirió que todas las áreas que hayan registrado una violación de NAAQS de PM_{10} antes de 1 de enero de 1989, serian designadas como áreas de no logro. El 15 de noviembre de 1990, según requerido por la ley antes mencionada, el municipio de Guaynabo de Puerto Rico fue designado como área de no logro reducido para PM_{10} y basado en violaciones medidas en 1987[1].

El 31 de mayo de 1995[2], la EPA aprobó la revisión del Plan de Implementación Estatal (SIP) con el propósito de cumplir con el NAAQS de PM_{10} y fue efectivo el 30 de junio de 1995. El SIP aprobado asegura el cumplimiento de la norma de PM_{10} según fue requerido por el CAA[3].

En el 2006 la EPA nuevamente revisó las normas de PM_{10}. La EPA decidió retener la norma de PM_{10} de 24 horas de 150 $\mu g/m^3$ y revocar la norma anual de PM_{10}. La EPA se basó en que la evidencia no sugiere una relación entre la exposición a largo plazo de PM_{10} y problemas de salud. Por lo tanto, el Estado Libre Asociado de Puerto Rico necesita demostrar cumplimiento con la norma de PM_{10} de 24 horas. La norma de PM_{10} para 24 horas es la siguiente:

Tabla II- Norma Nacional de Calidad de Aire para Materia Particulada			
Contaminante	**Norma Primaria**	**Tiempo Promedio**	**Norma Secundaria**
Materia Particulada (PM_{10})	150 $\mu g/m^3$	24-horas	Igual a la Primaria

[1] 56 FR 11101, March 15, 1991.
[2] 60 FR 28333
[3] §§189(c)(1) and 189(a)(1)(B) of the CAA.

El Estado Libre Asociado de Puerto Rico solicita la redesignación del municipio de Guaynabo área de no logro de la norma de PM_{10} a un a un área de logro utilizando la política pública establecida por la EPA en el memorado titulado *Limited Maintenance Plan Option for Moderate PM_{10} Nonattainment Areas (LMP),* del 9 de agosto de 2001.

El LMP requiere que se cumpla con los criterios establecidos bajo la sección 107(d)(3)(E) para solicitar que un área de no logro sea redesignada a logro. Los criterios establecidos en la sección 107(d)(3)(E) que se tienen que cumplir son los siguientes:

(1) El Administrador determina que el área ha cumplido con la Norma Nacional de Calidad de Aire (NAAQS) aplicable;
(2) El administrador ha aprobado el Plan de Implementación Estatal (SIP) aplicable bajo la sección 110(k) de CAA;
(3) El Administrador ha determinado que hay mejoría en la calidad de aire por las reducciones permanentes y aplicables en emisiones como resultado de la adopción del plan, las reglas aplicables federales para el control de la contaminación de aire, y reducciones aplicables y permanentes;
(4) El área cumple con todos los requisitos aplicables bajo la sección 110 y la parte D del CAA; y
(5) El Administrador aprobó un plan de mantenimiento para el área que cumple con los requisitos de la sección 175 A del CAA.

Las secciones que siguen a continuación discuten los requisitos arriba mencionados y es la base para solictar la redesignación del Municipio de Guaynabo de área de no logro a área de logro de la norma de 24 horas de PM_{10}.

3. Demostración de Cumplimiento con la Sección 107(d)(3)(E)

A continuación se discuten los criterios de la sección 107(d)(3)(E) y el LMP.

a. Criterio (1): Demostración de Cumplimiento (El Administrador determina que el área ha cumplido con la Norma Nacional de Calidad de Aire).

La demostración de cumplimiento con las normas de PM_{10} de 24 horas se incluyó como parte de la revisión del Plan de Implementación Estatal aprobado el 31 de mayo de 1995. La demostración para áreas moderadas de no logro para PM_{10} requería que se cumpliera con las normas en una forma expedita pero no más tarde del 31 de diciembre de 1994.

El Estado Libre Asociado de Puerto Rico demostró el cumplimiento utilizando el modelo de dispersión *Industrial Source Complex* (ISC2) y cinco años de datos meteorológicos del Servicio Nacional de Meteorología. La guía de la EPA recomienda que el plan de implementación estatal demuestre mantenimiento con las normas de PM_{10} por tres años luego del día de cumplimiento. La demostración que se incluyó en el plan de implementación para la norma de PM_{10} para municipio de Guaynabo, indicó que se cumplió para la fecha del 31 de diciembre de 1994. En adición, la demostración de cumplimiento del Estado Libre Asociado de Puerto Rico para el municipio de Guaynabo fue más allá de la recomendación de la EPA de tres años y se demostró que la norma para PM_{10} se mantendría hasta el 1999.

En cumplimiento con los requisitos establecidos en la Parte 58 del Código de Reglamentación Federal 40 (CFR), la Junta de Calidad Ambiental (JCA) opera una red de muestreo para PM_{10}. Esta es la base para evaluar el estatus de cumplimiento del municipio de Guaynabo. Los datos de la concentración de PM_{10} ambiental se obtienen de dos monitores localizados al norte del municipio de Guaynabo. La Tabla III incluye las coordenadas UTM para cada uno de los monitores. La Tabla IV resume información que se encuentra en el sistema de la EPA *Aerometric Information Retrieval System (AIRS) Air Quality Subsystem Site Description Inventory.*

Tabla III- PM_{10} Red de Muestreo Municipio de Guaynabo

Identificación del Lugar	Número AIRS	Localización	Coordenadas UTM (m)	
JCA 7	72-061-0001	Edificio USGS	North: 2039520.62	East: 804645.36
JCA 24	72-061-0005	Subestación Eléctrica	North: 2040520.13	East: 804756.17

Tabla IV - PM_{10} Descripción de la Red de Muestreo en AIRS

Identificación del Lugar	POC	Tipo de Monitor	Clasificaión Suelo	Localización	Altura (m)	Elevación MSL (m)	Método de recolección y análisis
JCA 7	1	SLAMS	Industrial	Suburbana		8	HI-VOL-SA/GMW-321-B Gravimetric
JCA 24	1	SLAMS	Industrial	Suburbana	5	3	HI-VOL-SA321A Gravimetric

La demostración de cumplimiento con la norma de PM_{10} de 24 horas se determina calculando el número de días en 1 año que las concentraciones son mayores de 150 $\mu g/m^3$. Se demuestra cumplimiento con esta norma cuando el promedio de días con niveles mayores a 150 $\mu g/m^3$ en un periodo de tres años es menor o igual a uno. Tres años de datos de calidad de aire son necesarios para demostrar cumplimiento con la norma.

La fecha de cumplimiento establecida en las secciones 188(c)(1) y 189(a)(1)(B) del CAA fue la del 31 de diciembre de 1994. El plan de implementación para el municipiuo de Guaynabo fue sometido y aprobado por la EPA, el 31 de mayo de 1995. En el mismo se demuestra que el municipio de Guyanabo esta en cumplimiento con la norma de PM_{10} para la fecha establecida en el CAA. Además, el Estado Libre Asociado de Puerto Rico fue más allá de los tres años recomendados por la EPA y demostró el cumplimiento con la norma de PM_{10} hasta el 1999.

Los últimos 5 años de datos de calidad de aire en AIRS para el municipio de Guaynabo demuestran que no se registró ninguna violación durante el periodo de 2002 a 2006. Según la política de la EPA de Eventos Naturales, se identificó para este periodo datos que fueron influenciados por los polvos del Sahara y ceniza volcánica del volcán Soufrière en la isla de Montserrat, que afectaron la calidad de aire en Puerto Rico. Además, excluyendo los datos identificados como eventos excepcionales, no se registraron violaciones a la norma de PM_{10} de 24 horas durante el periodo del 31 de diciembre de 1994 al presente. Por lo tanto, el área moderada de no logro para la norma de PM_{10} del municpio de Guaynabo ha estado en cumplimiento y continúa en cumplimiento desde el 31 de diciembre de 1994, hasta el presente.

Durante el periodo de 1995 –2000 la EPA publicó en el Registro Federal varias notificaciones en la que se identifican las áreas moderadas de no logro de PM_{10} (las areas designadas en el 1990 por ley) que no cumplieron para la fecha de cumplimiento del 31 de diciembre de 1994. El municipio

de Guyanabo, no fue incluído en ninguna de las notificaciones hechas por la EPA. Por lo tanto, por inferencia la EPA ha determinado que el municipio de Guaynabo esta en cumplimiento con la norma nacional de PM_{10}.

b. Criterio (2): Aprobación del Plan de Implementación Estatal (SIP) bajo la sección 110 (k): (El administrador ha aprobado el Plan de Implementación Estatal (SIP) aplicable bajo la sección 110(k) de CAA).

La sección 110(k) del CAA establece los requisitos para la revisión de los Planes de Implementación Estatal sometidos a la EPA. Como parte de estos procedimientos el Estado Libre Asociado de Puerto Rico celebró una vista pública el 15 de octubre de 1993[4]. El propósito de esta vista pública fue recibir comentarios del público relacionado con el plan de implementación para el área moderada de no logro para la norma de PM_{10} del municipio de Guaynabo.

Luego de la vista pública el plan de implementación fue adoptado por el Estado Libre Asociado de Puerto Rico con fecha de efectividad del 2 de abril de 1994[5]. El 14 de noviembre de 1994, el SIP fue enviado a la EPA para su revisión y se incluyeron las enmiendas al Reglamento para el Control de la Contaminación Atmosférica (RCCA) que se incluyen a continuación:

Parte I: Disposiciones Generales
Regla 102 - Definiciones

Parte II: Aprobación y Permisos
Regla 201 - Aprobación de Ubicación
Regla 202 - Análisis de Impacto de Calidad de Aire
Regla 203 - Permisos para Construir una Fuente de Emisión

Parte IV: Prohibiciones
Regla 401 - Prohibiciones Genéricas
Regla 402 - Quema a Campo Abierto
Regla 403 - Emisiones Visibles
Regla 404 - Emisiones Fugitivas
Regla 423 - Limitaciones para el Área de No-Logro PM_{10} de Guaynabo

Esta revisión del SIP fue aprobada por la EPA el 15 de mayo de 1995 y fue efectiva el 30 de junio de 1995[6]. De acuerdo con la información recopilada por la Junta de Calidad Ambiental (JCA) el municipio de Guaynabo cumplió con la norma de PM_{10} desde el 1995. Esto quiere decir que las Medidas Razonables de Control Disponibles (RACM), incluyendo las Tecnologías Razonables de Control Disponibles (RACT) y las medidas de contingencia adoptadas en el SIP han sido estrategias efectivas para cumplir con la norma de PM_{10}.

[4] R-93-27-2
[5] R-94-4-8
[6] 60 FR 28333 – 28338, May 15, 1995.

c. Criteria (3): Mejoramiento de la Calidad de Aire por reducción de emisiones permanentes y aplicables (El Administrador ha determinado que hay mejoría en la calidad de aire por las reducciones permanentes y aplicables en emisiones como resultado de la adopción del plan, las reglas aplicables federales para el control de la contaminación de aire y reducciones aplicables y permanentes).

La Ley Federal de Aire Limpio (CAA) requirió que el Estado Libre Asociado de Puerto Rico desarrollará el Plan de Implementación Estatal (SIP) para el área moderada de no logro para la norma de PM_{10} en el municipio de Guaynabo, que asegure que las Medidas Razonables de Control Disponibles (RACM), incluyendo las Tecnologías Razonables de Control Disponibles (RACT), sean implementadas a más tardar del 10 de diciembre de 1993. Como se indicó en el Criterio (2), el SIP aprobado por la EPA incluye las medidas para cumplir con los requistos establecidos en el CAA. Incluímos a continuación un resumen de los RACM y RACT adoptados y aprobados por la EPA el 30 de junio de 1995.

Medidas Razonables de Control Disponibles (RACM)

El análisis de RACM se concentró en medidas para controlar las emisiones fugitivas de polvo como la reintroducción de polvo de la carreteras pavimentadas, sin pavimentar y los lotes de estacionamientos, construcciones y otras áreas donde la emisión de polvo es producida a causa del viento. El RACM fue implementado por el Estado Libre Asociado de Puerto Rico a través del Memorando de Entendimiento entre la Junta de Calidad Ambiental de Puerto Rico y las siguientes entidades gubernamentales:

- El Departamento de Transportación y Obras Públicas y el Director Ejecutivo de la Autoridad de Carreteras y Transportación, para mantener el control en la reconstrucción de las carreteras existentes y la construcción de nuevas carreteras. Este memorando de entendimiento entró en vigencia el 2 de julio de 1993[7];

- El Municipio de Guaynabo para que pavimente y mantenga las calles, carreteras y áreas de estacionamiento localizadas en dicho municipio. Este memorando de entendimiento entró en vigencia el 13 de diciembre de 1993[8]; y

- La Autoridad de los Puertos de Puerto Rico para que pavimente y mantenga las calles, carreteras y áreas de estacionamiento que dan acceso a la zona portuaria en Puerto Nuevo, Guaynabo y San Juan.

[7] 40 CFR Part 52.2720 (c) (35)(i)(B)(2)
[8] 40 CFR Part 52.2720 (c) (35)(i)(B)(3)

Este memorando de entendimiento entró en vigencia el 14 de octubre de 1993[9].

Las medidas de control establecidas a través de estos memorandos de entendimiento son consistentes con RACM y han sido implementadas desde el 1993, y las mismas son permanentes y federalmente ejecutables. En la Tabla V se incluye un resumen de RACM que se incluye en la Regla 423 del Reglamento para el Control de la Contaminación Atmosférica (RCCA).

Tabla V - Medidas Razonables de Control Disponibles (RACM)

Medidas de Control	Agencia Estatal	Autoridad
Reducir las emisiones de materia particulada paviementando o estabilizando los paseos para las siguientes autopistas PR-5, PR-22, PR-24, PR-165 localizadas en el municipio de Guaynabo.	Departmento de Transportación y Obras Públicas y la Autoridad de Carreteras y Transportación de Puerto Rico	Regla 423 (C) RCCA[10]
Reducir las emisiones de polvo fugitivo de las carreteras con la operación de máquinas barredoras en las autopistas mencionadas anteriormente al menos una vez a la semana.		
Reducir las emisiones de materia particulada pavimentando y estabilizando químicamente cualquier carretera sin pavimentar y áreas de estacionamiento y cualquier punto de donde las superficies transitadas se unen con carreteras pavimentadas en su jurisdicción.	Municipio de Guaynabo	Regla 423 (C) RCCA[11]
Reducir las emisiones de polvo fugitivo de las carretereas con la operación de máquinas barredoras en las carreteras pavimentadas, calles, áreas de estacionamiento al menos dos veces por semana.		
Reducir las emisiones de materia particulada pavimentando y estabilizando químicamente cualquier carretera sin pavimentar y áreas de estacionamiento y cualquier punto de donde las superficies transitadas se unen con carreteras pavimentadas en las siguientes zonas portuarias: Puerto Nuevo, Guaynabo, y San Juan.	Autoridad de los Puertos de Puerto Rico	Regla 423(C) RCCA[12]
Reducir las emisiones de polvo fugitivo de las carrtereas con la operación de máquinas barredoras en las carreteras pavimentadas, calles áreas de estacionamiento al menos dos veces por semana.		
Implementación de mejores prácticas de ingeniería para el control de las emisiones de materia particulada durante la construcción de futuros proyectos en la zona portuaria de Puerto Nuevo, Guaynabo y San Juan.		

[9] 40 CFR Part 52.2720 (c) (35)(i)(B)(4)
[10] Ver Apéndice A
[11] Ver Apéndice B
[12] Ver Apéndice C

La JCA reconoce que la Autoridad de los Puertos esta trabajando hacia el cumplimiento con el Memorando de Entendimiento (por ejemplo, buenas practices de ingeniería para el que pueden incluir medidas como el control de emisiones de material particulado durante la construcción de futuros proyectos esto puede incluir medidas como la utilización de combustible con bajo contenido de azufre y uso de controles efectivos en los gases de escape luego de los cambios). La JCA participara en reuniones con la Autoridad de los Puertos para que llegar al cumplimiento total, incluyendo iniciativas de aire limpio con la meta de reducir la contaminación de aire para fuentes estacionarias y móviles completar.

Tecnologías Razonables de Control Disponibles (RACT)

El inventario de emisiones para el área de no logro de PM_{10} identifica las fuentes de emisión consideradas en el análisis RACT. Algunas fuentes menores de emisión fueron excluídas porque se determinó, utilizando el modelo matemático, que las mismas no contribuyen a las excedencia de la norma de PM_{10} y que la imposición de medidas adicionales de tecnología para el control de las emisiones eran irrazonables. Sin embargo, otras fuentes de emisión localizadas fuera del área de no logro del municipio de Guaynabo fueron consideradas en el análisis RACT porque se determinó que las mismas contribuían significativamente a las excedencias modeladas de las normas de PM_{10}.

Las siguientes fuentes de emisión fueron consideradas en el análisis RACT realizado:

- Molinos de Puerto Rico
- Pan American Grain Mfg. Co. – Terminal de Ejército
- Pan American Grain Mfg. Co. – Planta de Amelia
- Agro Ochoa Inc.
- Pan American Grain Mfg. Co. – Arroz Rico
- PREPA Palo Seco
- PREPA Puerto Nuevo
- Caribbean Petroleum Company
- Petroleum Chemical Cantera San Antonio
- Canteras de Puerto Rico

Las industrias arriba mencionadas se agruparon en categorías generales con el propósito de analizar las posibles alternativas de control tecnológicas y económicamente viables. Las categorías incluyeron las siguientes: plantas termoeléctricas, manejo y procesamiento de granos, refinerías, asfalteras, y canteras.

Las estrategias de control adoptadas para estas fuentes estacionarias fueron aprobadas por la EPA y proveen las medidas de control necesarias

para el cumplimiento de la norma de PM_{10} para el 31 de diciembre de 1994. Las estrategias de control aprobadas continúan en vigor, son permanentes y federalmente ejecutables. La Tabla VI incluye un resumen de RACT de la Regla 423 del Reglamento para el Control de la Contaminación Atmosferica (RCCA).

Table VI - Tecnologías Razonables de Control Disponibles (RACT)

Categorías	Medidas de Control
Facilidades para el Manejo de Granos	Emplear procedimientos adecuados de limpieza a través de toda la instalación, cubrir todos los camiones en todo momento en que están en movimiento; mantener todos los sistemas de ventilación y aparatos de recolección de polvo; pavimentar todas las áreas sobre las cuáles viajarán vehículos y mantener dichas áreas de acuerdo con un programa de limpieza, prohibir la carga y descarga de barcos o barcazas mediante brazo mecánico de quijada; cargar o descargar barcos o barcazas mediante conductos telescópicos neumáticos o mecánicos dentro de un área completamente encerrada salvo por el espacio necesario para introducir el conducto o al ventilar el aire desplazado con un sistema de ventilación que exhale hacia un aparato de recolección con filtro de tela, con una eficiencia mínima de filtración de 99.5%; cargar o descargar camiones en cobertizos o edificios completamente encerrados con un sistema de ventilación que exhale hacia un aparato de recolección con filtro de tela, con una eficiencia mínima de filtración de 99.5%; limpiar, separar, manejar, transportar, transferir y moler el grano en cobertizos o edificios completamente encerrados que cumplan con los requisitos del Método de Referencia APA 30 para enclaustramiento total y ventilar el lugar encerrado hacia un aparato de recolección con filtro de tela, con una eficiencia mínima de filtración de 99.5%.
Canteras	El uso, donde sea posible, de agua o químicos apropiados para controlar el polvo durante las operaciones de cantera; la aplicación, donde sea posible, de agua o químicos adecuados sobrecarreteras sin pavimentar, materiales, montones y otras superficies que pueden provocar que el polvo se vaya al aire; el cumplimiento con las restricciones de opacidad debe determinarse mediante el EPA Reference Method 9 ó 22; la fuente debe mantener bitácoras que muestren qué reparaciones se le hicieron al sistema de supresión de polvo; la fuente también deberá mantener un inventario adecuado de piezas de reemplazo.
Centrales Termoeléctricas	Para cualquier planta de energía eléctrica con una capacidad mayor de 25 megavatios localizada dentro de los límites del o que tenga un impacto significativo en los niveles ambientales del Area de No-Logro de PM_{10} de Guaynabo, ninguna persona causará o permitirá la quema de aceite combustible residual con un contenido de azufre en exceso de 1.5% por peso como un precursor de PM_{10}. Sin embargo, la Junta podrá requerir un contenido menor de azufre en el combustible si se demuestra una excedencia a cualquier disposición aplicable de este reglamento que afecte el logro de la norma para PM10 en el área clasificada como no-logro. Este límite de emisión reemplaza el límite dispuesto en la Regla 406 de este Reglamento.

Categorías	Medidas de Control
Refinerías de Petróleo	Para cualquier refinería de petróleo localizada dentro de los límites del o que tenga un impacto significativo en los niveles ambientales del Area de No-Logro de PM_{10} de Guaynabo, ninguna persona causará o permitirá la quema de aceite combustible residual con un contenido de azufre en exceso de 1.0% por peso como un precursor de PM_{10}. Sin embargo, la Junta podrá requerir un contenido menor de azufre en el combustible si se demuestra una excedencia a cualquier disposición aplicable de este reglamento que afecte el logro de la norma para PM_{10} en el area clasificada como no-logro. Este límite de emisión reemplaza el límite dispuesto enla Regla 406 de este Reglamento.
Asfalteras	Para cualquier instalación que utilice un procedimiento de soplado de asfalto localizada dentro de los límites del o que tenga un impacto significativo en los niveles ambientales del área de No-Logro PM_{10} de Guaynabo, ninguna persona causará o permitirá la emisión de materia particulada a menos que dichas emisiones sean capturadas y controladas mediante un equipo de control que logre un 90% de eficiencia de remoción.

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d. Criterio (4): Ley de Aire Limpio requisitos Sección 110 y la Parte D (El área con todos los requisitos aplicables bajo la sección 110 y la parte D del CAA.)

El Estado Libre Asociado de Puerto Rico cumplió con los requisitos de la Sección 110 y la parte D del CAA mediante la aprobación del Plan de Implementación Estatal (SIP) bajo la Parte 52 Subparte BBB – Puerto Rico del 40 CFR. El SIP incluye las revisiones sometidas que incluyen los planes de cumplimiento y mantenimiento con las normas nacionales de calidad de aire.

Para el área moderada de no logro de PM_{10} del municipio de Guaynabo, la EPA aprobó la revisión del SIP el 31 de mayo de 1995[13]. Esta revisión al SIP incluyó una demostración de que el área cumpliría con la norma de PM_{10} para el 31 de diciembre de 1994 y que se iba a mantener hasta el 1999. Además, la revisión al SIP incluía las estrategias de control, medidas de contingencia y los requisitos de revisión de permiso para nuevas fuentes mayores (NSR), como el umbral apropiado para fuente mayor, compensación de emisión, niveles significativos para modificaciones y requisitos para los precursores de PM_{10}.

El Estado Libre Asociado de Puerto Rico certifica que la reglamentación en vigencia es suficiente para asegurar y mantener el cumplimiento con las normas nacionales de calidad de aire de PM_{10} en el municipio de Guaynabo. Luego de la redesignación a logro el Estado Libre Asociado de Puerto Rico se compremete a mantener las normas para PM_{10} en el municipio de Guaynabo por los próximos diez (10) años como lo requiere el LMP.

[13] Apéndice D

e. Criterio (5): Plan de Mantenimiento de la Calidad de Aire (El Administrador aprobó un plan de mantenimiento para el área que cumple con los requisitos de la sección 175 A del CAA).

La EPA publicó un memorando titulado *Limited Maintenance Option for Moderate PM_{10} Nonattainment Areas (LMP)* que incluye un proceso expedito para los Estados que buscan la redesignación de un área de no logro moderada a logro, como el municipio de Guaynabo. Esta opción esta diseñada para áreas que presentan riesgos mínimos de violación a las normas para PM_{10} y el mismo se conoce como el plan de mantenimiento limitado (LMP).

Para calificar para la opción de LMP el municpio de Guaynabo tiene que cumplir con los dos criterios que se presentan a continuación:

- Criterio 1

El área tiene que estar en cumplimiento con la norma para PM_{10} y con el promedio del valor designado de PM_{10} basado en los pasados cinco años de los datos de calidad de aire. Todos los monitores para medir la calidad de aire en el área tienen que estar por debajo de 40 $\mu g/m^3$ para el anual y de 98 $\mu g/m^3$ para el de 24 horas de NAAQS de PM_{10} sin ninguna violación en los monitores.

Contestación:

La EPA revisó los datos de calidad de aire para la contaminación de materia particulada en el 2006. La EPA determinó mantener la norma existente del NAAQS de 24 horas para PM10 que es de 150 $\mu g/m^3$ y revocar la norma anual. La EPA tomó esta decisión basado en que la evidencia no sugiere una relación entre la exposición a largo plazo de PM_{10} con problemas de salud. Por lo tanto, el Estado Libre Asociado de Puerto Rico sólo va demostrar cumplimiento con la norma para PM_{10} de 24 horas.

El municipio de Guaynabo demostró cumplimiento con la norma por las medidas de control aprobadas en el SIP de 1995. Desde la aprobación del SIP ninguna violación se ha registrado en el área.

El valor designado[14] calculado para la norma de 24 horas para los años del 2002 al 2006 fué de 85 $\mu g/m^3$. El valor designado

[14] Apéndice E incluye el cálculo y la metodología utilizada para determinar el valor de diseño para el PM_{10} de 24 horas que se conoce como el procedimiento de mirar tables que se incluye en el Capítulo 6 *Development of Control Strategies of the document entitled the PM_{10} SIP Development Guideline,* EPA-450/2-86-001, *June 1987.*

obtenido para la norma para PM_{10} de 24 horas es por debajo del establecido de 98 $\mu g/m^3$.

- Criterio 2

Las expectivas de crecimiento en las emisiones regionales de vehículos de motor en el área (incluyendo polvo fugitivo) debe ser limitado y tiene que pasar el examen del análisis de emisiones regionales para vehículos de motor.

Contestación:

La metodología utilizada para determinar si el crecimiento de emisiones de fuentes móviles puede en los próximos diez años aumentar la concentración en el área y amenaza la suposición de mantenimiento, se incluye en el Apéndice B del LMP. La ecuación que se incluye es la siguiente:

$$DV + (VMT_{pi} \times DV_{mv}) = MOS$$

Dónde:

DV = el valor designado del área durante los pasados cinco años de los datos de calidad de aire en $\mu g/m^3$
VMT_{pi} = el porciento de crecimiento proyectado de las millas viajadas por vehículos durante los próximos diez años
DV_{mv} = el valor designado para vehículos de motor basado en la porción del inventario de emisones en $\mu g/m^3$
MOS = margen de seguridad para la norma de PM_{10} dado que el área esta por debajo de: 40 $\mu g/m^3$for para la norma anual o 98 $\mu g/m^3$ para la norma de 24 horas.

Utilizando la ecuación arriba descrita el siguiente valor designado[15] de 88.70 $\mu g/m^3$ para la norma de 24 horas de PM_{10} fue obtenido. Este valor designado está por debajo del margen de seguridad de 98 $\mu g/m^3$ establecido en el LMP.

Por lo tanto, el Estado Libre Asociado de Puerto Rico cumple con los criterios establecidos anteriormente y cualifica para LMP.

[15] Apéndice F - *Calculation of the Motor Vehicle Regional Analysis Methodology Municipality of Guyanabo*

i. Inventario de Emisiones Área de Logro

El inventario de emisiones para PM_{10} de 1990 fue actualizado. El inventario de emisiones para el área de logro[16] para PM_{10} del municipio de Guaynabo representa las emisiones actuales calculadas para un periodo de cinco años, desde el 2002 al 2006, en cumplimiento con el requisito de LMP.

Los permisos de las fuentes estacionarias fueron revisados y las emisiones actuales fueron calculadas para el periodo de cinco años que cubre desde el 2002 al 2006. Las emisiones de PM_{10} para las fuentes de punto fueron calculadas utilizando los reportes de la Regla 410 del Reglamento para el Control de la Contaminación Atmosférica, para equipos de combustión localizadas en el municipio de Guaynabo. En el caso de que estos reportes no estuvieran disponibles el consumo máximo de combustible permitido por permiso otorgado fue utilizado para el cálculo de las emisiones. Para calcular las emisiones de la industrias de granos y geológicas se utilizó la producción máxima anual incluida en los permisos.

El inventario de emisiones fue calculado utilizando los factores de emisión del AP-42, permisos, *Fire Data System* y de otras fuentes. Las fuentes de area consideradas fueron: de combustión, incineración, fuegos estructurales, emisiones de barcazas, carreteras sin pavimentar, lugares de estacionamiento y el microinventario. Para fuentes móviles las emisiones de PM_{10} fueron obtenidas del análisis de transportación y conformidad con la calidad de aire incluido en el *2030 Plan of the San Juan Metropolitan Area September 2005;* y del documento titulado *Documentation for the Development of Air Toxics Area Source Inventory for Puerto Rico and U.S. Virgin Islands and Onroad Mobile Source for Puerto Rico, Final Report, March 2007.* .

[16] Apéndice G Inventario de Emisiones

Tabla VII – Resumen de Emisiones de PM_{10} por tipo de Fuente Años 2002 al 2006 en el Municipio de Guaynabo

Tipo de Fuente	Emmisiones Actuales (TPY)				
	2002	2003	2004	2005	2006
Punto	2365	1501	1474	1650	1647
Área	10.73	10.24	10.62	10.52	10.59
Inventorio Micro	121	121	121	121	121
Vehículos de Motor	48.89	45.42	45.45	44.24	44.23
Carreteras Pavimentadas	266.51	302.38	302.59	294.53	294.45
Buques Marinos	15.75	15.46	16.51	15.88	15.10
Equipo de Construcción que no es de Carretera	97.37	97.37	97.37	97.37	97.37
Equipo de mantenimiento de jardines que no es de carretera	9.62	9.62	9.62	9.62	9.62
Equipos Pequeños Industriales de Combustiónde Combustible que no es de carreretera	3	3	3	3	3
Equipos Pequeños Comerciales e Institucionales de Combustión de Combustible que no es de carreretera	4.71	4.71	4.71	4.71	4.71
TOTAL	2942.58	2110.2	2084.87	2250.87	2247.07

Si comparamos el inventario de emisiones del 2002 con los próximos años (2003 al 2006) se demuestra que hay una reducción en emisiones para el área del municipio de Guaynabo.

ii. Medidas de Control para mantener las Normas Nacionales de Calidad de Aire para PM_{10}

La Junta de Calidad Ambiental (JCA) depende de las medidas aprobadas en el SIP de 1995 que se resumieron anteriormente para cumplir con la norma. Las medidas de control adoptadas han sido efectivas en la reducción de emisiones de PM_{10} en el municipio de Guaynabo.

De acuerdo con la política establecida en el LMP, las medidas de control establecidas continuaran en vigor durante el periodo del plan de mantenimiento. Las medidas de control para cumplir con la norma de PM_{10} fueron aprobadas por la EPA el 31 de mayo de 1995. Por lo tanto, medidas de control adicionales no son necesarias para mantener y continuar en cumplimiento con la norma de PM_{10}.

iii. Demostración de Mantenimiento para PM_{10}

En cumplimiento con la opción de LMP el área tiene que satisfacer los criterios resumidos anteriormente. El LMP está basado en un análisis estadístico, de manera que si se cumple con el mismo, se satisface la demostración de mantenimiento. El análisis para demostrar que el municipio de Guyanabo cumple con el criterio del LMP se incluye en el Apéndice E y F en los cuales se hace el computo del valor de diseño. Por lo tanto, la demostración de mantenimiento del LMP se presume que se satisface.

iv. Red de Muestreo de Aire

La red de muestreo de aire para PM_{10} del municipio de Guaynabo consiste de dos monitores. Estos lugares están identificados como: 1) JCA 7, localizado en el edifificio del USGS y Recursos de Agua y JCA 24, localizada en la subestación eléctrica. Estos monitores se encuentran cerca el uno del otro y los mismos son representativos de la calidad del aire de esa área. También, el Estado Libre Asociado de Puerto Rico es afectado por eventos naturales como polvo del desierto Sahara que es transportado a través del Océano Atlántico y ceniza del volcán de Soufrière Hills localizado en la isla de Montserrat. Estos eventos naturales afectan la calidad del aire en el municipio de Guaynabo y en el archipiélago de Puerto Rico. Estos eventos naturales fueron excluidos de la determinación de cumplimiento con la norma para PM_{10} de acuerdo con los requisitos que se establecen *Guideline on the Identification and Use of Air Quality Data Affected by Exceptional Events* (guías para eventos excepcionales) y el Apéndice K de la Parte 50 del 40 CFR. La JCA mantiene una estación de muestreo de calidad de aire en Fajardo que se utiliza de trasfondo para determinar la contribución de eventos naturales que afectan a Puerto Rico.

La red de muestreo de calidad de aire fue desarrollada y es mantenida de acuerdo con los criterios establecidos en los Apéndices D y E la Parte 58 del 40 CFR y en acuerdo con la EPA. El Estado Libre Asociado de Puerto Rico se compromete a mantener la red de muestreo durante el perido de LMP.

v. Verificación de Continuo Cumplimiento en el Área de Logro

La red de muestreo localizada en el municipio de Guaynabo será utilizada para verificar el cumplimiento con la norma para PM_{10} durante el periodo del plan de mantenimiento.

Como lo requiere la política del LMP la JCA recalculará anualmente el valor de diseño durante los cinco años más recientes de datos de calidad de aire para verificar que el municipio de Guaynabo continua cumpliendo con la política establecida en el LMP. Los resultados serán informados a la EPA.

En la eventualidad de que el municipio de Guaynabo no cumpla con la opción del LMP, la JCA implementará las medidas de contingencia que se describen a continuación. Si el área falla por segunda vez para cumplir con el LMP, un plan de mantenimiento será preparado según lo requiere la política del LMP.

vi. Plan de Contingencia

En cumplimiento con la sección 172 (c)(9) del CAA, la JCA incluyó medidas de contingencia en el SIP de PM_{10} para el municipio de Guaynabo. Las mismas fueron aprobadas por la EPA el 31 de mayo de 1995[17]. Las medidas de contingencia son procedimientos establecidos para corregir prontamente cualquier violación la norma de PM_{10}, que puedan ocurrir luego de que el área sea redesignada como logro.

Las medidas de contingencia están incluídas en la Regla 423(D) del Reglamento para el Control de la Contaminación Atmosférica (RCCA) y continuarán en vigor durante el periodo establecido por el LMP. A continuación incluimos las medidas de contingencia que están y continuarán en vigor en el municipio de Guaynabo:

(1) El Departamento de Transportación recogerá datos sobre el contenido de sedimento y la cantidad de polvo en carreteras del Municipio de Guaynabo utilizando procedimientos de APA en el AP-42 (documento técnico de APA) para un mejor estimado de las emisiones de PM_{10}.

[17] 60 FR 28335, May 31, 1995.

(2) El Municipio de Guaynabo proveerá vegetación, estabilización química o cualquier otra disminución de terreno erosivo.

(3) Toda embarcación que opere en la Bahia de San Juan, definida como las aguas navegables al sur de la línea imaginaria que conecta a Punta del Morro y la Isla de Cabras, deberá utilizar el combustible diesel con un contenido de azufre menor de 0.3% por peso.

(4) No se permite la emisión visible de ninguna embarcación excepto lo que dispone la Regla 403 de este Reglamento.

(5) La Autoridad de los Puertos deberá implantar un programa de limpieza de calles o cualquier otro programa que impida que el polvo sea depositado en las superficies asfaltadas bajo su jurisdicción.

(6) El Municipio de San Juan deberá revisar los planes de control de incendios y mitigación de polvo en su relleno sanitario municipal de forma que se establezcan estrategias adicionales de control de contaminación.

vii. Conformidad con el Plan de Transportación

El Departamento de Transportación y Obras Públicas es la agencia designada por el Estado Libre Asociado de Puerto Rico como la agencia que asegura que los proyectos de autopistas cumplen con la regla de conformidad con la transportación[18] y la regla de conformidad general[19] para el municipio de Guaynabo. Ambas reglas requieren una demostración de conformidad en la que se indica que las emisiones que se esperan de las acciones planificadas son consistentes con las emisiones totales para el área.

En las áreas donde los criterios del LMP se satisfacen, el cumplimiento con las emsiones totales no es obligado debido a que el potencial de crecimiento de emisión esta limitado en el área de mantenimiento. Por lo tanto, la conformidad regional con la transportación se presume. Esto quiere decir que el análisis de emisiones regional y los requisitos de conformidad requerido por la Parte 93.118 y 93.119 del 40 CFR no son

[18] 40 CFR 51 and 93
[19] 58 FR 63214, November 30, 1993.

necesarios porque no hay emisiones totales establecidas para vehículos de motor en el SIP y por ello no hay forma de recibir una decisón negativa de conformidad.

Aunque, como indicaramos anteriormente la conformidad regional con la transportación se presume, el DTOP tendrá que afirmar conformidad como se requiere para áreas que operan bajo un plan de mantenimiento.

4. Enmiendas a la Regla 423 del Reglamento para el Control de la Contaminación Atmosférica

La definición de Área de No Logro de PM_{10} de Guaynabo de la Regla 102 del Reglamento para el Control de la Contaminación Atmosférica (RCCA) se enmienda para incluir el cambio de la designación de el municipio de Guaynabo

> Área de ~~No-Logro~~ **Mantenimiento** de PM_{10} de Guaynabo
> Todo el Municipio de Guaynabo según lo establece el Plan de Implantación Estatal para PM_{10} de Puerto Rico y la Ley 81 del 30 de agosto de 1991**, según enmendada, conocida como:** Ley de Municipios Autónomos.

El título de la Regla 423 del RCCA se enmendará para que refleje la redesignación del área a una de mantenimiento y para la Regla 423 del RCCA según aprobada en el Plan de Implementación Estatal de l31 de mayo de 1995[20]. El siguiente será el título de la Regla 423: Limitaciones para el Área de Mantenimiento de PM_{10} de Guaynabo. La Regla 423 de RCAP leerá como sigue:

> REGLA 423 **LIMITACIONES PARA EL ÁREA DE MANTENIMIENTO DE PM_{10} DE GUAYNABO** ~~PARA EL AREA DE NO-LOGRODEPM10 DE GUAYNABO~~
>
> A) Cualquier instalación ~~fuente~~ dentro de los límites de cualquier Área de **Mantenimiento** ~~de No-Logro~~ de PM_{10} o que tenga un impacto significativo sobre la calidad del aire un Área de **Mantenimiento** ~~No-Logro~~ de PM_{10} deberá, además de cumplir con todas las prohibiciones establecidas en las Reglas 401 hasta la 422, cumplir con los límites impuestos por la Tecnología de Control Razonablemente Disponible (TCRD) especificados en esta sub-sección.
>
> (1) Para cualquier instalación para el manejo o el procesamiento de granos, ~~arena, soda ash, cemento, clinker en polvo y cualquier otra fuente que maneje o procese otro material donde más del 50% de las partículas aproximadamente tienen un diámetro menor de 1 milímetro (mm) y el material al manejarse o procesarse tendrá emisiones de PM10 en tales cantidades que impacte significativamente la calidad de aire en el área de no-logro de Guaynabo,~~ ninguna persona causará o permitirá que cualesquiera materiales se reciban, manejen, transporten, procesen, muelan o almacenen sin antes tomar las siguientes precauciones para impedir que materia particulada se vaya al aire:
>
> (a) emplear procedimientos adecuados de limpieza a través de toda la instalación, incluyendo, aunque sin limitarse a, la pronta remoción de polvo de molienda ~~o cualquier otro material en polvo~~

[20] 61 FR 31885, 21 de junio de 1996.

acumulado mediante una técnica que evite que este material se escape a la atmósfera;

~~(i) Cualquier otro material no granulado o que no este cubierto por esta Regla deberá ser manejado en conformidad con la Regla 404.~~

(b) cubrir todos los camiones en todo momento en que están en movimiento;

(c) mantener todos los sistemas de ventilación y aparatos de recolección de polvo;

(d) pavimentar todas las áreas sobre las cuales viajarán vehículos y mantener dichas áreas de acuerdo con un programa de limpieza aprobado por la Junta;

(e) prohibir la carga y descarga de barcos o barcazas mediante brazo mecánico de quijada (*clam*, en inglés);

(f) Cargar o descargar barcos o barcazas mediante conductos telescópicos neumáticos o mecánicos dentro de un área completamente encerrada salvo por el espacio necesario para introducir el conducto o al ventilar el aire desplazado con un sistema de ventilación que exhale hacia un aparato de recolección con filtro de tela, con una eficiencia mínima de filtración de 99.5%.

(g) cargar o descargar camiones en cobertizos o edificios completamente encerrados con un sistema de ventilación que exhale hacia un aparato de recolección con filtro de tela, con una eficiencia mínima de filtración de 99.5%.

(h) limpiar, separar, manejar, transportar, transferir y moler el grano en cobertizos o edificios completamente encerrados que cumplan con los requisitos del Método de Referencia APA 30 (Propuesto) para enclaustramiento total y ventilar el lugar encerrado hacia un aparato de recolección con filtro de tela, con una eficiencia mínima de filtración de 99.5%.

(i) Se deben poner a prueba todos los aparatos de recolección con filtro de tela mediante:

(1) *EPA Reference Method 5 - Determination of Particulate Emissions from Stationary Sources* (40 CFR Parte 60) o;

(2) *EPA Reference Method 17 - Determination of Particulate Emissions from Stationary Sources (In-Stack Filtration Method)* (40 CFR Parte 40) o;

(3) *EPA Reference Method 201- Determination of PM10 Emissions* (40 CFR Parte 51) o;

(4) *EPA Reference Method 201A - Determination of PM 10 Emissions* (*Constant Sampling Rate Procedure*) (40 CFR Parte 51) o;

(5) *EPA Reference Method 202 - Determination of Condensable Particulate Emissions from Stationary Sources* (40 CFR Parte 51).

(j) Se determinará la opacidad de las chimeneas mediante:

(1) *EPA Reference Method 9 - Visual Determination of the Opacity of Emissions from Stationary Sources.*

(k) Se determinará la opacidad de las emisiones fugitivas mediante:

(1) *EPA Reference Method 22 - Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Flares* (40 CFR Parte 60).

(l) Cada zona del aparato de recolección con filtro de tela debe estar equipada con un monitor continuo que mida la caída de presión a través de la zona. Durante la prueba de funcionamiento, las lecturas de caída de presión deberán medirse. El permiso de operación deberá especificar un régimen de operación para la caída de presión para asegurar la operación óptima de la unidad.

(m) Si la caída de presión a través de cualquier zona se desvía del régimen de caída de presión permitido, la fuente deberá notificar estas desviaciones a la Junta de Calidad Ambiental. La fuente someterá informes trimestrales en que identifique todos los períodos de desviación durante el trimestre y una explicación de las medidas correctivas tomadas. Los informes deberán entregarse 30 días naturales después del final de cada trimestre.

(n) Se mantendrán expedientes tanto para los parámetros operacionales como para los planes de mantenimiento (por ejemplo, la lectura de la caída de presión se anotará una vez por cada turno o con más frecuencia de ser necesario). Una vez al día,

se realizará una inspección ocular alrededor de cada aparato de recolección para determinar sus condiciones actuales. Se mantendrá una bitácora de todos los hallazgos y con respecto a las acciones tomadas para resolver los problemas. Las fuentes deben mantener inventarios adecuados de piezas de reemplazo. Los expedientes deben mantenerse en el lugar por al menos cinco años y estarán disponibles tanto para los inspectores de la APA como para los de la JCA.

(2) Para cada instalación de cantera, ninguna persona causará o permitirá que los materiales se manejen, transporten, trituren, puedan cernir o almacenen sin antes tomar las siguientes precauciones para impedir que materia particulada se vaya al aire. Estas precauciones incluirán, aunque no se limitarán a:

(a) el uso, donde sea posible, de agua o químicos apropiados para controlar el polvo durante las operaciones de cantera;

(b) la aplicación, donde sea posible, de agua o químicos adecuados sobre carreteras sin pavimentar, materiales, montones y otras superficies que pueden provocar que el polvo se vaya al aire.

(c) El cumplimiento con las restricciones de opacidad debe determinarse mediante el *EPA Reference Method* 9 ó 22.

(d) La fuente debe mantener bitácoras que muestren qué reparaciones se le hicieron al sistema de supresión de polvo. La fuente también deberá mantener un inventario adecuado de piezas de reemplazo.

(3) Para cualquier planta de energía eléctrica con una capacidad mayor de 25 megavatios localizada dentro de los límites del o que tenga un impacto significativo en los niveles ambientales del Área **de Mantenimiento** ~~No-Logro~~ de PM_{10} de Guaynabo, ninguna persona causará o permitirá la quema de aceite combustible residual con un contenido de azufre en exceso de 1.5% por peso como un precursor de PM_{10}. Sin embargo, la Junta podrá requerir un contenido menor de azufre en el combustible si se demuestra una excedencia a cualquier disposición aplicable de este reglamento que afecte el logro del Estandar Nacional de Calidad de Aire (*NAAQS*, por sus siglas en inglés) para PM_{10} en el área clasificada como **de mantenimiento** ~~no-logro~~. Este límite de emisión reemplaza el límite dispuesto en la Regla 406 de este Reglamento.

(4) Para cualquier refinería de petróleo localizada dentro de los límites del o que tenga un impacto significativo en los niveles ambientales del Area **de Mantenimiento** ~~No-Logro~~ de PM_{10} de Guaynabo, ninguna persona

causará o permitirá la quema de aceite combustible residual con un contenido de azufre en exceso de 1.0% por peso como un precursor de PM_{10}. Sin embargo, la Junta podrá requerir un contenido menor de azufre en el combustible si se demuestra una excedencia a cualquier disposición aplicable de este reglamento que afecte el logro del Estandar Nacional de Calidad de Aire (*NAAQS*, por sus siglas en inglés) para PM_{10} en el área clasificada como de **mantenimiento** ~~no-logro~~. Este límite de emisión reemplaza el límite dispuesto en la Regla 406 de este Reglamento.

(5) Para cualquier instalación que utilice un procedimiento de soplado de asfalto localizada dentro de los límites del o que tenga un impacto significativo en los niveles ambientales del Área de **Mantenimiento de** ~~No-Logro~~ PM_{10} de Guaynabo, ninguna persona causará o permitirá la emisión de materia particulada a menos que dichas emisiones sean capturadas y controladas mediante un equipo de control que logre un 90% de eficiencia de remoción.

(i) El cumplimiento con la eficiencia de remoción quedará demostrado mediante los Métodos 5, 17, 201, 201A o 202 (40 CFR Partes 51 y 60) en la entrada y la salida del equipo de control. El cumplimiento con las normas de opacidad se determinará mediante el EPA Reference Method 9 (40 CFR Parte 60).

(ii) Si se instala un post-quemador, la temperatura en la zona de combustion se deberá supervisar continuamente y registrarse. El equipo de monitoria deberá tener una exactitud de +10 °C a través de su régimen. Si se instala un limpiador de gases, la caída de presión a través del limpiador de gases se supervisará continuamente y se registrará. Se establecerá el regimen óptimo de presión durante la prueba de funcionamiento y se incorporará al permiso de operación.

(B) El dueño u operador de cualquier fuente sujeta a las limitaciones del párrafo A deberá:

(1) Someter, en la fecha en que lo requiera la JCA, y obtener aprobación inmediata del plan de cumplimiento en el que el dueño u operador de tal fuente demuestre que ha cumplido con todos los límites aplicables incluidos en el Plan de Implantación Estatal y provee para la implantación de los requisitos del TCRD. El plan de cumplimiento debe estar por escrito e incluir:

(a) el nombre del individuo responsable de las actividades de demostración de cumplimiento en la fuente;

(b) una descripción del sistema de control de contaminación atmosférica, el equipo de control específico, las chimeneas, respiraderos, materia prima, combustibles y demás renglones o parámetros que vayan a ponerse a prueba, supervisarse, muestrearse, analizarse o medirse para determinar que la fuente está cumpliendo continuamente;

(c) una descripción de los métodos de prueba específicos, las técnicas de supervisión, los métodos de muestreo y análisis, y las medidas que se utilizarán para demostrar cumplimiento continuo;

(d) una descripción de otros expedientes pertinentes o informes razonablemente necesarios para demostrar el cumplimiento continuo;

(e) la frecuencia de las pruebas, la supervisión, el muestreo, el análisis y las medidas necesarias para demostrar el cumplimiento continuo.

(2) La Junta podrá revisar y aprobar el plan dentro de un período de revisión de 30 días, o enmendar el plan si fuese necesario para asegurar que el cumplimiento ha sido demostrado adecuadamente.

(3) Cuando sea necesario alterar físicamente la fuente para lograr el cumplimiento, la construcción debe comenzar treinta días calendario luego de entrar en vigencia este Reglamento y completarse en un perido no mayor de doce meses. El plan de cumplimiento debe incluir este itinerario así como una explicación detallada de la alteración física.

(4) Implantar el plan de cumplimiento y demostrar que se ha logrado el cumplimiento final con los límites aplicables del Plan de Implantación Estatal. Un funcionario responsable certificará dicho cumplimiento e indicará, a base de información y creencia formada luego de una investigación razonable, que la información certificada es verdadera y exacta.

(C) Memorandos de Entendimiento Interagencial

Cualquier convenio o Memorandos de Entendimiento Interagencial logrado y firmado entre la Junta de Calidad Ambiental y cualquier otra agencia estatal, autoridad o entidad municipal que establezca las medidas o estrategias de control definidas para controlar y reducir cualquier emisión de PM_{10} y/o el precursor de PM_{10} será fiscalizable estatal y federalmente por la Junta y la APA respectivamente, se hará formar parte de este reglamento y se hará formar parte del permiso de operación de la fuente afectada.

(D) Medidas de Contingencia

Las siguientes medidas de contingencia serán fiscalizadas bajo este Reglamento sino se alcanza cumplimiento con los estandares de calidad de aire de PM_{10} en el Municipio de Guaynabo para el 31 de diciembre de 1994:

(1) El Departamento de Transportación recogerá datos sobre el contenido de sedimento y la cantidad de polvo en carreteras del Municipio de Guaynabo utilizando procedimientos de APA en el AP-42 (documento técnico de APA) para un mejor estimado de las emisiones de PM_{10}.

(2) El Municipio de Guaynabo proveerá vegetación, estabilización química o cualquier otra disminución de terreno erosivo.

(3) Toda embarcación que opere en la Bahia de San Juan, definida como las aguas navegables al sur de la línea imaginaria que conecta a Punta del Morro y la Isla de Cabras, deberá utilizar el combustible diesel con un contenido de azufre menor de **0.05**~~0.3~~% por peso.

(4) No se permite la emisión visible de ninguna embarcación excepto lo que dispone la Regla 403 de este Reglamento.

(5) La Autoridad de los Puertos deberá implantar un programa de limpieza de calles o cualquier otro programa que impida que el polvo sea depositado en las superficies asfaltadas bajo su jurisdicción.

(6) El Municipio de San Juan deberá revisar los planes de control de incendios y mitigación de polvo en su relleno sanitario municipal de forma que se establezcan estrategias adicionales de control de contaminación.

~~(E) Sanciones por No-Cumplimiento~~

~~Cualquier fuente que se encuentre en violación de cualquier plan de cumplimiento aprobado por la Junta o cualquier requisito incluido en el mismo, podrá estar sujeta a las sanciones especificadas en la Regla 115.~~

COMMONWEALTH OF PUERTO RICO

HIGHWAY AND TRANSPORTATION AUTHORITY

October 30, 2008

Evelyn Rodriguez Cintrón
Manager Air Quality Area
Environmental Quality Board
P.O. Box 11488
San Juan, Puerto Rico 00910

RECIBIDO
14 NOV 2008
24

Re: Unpaved Roads Emission Inventory - Guaynabo

Dear Mrs. Rodríguez Cintrón:

Your Agency recently inquired about unpaved road mileage in the Municipality of Guaynabo, since particulates associated with this type of facilities must be considered in the emission inventory in the area. Regarding this matter we wish to inform the following.

Unpaved roads are a significant element in the road inventory of many States, but not so in Puerto Rico. Because of our climate and topography, unpaved roads last very little (maybe only a few days) before becoming unusable. As a result, there are virtually no unpaved roads in the Commonwealth's and Municipal highway systems.

To confirm this information, we asked our Highway Systems Office to provide us with updated information specifically on the highway inventory for the Municipality of Guaynabo, and no unpaved roads were identified there; notwithstanding that the inventory for the Municipality includes 14.93 kilometers of local roads and 223.84 kilometers of rural roads. These, as well as all the Interstate, Freeways, Expressways, Principal Arterials, Minor Arterials and Collector roads or streets, were paved.

We hope that this information results useful for your analyses.

For any additional details you may reach us at (787) 722-4664.

Cordially,

Gabriel A. Rodríguez-Fernández, PPL, MP, MCIT
Director
Strategic Planning Office

RECIBIDO
NOV 13 '08 10:08

APÉNDICE A

ESTADO LIBRE ASOCIADO DE PUERTO RICO
OFICINA DEL GOBERNADOR
JUNTA DE CALIDAD AMBIENTAL

ACUERDO INTERAGENCIAL

COMPARECEN

DE LA PRIMERA PARTE: El **Departamento de Transportación y Obras Públicas** y la **Autoridad de Carreteras** (en lo sucesivo denominados como "**El Departamento y la Autoridad**"), esta última adscrita a la primera, siendo ambas agencias del Estado Libre Asociado de Puerto Rico, representadas por su Secretario, Dr. Carlos I. Pesquera, mayor de edad, ingeniero, casado, vecino de San Juan, Puerto Rico y el Director Ejecutivo de la Autoridad de Carreteras y Transportación, Dr. Sergio González Quevedo, mayor de edad, soltero, ingeniero y vecino de Carolina, Puerto Rico.

DE LA SEGUNDA PARTE: La **Junta de Calidad Ambiental** (en lo sucesivo denominada como "**La Junta**"), agencia pública del Estado Libre Asociado de Puerto Rico, representada por su Presidente, Héctor Russe Martínez, mayor de edad, casado y vecino de Morovis, Puerto Rico.

EXPONEN Y CONVIENEN

PRIMERO: La Agencia de Protección Ambiental Federal ha designado al municipio de Guaynabo como área que no cumple con el estándar nacional primario para el contaminante PM_{10} (material particulado inhalable cuyo tamaño no excede de 10 micrones).

SEGUNDO: Que para lograr y mantener la concentración de material particulado fino bajo el estándar anual (promedio aritmético) de la calidad de aire de 50 ug/m^3 en el área de no logro, La Junta tiene que imponer las más estrictas medidas a las actividades que tienen un efecto detrimental sobre la calidad de aire del área de no logro.

TERCERO: La excedencia en la concentración permitida de PM_{10} se debe a la deficiencia o ausencia de medidas para controlar el material particulado generado por diversas actividades, siendo una de ellas el movimiento vehicular en las vías estatales.

CUARTO: Que se ha identificado a El Departamento y la Autoridad como las agencias con jurisdicción sobre las carreteras estatales, y que por lo tanto tiene el control del acondicionamiento de las servidumbres y del mantenimiento de las carreteras estatales existentes, y de la construcción de las nuevas carreteras estatales.

QUINTO: Que El Departamento está autorizado por la Ley Num. 54 de 30 de mayo de 1973 (según enmendada) para asumir las tareas que motivan este acuerdo interagencial.

SEXTO: Que El Departamento y la Autoridad reconocen que deben contribuir para que se alcance y mantenga el estándar nacional de PM_{10} en el área de no logro, y lo hará mediante la implantación de las medidas que se detallarán a continuación. A los fines de contribuir con la reducción de contaminantes en el Área de No-Logro, las siguientes actividades serán realizadas.

SEPTIMO: Que El Departamento y la Autoridad se comprometen a pavimentar y dar mantenimiento a las secciones de las carreteras PR-5, PR-22, PR-24, PR-165 (desde PR-5 hasta PR-2) y PR-28 (en adelante "las carreteras") localizadas dentro de los municipios de Guaynabo y Cataño según se detallan en el Anejo A que acompaña este acuerdo. Esta tarea se realizará conforme lo establecido en los incisos OCTAVO, NOVENO y DECIMO, y siguiendo las mejores prácticas.

1. Realizará un muestreo representativo de vehículos en el Municipio de Guaynabo a los fines de establecer la condición de éstos y las emisiones de contaminantes que generan los mismos. El mismo se realizará durante el año 1994.

2. Realizará mejoras a los paseos de las siguientes vías:

   a. PR-5, Encintados entre la PR-8869 y la PR-22.

   b. Encintados de lados Este de PR-165, desde El Nuevo Día hasta la Rampa Caguas-San Juan de la PR-2.

   c. PR-28, Paseos/Encintados desde la PR-165 hasta Texaco.

OCTAVO: Que El Departamento comprará o gestionará la adquisición de dos (2) máquinas barredoras (en adelante "las barredoras") que operen con agua para barrer las carreteras mencionadas en el inciso SEPTIMO. Las carreteras serán barridas por lo menos una (1) vez a la semana por el tiempo necesario hasta que por acuerdo entre el Departamento y la Autoridad, y la Junta se pueda disminuir la frecuencia.

NOVENO: Que si en algún momento las barredoras se averían simultáneamente, El Departamento realizará gestiones tendentes a repararlas para poder cumplir con la obligación descrita en el inciso OCTAVO.

DECIMO: Que en caso de que la avería de las barredoras no pudiese corregirse con la celeridad necesaria para cumplir con la obligación de barrer las calles una (1) vez en semana, El Departamento enviará brigadas para que limpien, hasta donde sea posible, el exceso de polvo de las carreteras mencionadas en el inciso SEPTIMO.

UNDECIMO: Que El Departamento someterá un análisis de costo respecto a las medidas propuestas en el plan de cumplimiento que someterá a La Junta en virtud de este acuerdo. El referido análisis contendrá información respecto a la viabilidad económica de todas las alternativas que fueron consideradas antes de escoger las medidas propuestas, y las razones que motivaron la selección final.

DECIMOSEGUNDO: Que El Departamento enviará un informe mensual certificando que se han realizado las tareas contenidas en este acuerdo, y conteniendo la fecha, lugar, costo y breve descripción de cada tarea,cualquier inconveniente o situación fuera de control de El Departamento que retrase el trabajo. Este informe será suscrito por el Secretario del Departamento o por un representante autorizado y será presentado utilizando el formato que se acompaña con este acuerdo (ver Anejo B).

DECIMOTERCERO: Que la persona de contacto en El Departamento y la Autoridad para efectos del presente acuerdo lo es el Ing. Jorge Rivera, Jefe de la Oficina de Estudios Ambientales de la Autoridad de Carreteras y Transportación y que como tal será responsable de coordinar con y comunicarle al Secretario de El Departamento sobre cualquier eventualidad relacionada con el presente acuerdo.

DECIMOCUARTO: Que El Departamento se compromete a utilizar las mejores prácticas de ingeniería para controlar las emisiones de materia particulada a la atmósfera en la construcción de carreteras estatales con jurisdicción en el Municipio de Guaynabo.

DECIMOQUINTO: Que las mejores prácticas de ingeniería que se mencionan en el inciso DECIMOCUARTO se refieren a lo siguiente, sin limitarse a ello: humectación continua de los terrenos expuestos a la erosión, utilización de lonas para tapar la carga de los camiones de acarreo, utilización de lonas en estibas de agregados, etc..

DECIMOSEXTO: Que el Departamento y la Autoridad reconocen que la Junta podrá exigirle a estos mediante enmiendas a este acuerdo, que implanten aquellas medidas de contingencia (bajo su jurisdicción) que se describen en el Plan de Implantación Estatal (SIP) y que han sido incorporadas a las enmiendas al Reglamento para el Control de la Contaminación Atmosférica, vigente en la Regla 423; para las actividades a realizarse en el Area de No-Logro (Anejo C) , cuando no se obtenga la reclasificación al Area de No-Logro y sea necesario implantar medidas más restrictivas para reducir las emisiones de materia particulada fina.

DECIMOSEPTIMO: Que la fecha de efectividad del presente acuerdo lo será la fecha en que se firme el mismo y durará hasta tanto el Municipio de Guaynabo recobre la categoría de Logro bajo el Acta de Aire Limpio.

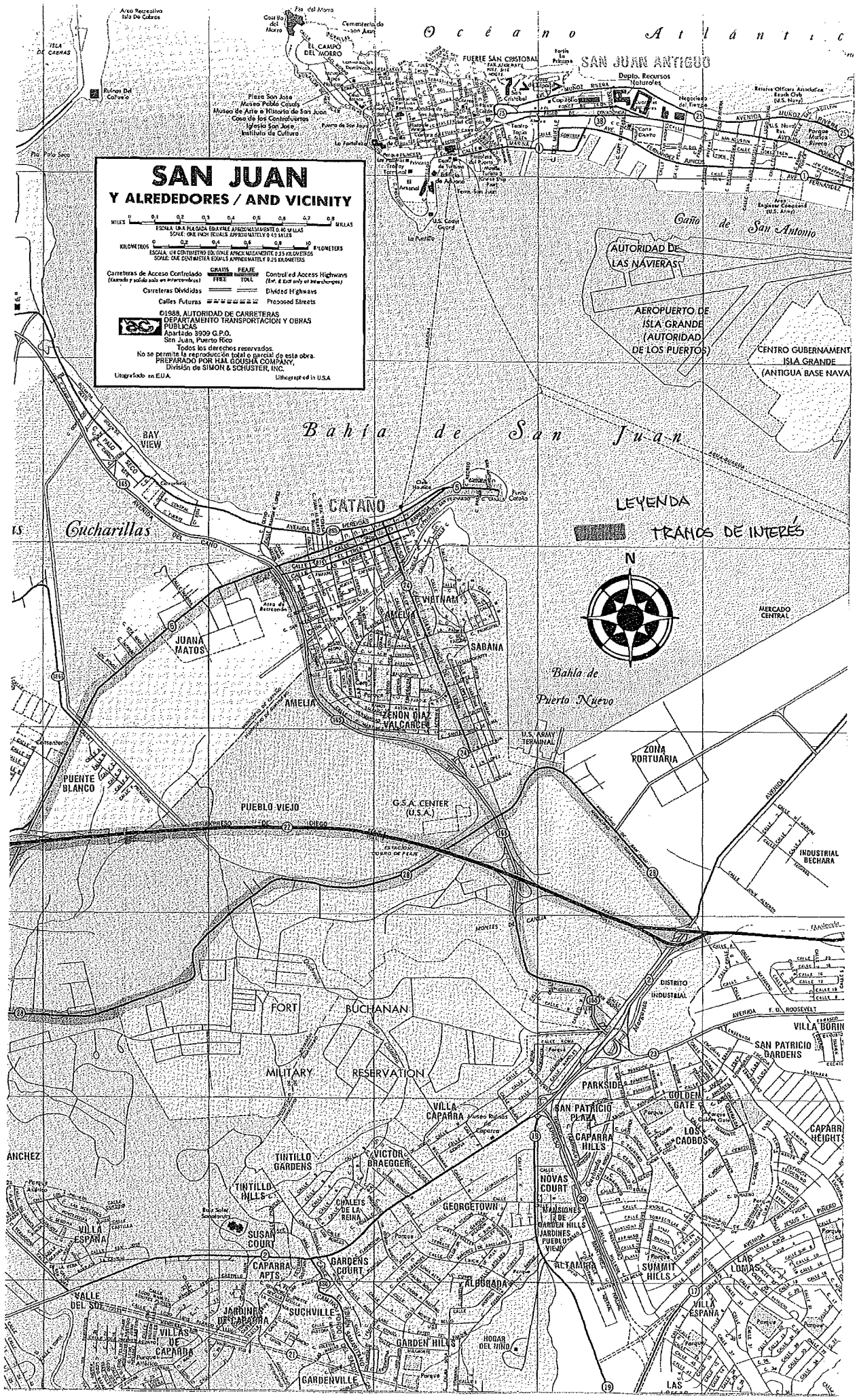
En San Juan de Puerto Rico, hoy día de de 1993.

Carlos I. Pesquera
Secretario
Departamento de Transportación
y Obras Públicas

Sergio González Quevedo
Director Ejecutivo
Autoridad de Carreteras y
Transportación

Héctor Russe Martínez
Presidente
Junta de Calidad Ambiental

ANEJO A


SAN JUAN
Y ALREDEDORES / AND VICINITY
MILES
MILLAS
ESCALA: UNA PULGADA EQUIVALE APROXIMADAMENTE A 0.40 MILLAS
SCALE: ONE INCH EQUALS APPROXIMATELY 0.40 MILES
KILOMETROS
KILOMETERS
ESCALA: UN CENTIMETRO EQUIVALE APROXIMADAMENTE 0.25 KILOMETROS
SCALE: ONE CENTIMETER EQUALS APPROXIMATELY 0.25 KILOMETERS
Carreteras de Acceso Controlado (Entrada y salida solo en interceptores)
GRATIS FREE
PEAJE TOLL
Controlled Access Highways (Ent. & Exit only at interchanges)
Carreteras Divididas
Divided Highways
Calles Futuras
Proposed Streets
©1988, AUTORIDAD DE CARRETERAS
DEPARTAMENTO TRANSPORTACION Y OBRAS PUBLICAS
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San Juan, Puerto Rico
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Océano Atlántico
SAN JUAN ANTIGUO
EL CAMPO DEL MORRO
FUERTE SAN CRISTOBAL
Caño de San Antonio
AUTORIDAD DE LAS NAVIERAS
AEROPUERTO DE ISLA GRANDE (AUTORIDAD DE LOS PUERTOS)
CENTRO GUBERNAMENT. ISLA GRANDE (ANTIGUA BASE NAVA
Bahía de San Juan
BAY VIEW
CATAÑO
Cucharillas
LEYENDA
TRAMOS DE INTERES
N
MERCADO CENTRAL
VIETNAM
AMELIA
SABANA
JUANA MATOS
Bahía de Puerto Nuevo
ZENON DIAZ VALCARCEL
U.S. ARMY TERMINAL
ZONA PORTUARIA
PUENTE BLANCO
PUEBLO VIEJO
G.S.A. CENTER (U.S.A.)
INDUSTRIAL BECHARA
DISTRITO INDUSTRIAL
FORT BUCHANAN
MILITARY RESERVATION
VILLA BORIN
SAN PATRICIO GARDENS
PARKSIDE
GOLDEN GATE
VILLA CAPARRA
SAN PATRICIO PLAZA
CAPARRA HILLS
LOS CAOBOS
CAPARRA HEIGHTS
TINTILLO GARDENS
VICTOR BRAEGGER
TINTILLO HILLS
NOVAS COURT
CHALETS DE LA REINA
GEORGETOWN
MANSIONES DE GARDEN HILLS
JARDINES DE PUEBLO VIEJO
VILLA ESPAÑA
SUSAN COURT
CAPARRA APTS.
GARDENS COURT
ALTAMIRA
SUMMIT HILLS
LAS LOMAS
ALBORADA
VALLE DEL SOL
JARDINES DE CAPARRA
SUCHVILLE
VILLAS DE CAPARRA
GARDEN HILLS
HOGAR DEL NIÑO
GARDENVILLE
LAS

ANEJO B

INFORME MENSUAL DE TAREAS
REALIZADAS EN EL MUNICIPIO
DE GUAYNABO DURANTE EL
MES DE _____

FECHA	DESCRIPCION DE [1] LA TAREA	LUGAR/TRAMO	COSTO	COMENTARIOS[2]	PERSONA QUE SUPERVISO TAREA

(1) En caso de que la tarea incluya asfaltar algún tramo, especifique la cantidad de asfalto utilizado.
(2) Incluya cualquier comentario pertinente tal como inconvenientes para realizar la tarea, etc.

CERTIFICO: que el presente informe detalla las tareas realizadas en los lugares y fechas que se mencionan en el mismo.

_____

FIRMA

ANEJO C

PROPUESTA REGLA 423 - LIMITES PARA EL AREA DE NO-LOGRO DE PM_{10} DE GUAYNABO

C) Memorandos de Entendimiento Interagencial

Cualquier convenio o Memorandos de Entendimiento Interagencial logrado y firmado entre la Junta de Calidad Ambiental y cualquier otra agencia estatal, autoridad o entidad municipal que establezca las medidas o estrategias de control definidas para controlar y reducir cualquier emisión de PM_{10} y/o el precursor de PM_{10} será fiscalizable estatal y federalmente por la Junta y la APA respectivamente, se hará formar parte de este reglamento y se hará formar parte del permiso de operación de la fuente afectada.

D) Medidas de Contingencia

Las siguientes medidas de contingencia serán fiscalizadas bajo este Reglamento sino se alcanza cumplimiento con los estandares de calidad de aire de PM_{10} en el Municipio de Guaynabo para el 31 de diciembre de 1994:

1- El Departamento de Transportación recogerá datos sobre el contenido de sedimento y la cantidad de polvo en carreteras del Municipio de Guaynabo utilizando procedimientos de APA en el AP-42 (documento técnico de APA) para un mejor estimado de las emisiones de PM_{10}.

2- El Municipio de Guaynabo proveerá vegetación, estabilización química o cualquier otra disminución de terreno erosivo.

3- Toda embarcación que opere en la Bahia de San Juan, definida como las aguas navegables al sur de la línea imaginaria que conecta a Punta del Morro y la Isla de Cabras, deberá utilizar el combustible diesel con un contenido de azufre menor de 0.3% por peso.

4- No se permite la emisión visible de ninguna embarcación excepto lo que dispone la Regla 403 de este Reglamento.

5- La Autoridad de los Puertos deberá implantar un programa de limpieza de calles o cualquier otro programa que impida que el polvo sea depositado en las superficies asfaltadas bajo su jurisdicción.

6- El Municipio de San Juan deberá revisar los planes de control de incendios y mitigación de polvo en su relleno sanitario municipal de forma que se establescan estrategias adicionales de control de contaminación.

APÉNDICE B

ESTADO LIBRE ASOCIADO DE PUERTO RICO
OFICINA DEL GOBERNADOR
JUNTA DE CALIDAD AMBIENTAL

ACUERDO INTERAGENCIAL

COMPARECEN

DE LA PRIMERA PARTE: El Municipio de Guaynabo (en lo sucesivo denominado como "El Municipio"), gobierno municipal del Estado Libre Asociado de Puerto Rico, representada por su Alcalde Héctor O'Neill García, mayor de edad, casado y vecino de Guaynabo, Puerto Rico o su representante autorizado.

DE LA SEGUNDA PARTE: La Junta de Calidad Ambiental (en lo sucesivo denominada como "La Junta", agencia del Estado Libre Asociado de Puerto Rico, representada por su Presidente Héctor Russe Martínez, mayor de edad, casado y vecino de Morovis, Puerto Rico.

EXPONEN Y ACUERDAN

PRIMERO: La Agencia de Protección Ambiental Federal ha designado al Municipio de Guaynabo como área que no cumple con el estándar nacional primario para el contaminante PM_{10} (material particulado inhalable cuyo tamaño no excede de 10 micrones).

SEGUNDO: Que para lograr y mantener la concentración de material particulado fino bajo el estándar anual (promedio aritmético) de la calidad de aire de 50 ug/m^3 en el área de no logro, La Junta tiene que imponer las más estrictas medidas a las actividades que tienen un efecto detrimental sobre la calidad de aire del área de no logro.

TERCERO: La excedencia en la concentración permitida de PM_{10} se debe a la deficiencia o ausencia de medidas para controlar el material particulado generado por diversas actividades, siendo varias de ellas las emisiones fugitivas debido al movimiento vehicular de camiones y automóviles en las calles municipales en y/o cercanas al Bo. Amelia donde ubican la mayoría de las industrias que manejan productos en granos. Se incluyen, además, las actividades de construcción de obras públicas y/o reparación que realiza el Municipio.

CUARTO: Que se ha identificado a El Municipio como la entidad legal con jurisdicción específica sobre el mantenimiento y limpieza de las calles y caminos desde y hacia las industrias donde los vehículos tienen acceso, y con jurisdicción exclusiva en lo referente a la construcción de carreteras municipales, pavimentación y mantenimiento (ver Anejo A).

QUINTO: Que El Municipio está autorizado por la Ley Orgánica Municipal, para asumir las tareas que motivan este acuerdo interagencial.

SEXTO: Que El Municipio reconoce que debe contribuir para que se alcance y mantenga el estándar nacional de PM_{10} en el área de no logro, y lo hará mediante la implantación de las medidas que se describen a continuación.

SEPTIMO: Que El Municipio se compromete a buscar los recursos económicos para asfaltar y dar mantenimiento a las carreteras, calles y áreas de estacionamiento en un radio de una (1) milla desde donde ubican las industrias de granos.

OCTAVO: Que El Municipio adquirirá o gestionará la adquisición de dos (2) máquinas barredoras (en adelante "las barredoras") que operen con agua para barrer dos (2) veces en semana (martes y jueves) las áreas mencionadas en el inciso SEPTIMO.

NOVENO: Que el Municipio mantendrá operando permanentemente (1) barredora en dicha área y de sufrir avería será sustituida inmediatamente para poder cumplir con su obligación.

DECIMO: Que en relación a las actividades de asfaltar calles, caminos y areas de estacionamiento que utilizan con regularidad las facilidades industriales de Guaynabo, El Municipio someterá un informe que contenga información y/o estadísticas respecto a cuantas de éstas pueden ser asfaltadas por el Municipio. (ver Anejo B)

UNDECIMO: Que El Municipio someterá un documento donde analice su facultad legal y económica para asfaltar las calles, caminos y areas de estacionamiento, y mantener áreas con vegetación.

DECIMOSEGUNDO: Que El Municipio someterá por escrito un informe mensual certificando que se han realizado las tareas contenidas en este acuerdo, y conteniendo la fecha, lugar, costo y breve descripción de cada tarea . Este informe será suscrito por el Director del Departamento de Obras Públicas Municipales, Director de Control Ambiental o su representante autorizado y deberá recibirse en la Junta de Calidad Ambiental no mas tarde de cinco(5) días calendarios luego de finalizado el trimestre.

DECIMOTERCERO: Que el Departamento y la Autoridad reconocen que la Junta podrá exigirle a estos mediante enmiendas a este acuerdo, que implanten aquellas medidas de contingencia (bajo su jurisdicción) que se describen en el Plan de Implantación Estatal (SIP) y que hasn sido incorporadas a las enmiendas al Reglamento para el Control de la Contaminación Atmosférica, vigente en la Regla 423; para las actividades a realizarse en el Area de No-Logro (Anejo C) , cuando no se obtenga la reclasificación al Area de No-Logro y sea necesario implantar medidas más restrictivas para reducir las emisiones de materia particulada fina.

DECIMOCUARTO: Que la fecha de efectividad del presente acuerdo lo será la fecha en que se firme el mismo y durará hasta tanto el Municipio de Guaynabo recobre la categoría de Logro bajo el Acta de Aire Limpio.

DECIMOQUINTO: Que la implantación de las medidas discutidas en este Acuerdo deberán iniciarse en o antes del 10 de diciembre de 1993 para lograr cumplimiento en o antes del 15 de noviembre de 1994.

En San Juan, Puerto Rico hoy 13 de dic de 1993.

Efrain Pérez Jiménez-A.G.
Alcalde Municipio de Guaynabo
o su Representante Autorizado

Héctor Russe Martínez
Presidente
Junta de Calidad Ambiental

23 de julio de 1993

ACUERDO INTERAGENCIAL ENTRE EL MUNICIPIO DE GUAYNABO Y LA JUNTA DE CALIDAD AMBIENTAL EN RELACION CON EL AREA DE NO-LOGRO CAUSADO POR EL CONTAMINANTE PM_{10} (MATERIAL PARTICULADO)

INFORME DESCRIPTIVO

El área de no-logro comprende el Municipio de Guaynabo, sin embargo, al presente se concentrará el área de trabajo dentro de una extensión de un radio de una milla desde las instalaciones donde se encuentran las industrias de los granos. Esta área es observada en las figuras 1 y 2 de este documento.

Dicha área ha sido dividida en zonas que tienen características en común. Esto se hace con la intención de poder facilitar las labores a realizarse en el área de interés.

En estas zonas se realizarán aquellos trabajos que ordene la Junta de Calidad Ambiental.

A continuación se describirán cada una de estas zonas.

1. Zona I

En esta zona se encuentran ubicadas las industrias de los granos. La misma está comprendida entre los siguientes límites.

a. Ave. Ponce de León

b. Calle Delicias

c. Bahía Puerto Nuevo

d. Ave. Las Palmas

Esta es la zona más crítica.

Los trabajos a realizarse en esta zona son de extrema urgencia. Los mismos comprenderán pavimentación y el uso de barredoras para la limpieza continua de la zona, ya que es un área de tránsito de vehículos pesados.

2. Zona II

En esta zona se ubica la Barriada Vietnam. Esta barriada a sido construida sin planificación alguna de calles y accesos. El movimiento vehicular es difícil entre cortas y angostas calles. Así lo será también la limpieza y mantenimiento de las calles. En muchas calles no se podrá usar barredoras. La misma comprende los siguientes límites:

a. Ave. Ponce de León

b. Ave. Las Palmas

c. Bahía Puerto Nuevo

d. Límite territorial con Cataño

3. Zona III

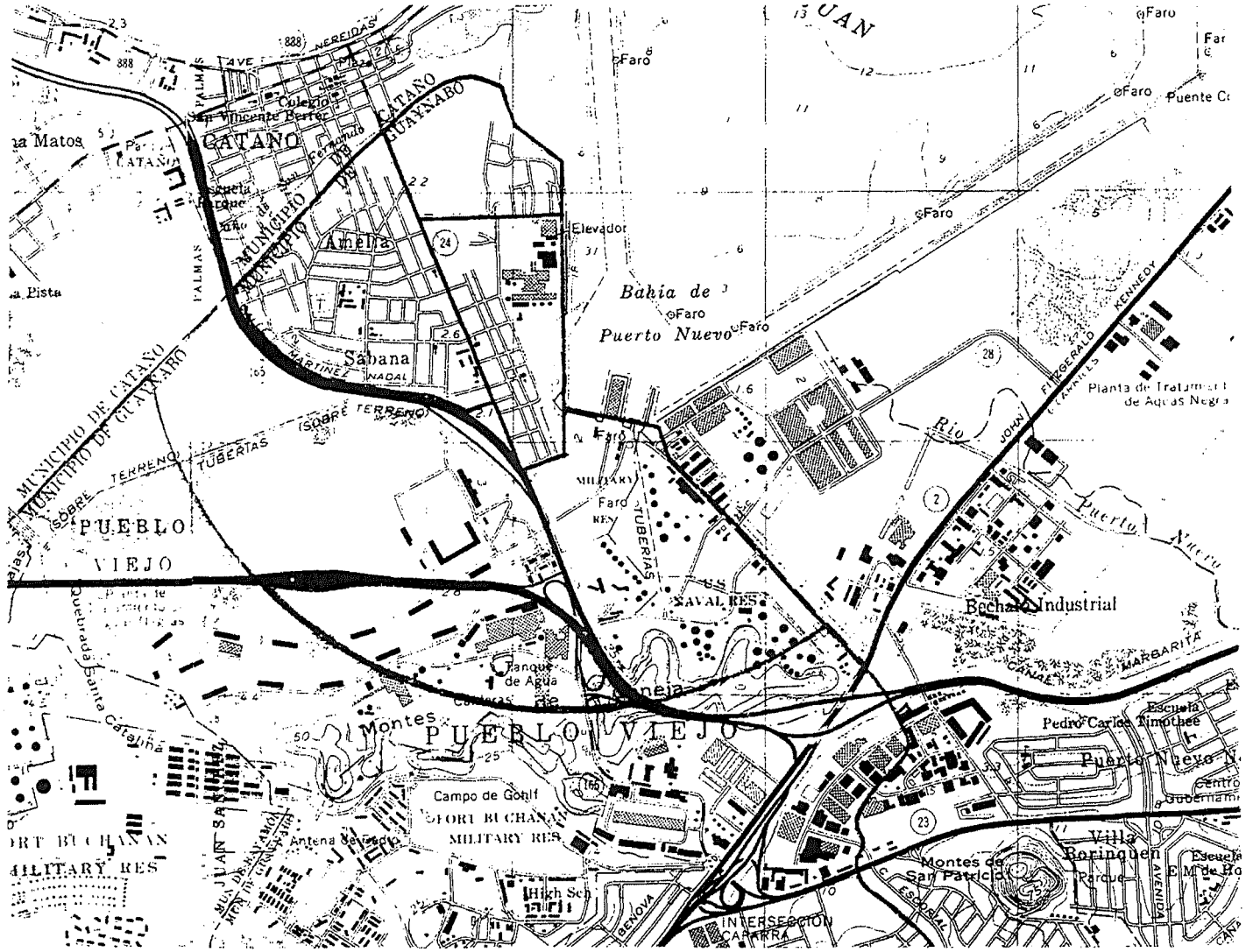
En esta zona se ubica el Barrio Amelia. En ella existe el patrón y el tamaño de calles de una urbanización tradicional. En esta zona no deben existir dificultades en llevar a cabo las actividades de limpieza y mantenimiento. La misma comprende los siguientes límites:

a. Ave. Ponce de León

b. Límite territorial con Cataño

c. Calle Martínez Nadal

d. Calle Santa Rosa de Lima


CATAÑO
MUNICIPIO DE CATAÑO
MUNICIPIO DE GUAYNABO
Amelia
Sabana
Bahía de
Puerto Nuevo
Elevador
Faro
Río
Puerto Nuevo
Planta de Tratamiento de Aguas Negras
Bechard Industrial
PUEBLO VIEJO
Montes
Tanque de Agua
Campo de Golf
FORT BUCHANAN MILITARY RES
Antena Selectiva
High Sch
INTERSECCIÓN CAPARRA
Pedro Carlos Timothee
Puerto Nuevo
Villa Borinquen
Montes de San Patricio
Parque
Escuela
Centro Gubernamental
Quebrada Santa Catalina
Pista
Matos
Colegio San Vicente Ferrer
Escuela Parque
NAVAL RES
MILITARY RES
TUBERIAS
SOBRE TERRENO
KENNEDY
FITZGERALD
MARGARITA
GENOVA
AVENIDA
CANAL
PALMAS
NEREIDAS
MARTINEZ NADAL
JUAN

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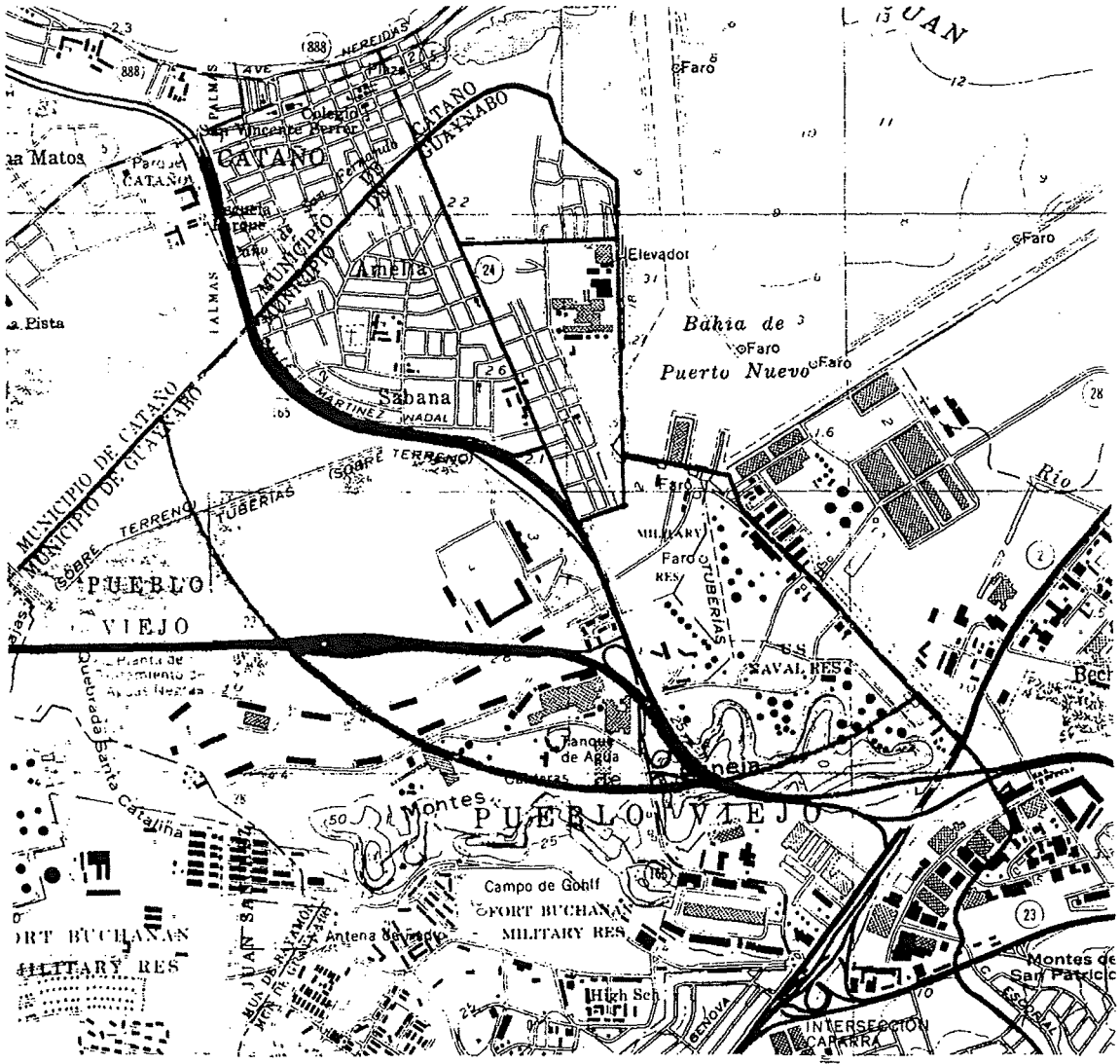
Los trabajos a realizarse en las Zonas II y III comprenden el mantenimiento de las áreas de rodaje, limpieza con barredoras y trabajos de pavimentación cuando éstos sean necesarios.

4. Zona IV

En esta zona se ubica el área Industrial de Amelia. La misma se encuentra al sur del área de no-logro. En esta zona los trabajos a realizarse serán de mantenimiento y limpieza. En esta área actualmente hay en construcción varios proyectos. La Junta de Calidad Ambiental le exigirá a los contratistas a mantener limpia el área de trabajo y los alrededores afectados, además de mantener vigente los permisos correspondientes.


CATAÑO
MUNICIPIO DE CATAÑO
MUNICIPIO DE GUAYNABO
Amelia
Sabana
Bahía de
Puerto Nuevo
Faro
Elevador
PUEBLO
VIEJO
TUBERIAS
SOBRE TERRENO
NAVAL RES
Tanque de Agua
Montes
PUEBLO VIEJO
Campo de Golf
FORT BUCHANAN
MILITARY RES
High Sch
INTERSECCION
CARRERA
Montes de San Patricio
Quebrada Santa Catalina
Río

Pg 3

Bahía de San Juan
Zona I
Zona II
Zona III
Zona IV
Barrio Vietnam
Avenida Luis Muñoz
Calle Sonia Rosa de Lima
Calle Martínez Nadal
Límite Territorial Guaynabo
Límite de Zona No Logro
Calle D
Calle C
Calle B
Calle A
Calle Ballajá
Calle Cerra
JUN 1993
212

ANEJO B

INFORME TRIMESTRAL DE TAREAS REALIZADAS EN EL MUNICIPIO DE GUAYNABO DURANTE EL TRIMESTRE DE _____

FECHA	DESCRIPCION DE [1] LA TAREA	LUGAR/TRAMO	COSTO	COMENTARIOS[2]	PERSONA QUE SUPERVISO TAREA

(1) En caso de que la tarea incluya asfaltar algún tramo, especifique la cantidad de asfalto utilizado.
(2) Incluya cualquier comentario pertinente tal como inconvenientes para realizar la tarea, etc.

CERTIFICO: que el presente informe detalla las tareas realizadas en los lugares y fechas que se mencionan en el mismo.

_____

FIRMA

ANEJO C

PROPUESTA REGLA 423 - LIMITES PARA EL AREA DE NO-LOGRO DE PM_{10} DE GUAYNABO

C) Memorandos de Entendimiento Interagencial

Cualquier convenio o Memorandos de Entendimiento Interagencial logrado y firmado entre la Junta de Calidad Ambiental y cualquier otra agencia estatal, autoridad o entidad municipal que establezca las medidas o estrategias de control definidas para controlar y reducir cualquier emisión de PM_{10} y/o el precursor de PM_{10} será fiscalizable estatal y federalmente por la Junta y la APA respectivamente, se hará formar parte de este reglamento y se hará formar parte del permiso de operación de la fuente afectada.

D) Medidas de Contingencia

Las siguientes medidas de contingencia serán fiscalizadas bajo este Reglamento sino se alcanza cumplimiento con los estandares de calidad de aire de PM_{10} en el Municipio de Guaynabo para el 31 de diciembre de 1994:

1- El Departamento de Transportación recogerá datos sobre el contenido de sedimento y la cantidad de polvo en carreteras del Municipio de Guaynabo utilizando procedimientos de APA en el AP-42 (documento técnico de APA) para un mejor estimado de las emisiones de PM_{10}.

2- El Municipio de Guaynabo proveerá vegetación, estabilización química o cualquier otra disminución de terreno erosivo.

3- Toda embarcación que opere en la Bahia de San Juan, definida como las aguas navegables al sur de la línea imaginaria que conecta a Punta del Morro y la Isla de Cabras, deberá utilizar el combustible diesel con un contenido de azufre menor de 0.3% por peso.

4- No se permite la emisión visible de ninguna embarcación excepto lo que dispone la Regla 403 de este Reglamento.

5- La Autoridad de los Puertos deberá implantar un programa de limpieza de calles o cualquier otro programa que impida que el polvo sea depositado en las superficies asfaltadas bajo su jurisdicción.

6- El Municipio de San Juan deberá revisar los planes de control de incendios y mitigación de polvo en su relleno sanitario municipal de forma que se establezcan estrategias adicionales de control de contaminación.

APÉNDICE C

ESTADO LIBRE ASOCIADO DE PUERTO RICO
OFICINA DEL GOBERNADOR
JUNTA DE CALIDAD AMBIENTAL

ACUERDO INTERAGENCIAL

COMPARECEN

DE LA PRIMERA PARTE: La **Autoridad de los Puertos** (en lo sucesivo denominada como "**La Autoridad**"), corporación pública del Estado Libre Asociado de Puerto Rico, representada por su Director Ejecutivo Carlos Díaz Olivo, mayor de edad, casado y vecino de San Juan, Puerto Rico.

DE LA SEGUNDA PARTE: La **Junta de Calidad Ambiental** (en lo sucesivo denominada como "**La Junta**"), agencia del Estado Libre Asociado de Puerto Rico, representada por su Presidente Héctor Russe Martínez, mayor de edad, casado y vecino de Morovis, Puerto Rico.

PRIMERO: La Agencia de Protección Ambiental Federal ha designado al municipio de Guaynabo como área que no cumple con el estándar nacional primario para el contaminante PM_{10} (material particulado inhalable cuyo tamaño no excede de 10 micrones).

SEGUNDO: Que para lograr y mantener la concentración de material particulado fino bajo el estándar anual (promedio aritmético) de la calidad de aire de 50 ug/m^3 en el área de no logro, La Junta tiene que imponer las más estrictas medidas a las actividades que tienen un efecto perjudicial sobre la calidad de aire del área de no logro.

TERCERO: La excedencia en la concentración permitida de PM_{10} se debe a la deficiencia o ausencia de medidas para controlar el material particulado generado por diversas actividades, siendo una de ellas la emisión de las embarcaciones en la zona portuaria.

CUARTO: Que se ha identificado a La Autoridad como la agencia con jurisdicción específica sobre aquellas embarcaciones marítimas (lanchas) que transportan pasajeros desde Cataño, Hato Rey y a San Juan, y con jurisdicción exclusiva en lo referente a la construcción, operación y uso de puertos y mantenimiento de carreteras y calles en zonas portuarias.

QUINTO: Que La Autoridad está autorizada por la Ley Núm. 125 de 7 de mayo de 1942 según enmendada, para asumir las tareas que motivan este acuerdo interagencial.

SEXTO: Que la Autoridad reconoce que debe contribuir para que se alcance y mantenga el estándar nacional de PM_{10} en el área de no logro, y lo hará mediante la implantación de las medidas que se describen a continuación.

SEPTIMO: Que La Autoridad se compromete a asfaltar y dar mantenimiento a las carreteras, calles, áreas de estacionamiento y caminos de las zonas portuarias de Puerto Nuevo, Guaynabo y San Juan bajo su jurisdicción y que se detallan en el listado que se acompaña con este acuerdo (ver Anejo A).

OCTAVO: Que La Autoridad adquirirá o gestionará la adquisición de dos (2) máquinas barredoras (en adelante "las barredoras") que operen con agua o en su efecto contratará los servicios de una compañia privada para barrer por lo menos una (1) vez por semana las áreas mencionadas en el inciso SEPTIMO .

NOVENO: Que si en algún momento las barredoras sufren averías simultáneamente, La Autoridad realizará gestiones tendentes a repararlas para poder cumplir con su obligación. En el caso de que la Autoridad contrate los servicios de una compañia privada, esta mantendra el servicio de limpieza.

DECIMO: Que en caso de que la avería de las barredoras no pudiese corregirse con la celeridad necesaria para cumplir con la obligación descrita en el inciso NOVENO, La Autoridad enviará o gestionará el envío de brigadas que limpiarán, hasta donde sea posible, el exceso de polvo acumulado en las áreas mencionadas en el inciso SÉPTIMO.

UNDECIMO: Que en relación a las embarcaciones que utilizan con regularidad las facilidades portuarias de San Juan, La Autoridad verificará la posibilidad que se pueda utilizar combustible alterno para reducir los contaminantes atmosféricos emitidos por dichas embarcaciones. El uso alterno de combustible deberá presentar un beneficio a la calidad del aire y las emisiones producidas por dicho combustible no deberá exceder del 20% de opacidad como definido en el Reglamento para el Control de la Contaminación Atmosférica, vigente.

DECIMOSEGUNDO: Que La Autoridad enviará un informe mensual certificando que se han realizado las tareas contenidas en este acuerdo, y conteniendo la fecha, lugar, costo y breve descripción de cada tarea, cualquier inconveniente o situación fuera de control de la Autoridad que retrase el trabajo. Este informe será subscrito por el Secretario del Departamento o por un representante autorizado utilizando el formato que se acompaña con este acuerdo (ver Anejo B).

DECIMOTERCERO: Que la persona de contacto en la Autoridad para efectos del presente acuerdo es el Ing. Jorge L. Dávila y que como tal será responsable de coordinar y comunicarle al Director Ejecutivo sobre cualquier eventualidad relacionada con el presente acuerdo.

DECIMOCUARTO: Que la Autoridad se compromete mediante la implantación de mejores prácticas de ingeniería para el control de la emisión de materia particulada a la atmósfera en la construcción de proyectos futuros bajo su jurisdicción ubicadas en las Zonas Portuarias de Puerto Nuevo, Guaynabo y San Juan.

DECIMOQUINTO: Que las mejores prácticas de ingeniería para el control de la emisión de materia particulada que se menciona en el inciso Decimocuarto se refieren a lo siguiente, sin limitarse a ello: humectación continua de los terrenos expuestos a la erosión, utilización de lonas para tapar la carga de los camiones de acarreo en proyectos de construcción, utilización de lonas en estibas de agregados y pavimentación de áreas de estacionamientos y vías de acceso.

DECIMOSEXTO: Que el Departamento y la Autoridad reconocen que la Junta podrá exigirle a estos mediante enmiendas a este acuerdo, que implanten aquellas medidas de contingencia (bajo su jurisdicción) que se describen en el Plan de Implantación Estatal (SIP) y que hasn sido incorporadas a las enmiendas al Reglamento para el Control de la Contaminación Atmosférica, vigente en la Regla 423; para las actividades a realizarse en

el Area de No-Logro (Anejo C) , cuando no se obtenga la reclasificación al Area de No-Logro y sea necesario implantar medidas más restrictivas para reducir las emisiones de materia particulada fina.

DECIMOSEPTIMO: Que la fecha de efectividad del presente acuerdo lo será la fecha en que se firme el mismo y durará hasta tanto el Municipio de Guaynabo recobre la categoría de Logro bajo el Acta de Aire Limpio.

DECIMOOCTAVO: Que la implantación de las medidas discutidas en este Acuerdo deberán iniciarse el 10 de diciembre de 1993 para lograr cumplimiento en o antes del 15 de noviembre de 1994.

En San Juan, Puerto Rico hoy de de 1993

Héctor Russe Martínez
Presidente
Junta de Calidad Ambiental

Carlos Díaz Olivo
Director Ejecutivo
Autoridad de Los Puertos

ANEJO A

Identificación de Vías de Rodaje y Areas de Estacionamiento Bajo el Control de la Autoridad de Los Puertos

Vías de Rodaje o Area de Estacionamiento	Actividad a Realizarse	Comentario
Army Terminal	Asfaltar y mantenimiento	Asfaltar área de estacionamiento y vías de rodaje interno.
Ave. Mercado Central y calles laterales a esta Zona Portuaria de Puerto Nuevo	Mantenimiento y limpieza	Limpieza de calles y mantenimiento de las mismas.
Ave. Mercado Central Final - Zona Portuaria de Puerto Nuevo	Asfaltar y Mantenimiento	Terrenos baldíos, áreas deprovista de vegetación y áreas utilizadas para estacionamientos de vehículo y vagones.

ANEJO B

INFORME MENSUAL DE TAREAS REALIZADAS EN EL MUNICIPIO DE GUAYNABO DURANTE EL MES DE _____

FECHA	DESCRIPCION DE [1] LA TAREA	LUGAR/TRAMO	COSTO	COMENTARIOS[2]	PERSONA QUE SUPERVISO TAREA

(1) En caso de que la tarea incluya asfaltar algún tramo, especifique la cantidad de asfalto utilizado.
(2) Incluya cualquier comentario pertinente tal como inconvenientes para realizar la tarea, etc.

CERTIFICO: que el presente informe detalla las tareas realizadas en los lugares y fechas que se mencionan en el mismo.

_____

FIRMA

ANEJO C

PROPUESTA REGLA 423 - LIMITES PARA EL AREA DE NO-LOGRO DE PM_{10} DE GUAYNABO

C) Memorandos de Entendimiento Interagencial

Cualquier convenio o Memorandos de Entendimiento Interagencial logrado y firmado entre la Junta de Calidad Ambiental y cualquier otra agencia estatal, autoridad o entidad municipal que establezca las medidas o estrategias de control definidas para controlar y reducir cualquier emisión de PM_{10} y/o el precursor de PM_{10} será fiscalizable estatal y federalmente por la Junta y la APA respectivamente, se hará formar parte de este reglamento y se hará formar parte del permiso de operación de la fuente afectada.

D) Medidas de Contingencia

Las siguientes medidas de contingencia serán fiscalizadas bajo este Reglamento sino se alcanza cumplimiento con los estandares de calidad de aire de PM_{10} en el Municipio de Guaynabo para el 31 de diciembre de 1994:

1- El Departamento de Transportación recogerá datos sobre el contenido de sedimento y la cantidad de polvo en carreteras del Municipio de Guaynabo utilizando procedimientos de APA en el AP-42 (documento técnico de APA) para un mejor estimado de las emisiones de PM_{10}.

2- El Municipio de Guaynabo proveerá vegetación, estabilización química o cualquier otra disminución de terreno erosivo.

3- Toda embarcación que opere en la Bahia de San Juan, definida como las aguas navegables al sur de la línea imaginaria que conecta a Punta del Morro y la Isla de Cabras, deberá utilizar el combustible diesel con un contenido de azufre menor de 0.3% por peso.

4- No se permite la emisión visible de ninguna embarcación excepto lo que dispone la Regla 403 de este Reglamento.

5- La Autoridad de los Puertos deberá implantar un programa de limpieza de calles o cualquier otro programa que impida que el polvo sea depositado en las superficies asfaltadas bajo su jurisdicción.

6- El Municipio de San Juan deberá revisar los planes de control de incendios y mitigación de polvo en su relleno sanitario municipal de forma que se establescan estrategias adicionales de control de contaminación.

ANEJO A

Identificación de Vías de Rodaje y Areas de Estacionamiento Bajo el Control de la Autoridad de Los Puertos

Vías de Rodaje o Area de Estacionamiento	Actividad a Realizarse	Comentario
Army Terminal	Asfaltar y mantenimiento	Asfaltar área de estacionamiento y vías de rodaje interno.
Ave. Mercado Central y calles laterales a esta Zona Portuaria de Puerto Nuevo	Mantenimiento y limpieza	Limpieza de calles y mantenimiento de las mismas.
Ave. Mercado Central Final - Zona Portuaria de Puerto Nuevo	Asfaltar y Mantenimiento	Terrenos baldíos, áreas deprovista de vegetación y áreas utilizadas para estacionamientos de vehículo y vagones.

ESTACION DE PM10 SAN JUAN, AVE. BALDORIOTY #30 1998

DIAS	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO.	SEPT.	OCT.	NOV.	DIC	DIAS
1	30			31	41						35	51	1
2		41				37	84		40				2
3	37			42	21			58				38	3
4			36			35	61		83	59			4
5	32			18	46			86			28	33	5
6			53			48	59		25	61			6
7				44	32			50			36	51	7
8		25	29			49	48		38				8
9	35			39	32			30			44	48	9
10		45				41	44						10
11	28			21	21			115			70	55	11
12		46	39			34			79	46			12
13				44	18			115			31	40	13
14		24	21				24		70	29			14
15	36			44	46			52			33	47	15
16		28	55			43	66		89	52			16
17	27			39	36			61			65		17
18		25	52			47	25		55	31			18
19	31			22	45			49			42	54	19
20		28	30			82	39			68			20
21	32			32	82			40			36	61	21
22		40				69	64			19			22
23	58			32	31			41		39	42	75	23
24		35				37	41						24
25	35			15	36			42			51	33	25
26		50				71	76			53			26
27				34	43			62			41	31	27
28		35	24			131	33			52			28
29				39	31			50			23	40	29
30			31			173	63			29			30
31					31			67				36	31
Num Obs mens	11	12	10	15	16	14	14	15	8	12	14	15	Num. Obs mens.
Max. mens	58	50	55	44	82	173	84	115	89	68	70	75	Max. mens.
Min mens.	27	24	21	15	18	34	24	30	25	19	23	31	Min. mens.
Prom. mens	34.6	35.2	37.0	33.1	37.0	64.1	51.9	61 2	59.9	44.8	41.2	46.2	Prom. mens
Num. Obs. Trim			33			45			37			41	Num. Obs. Trim.
Max. trim.			37			173			115			75	Max. trim.
% De Capt. trim			0.97			0.98			0.93			0.91	% De Capt. trim.
Prom.Trim.			35.55			44.11			57.41			44.10	Prom.Trim.

No. Obs. Anual	156
Max. Anual	173
2 da Max. Anual	131
Min. Anual	15
Prom. Anual	45.29

*Norma Nacional Anual 50 µg/m3
* Norma Nacional 24 hrs 150 µg/m3

ESTACION DE PM10 USGS GUAYNABO #7 1998

DIAS	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO.	SEPT.	OCT.	NOV.	DIC.	DIAS
1		22					99				28	37	1
2	28				20				31				2
3			36					28					3
4		35				24	57				33		4
5	25			16	28				21				5
6			35					25					6
7		25				62	34				28	39	7
8	24			31	25				27				8
9			33					19					9
10		32				28	30					43	10
11	19			19	24				82				11
12			30					55					12
13		33				46	29				18	23	13
14	29			35	23				59	29			14
15			39					21					15
16		25				29					42	34	16
17	29			23	27				53				17
18			39					30					18
19		36				39	45				29	33	19
20	31			23	46								20
21			29					21					21
22		35				63	50				24	34	22
23	49			24	22								23
24			61					21					24
25		39				36	63				37	22	25
26	42			16	25					40			26
27			31					34					27
28		26				120	29					28	28
29	26			23	24					28			29
30			23					35					30
31							61					31	31
Num. Obs mens	10	10	10	9	10	9	10	10	6	3	8	10	Num. Obs mens
Max. mens.	49	39	61	35	46	120	99	55	82	40	42	43	Max mens
Min. mens.	19	22	23	16	20	24	29	19	21	28	18	22	Min mens
Prom. mens	30 2	30 8	35.6	23 3	26 4	49.7	49 7	28.9	45.5	32 3	29.9	32.4	Prom. mens
Num. Obs. Trim			30			28			26			21	Num. Obs. Trim.
Max. trim.			61			120			99			43	Max trim.
% De Capt. trim			1.07			0.93			0.90			0.75	% De Capt. trim
Prom.Trim.			**32.20**			**32.89**			**40.73**			**31 43**	Prom Trim.

No. Obs. Anual	105
Max. Anual	120
2 da Max. Anual	99
Min. Anual	16
Prom. Anual	**34.31**

* Norma Nacional Anual 50 µg/m3
* Norma Nacional 24 hrs 150 µg/m3

ESTACION DE PM10 FT. BUCHANAN #33 1998

DIAS	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO.	SEPT.	OCT.	NOV.	DIC.	DIAS
1											24	22	1
2													2
3								19					3
4		20				17	50						4
5	16			13	18								5
6			26										6
7											17	21	7
8										20			8
9								14					9
10		30				19	21						10
11	15			14	16								11
12			22										12
13											14	18	13
14									44	20			14
15								16					15
16		14				15	40						16
17	14			14	22								17
18			27										18
19											17	17	19
20										30			20
21								17					21
22		28				46	37						22
23	34			11	17								23
24			46										24
25											16	18	25
26													26
27								20					27
28		16				95	19						28
29	17			15	16								29
30			17										30
31												21	31
Num Obs. mens.	5	5	5	5	5	5	5	5	1	3	5	6	Num. Obs. mens
Max mens.	34	30	46	15	22	95	50	20	44	30	24	22	Max mens
Min. mens.	14	14	17	11	16	15	19	14	44	20	14	17	Min mens
Prom. mens.	19 2	21.6	27.6	13 4	17.8	38.4	33 4	17 2	44.0	23.3	17.6	19.5	Prom. mens
Num. Obs. Trim.			15			15			11			14	Num. Obs. Trim
Max. trim			46			95			50			30	Max. trim.
% De Capt. trim.			1.00			1.00			1.00			0.93	% De Capt. trim.
Prom.Trim			22.80			23.20			27.00			19.64	Prom.Trim.

No. Obs. Anual	55
Max. Anual	95
2 da Max. Anual	50
Min. Anual	11
Prom. Anual	**23.16**

* Norma Nacional Anual 50 µg/m3
* Norma Nacional 24 hrs 150 µg/m3

APÉNDICE D

[Federal Register: May 31, 1995 (Volume 60, Number 104)]
[Rules and Regulations]
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From the Federal Register Online via GPO Access [wais.access.gpo.gov]
[DOCID:fr31my95-9]

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[Region II Docket No. 136, PR3-2-6731, FRL-5209-5]

Approval and Promulgation of PM<INF>10 Implementation Plan for the Commonwealth of Puerto Rico

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: The EPA is approving the State Implementation Plan (SIP) revision submitted by the Commonwealth of Puerto Rico for the purpose of attaining the National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM<INF>10). The SIP addresses sources impacting the Municipality of Guaynabo, Puerto Rico which has been designated nonattainment.

EFFECTIVE DATE: This action will be effective June 30, 1995.

ADDRESSES: Copies of the state submittal are available at the following

addresses for inspection during normal business hours:

Environmental Protection Agency, Region II Office, Library, 290 Broadway, 16th Floor, New York, New York, 10007-1866.

Environmental Protection Agency, Region II, Caribbean Field Office, Centro Europa Building, Suite 417, 1492 Ponce De Leon Avenue, Stop 22, Santurce, Puerto Rico, 00909.

Commonwealth of Puerto Rico, Environmental Quality Board, Banco National Plaza, 8th Floor, 431 Ponce De Leon Avenue, Hato Rey, Puerto Rico, 00917.

Environmental Protection Agency, Air and Radiation Docket and Information [[Page 28334]] Center (MC 6102), 401 M. Street, S.W. Washington, D.C. 20460.

FOR FURTHER INFORMATION CONTACT:

Kirk J. Wieber, Air Programs Branch, Environmental Protection Agency, Region II Office, 290 Broadway, 20th Floor, New York, New York 10007-18666 (212) 637-4249.

or

Carl Soderberg, Director, Environmental Protection Agency, Region II, Caribbean Field Office, Centro Europa Building, Suite 417, 1492 Ponce De Leon Avenue, Stop 22, Santurce, Puerto Rico, 00909, (809) 729-6951.

SUPPLEMENTARY INFORMATION:

I. Background

The Clean Air Act, as amended in 1990 (the Act), requires all areas that have measured a violation of the NAAQS for PM<INF>10 before January 1, 1989 be designated nonattainment. On November 15, 1990 by operation of law the Municipality of Guaynabo, Puerto Rico was designated nonattainment for PM<INF>10 and classified as moderate based on violations measured in 1987 in the Municipality. [see 56 FR 11101 (March 15, 1991)]. The Act requires state or territorial governments to revise their SIP for all areas that are designated as nonattainment to ensure that the NAAQS will be attained. Under the Act, the Commonwealth of Puerto Rico is regarded as a state. The reader should refer to the

``General Preamble" [see generally 57 FR 13498 (April 16, 1992) and 57 FR 18070 (April 28, 1992)] for a more detailed discussion of the designation of PM<INF>10 nonattainment areas.

II. Today's Action

Section 110(k) of the Act sets out provisions governing EPA's review of SIP submittals. (See 57 FR 13565-13566.) In this action, EPA is approving the Puerto Rico PM<INF>10 implementation plan revision submitted to EPA on November 14, 1993. This submittal was intended to satisfy those moderate PM<INF>10 nonattainment area SIP requirements due November 15, 1991 and the moderate PM<INF>10 nonattainment area New Source Review requirements due June 30, 1992. EPA proposed to approve the submittal on August 11, 1994, 57 FR 41265. The reader is referred to the proposal for a detailed explanation of Puerto Rico's PM<INF>10 SIP and EPA's evaluation. In response to the Federal Register notice and a Public Meeting held by EPA Region II on September 11, 1994 in the Municipality of Catano, comments were received from ten interested parties. EPA's response to these comments are discussed in IV. Public Comment.

III. Analysis of Puerto Rico's SIP Submission

A. Administrative Requirements

The Commonwealth of Puerto Rico held a public hearing on October 15, 1993 to accept public comments on the implementation plan for the Municipality of Guaynabo PM<INF>10 nonattainment area. Following the public hearing the plan was adopted by Puerto Rico and was submitted to EPA as a revision to the SIP on November 14, 1994. The submittal was supplemented with administrative documents on March 18, 1994 and March 30, 1994. The SIP submittal included revisions to the Puerto Rico **Regulations** for the Control of Atmospheric Pollution which include the following: Part I; Rule 102, ``Definitions," Part II; Rule 201, ``Location Approval," Rule 202, ``Air Quality Impact Analysis," Rule 203, ``Permit to Construct a Source," and Part IV; Rule 401, ``Generic Prohibitions," Rule 402, ``Open Burning," Rule 403, ``Visible

Emissions," Rule 404, ``Fugitive Dust," and Rule 423, ``Limitations for the Guaynabo PM<INF>10 Nonattainment Area," which became effective on April 2, 1994. The entire SIP revision was reviewed by EPA to determine completeness in accordance with the completeness criteria set out at 40 CFR 51, and found to be administratively complete.

B. Emissions Inventory

Puerto Rico submitted an emissions inventory for base year 1990. EPA is approving the emissions inventory because it is accurate and comprehensive, and provides a sufficient basis for determining the adequacy of the attainment demonstration for this area consistent with the requirements of sections 172(c)(3) and 110(a)(2)(K) of the Act.

C. New Source Review (NSR) PM<INF>10 Permit Program

The statutory permit requirements for moderate PM<INF>10 nonattainment areas are contained in section 173 and section 189 of the Act. For all moderate PM<INF>10 nonattainment areas, states must adopt the appropriate major source threshold, offset ratio, significance level for modifications, and provisions for PM<INF>10 precursors. Puerto Rico's PM<INF>10 implementation plan submittal addressed all NSR Act requirements, therefore, EPA is approving the PM<INF>10 NSR permit program SIP revision.

D. Reasonably Available Control Measures (RACM) including Reasonably Available Control Technology (RACT)

Moderate PM<INF>10 nonattainment areas were required to submit provisions to assure that RACM (including RACT) would have been implemented no later than December 10, 1993 or four years after designation in the case of an area classified as moderate nonattainment after November 15, 1990. [see sections 172(c)(1) and 189(a)(1)(C)]. The Municipality of Guaynabo was designated and classified as moderate nonattainment for PM<INF>10 on November 15, 1990 by operation of law, therefore, the Puerto Rico PM<INF>10 implementation plan needed to assure that RACT/RACM would have been implemented no later than

December 10, 1993. The SIP contains enforceable commitments by the Puerto Rico Environmental Quality Board (EQB) to achieve various RACM requirements through **regulations** as well as through Memoranda of Understanding (MOU). These were effective upon adoption. The EQB has signed MOU's with various entities which include details of how the various RACM requirements would be implemented.

EPA has reviewed Puerto Rico's SIP documentation and concluded that its choice of control measures has provided for attainment of the PM<INF>10 NAAQS by December 31, 1994. By this notice, EPA is determining that the control strategies are consistent with the RACM and RACT requirements contained in the Act.

E. Contingency Measures

As provided in section 172(c)(9) of the Act, all PM<INF>10 nonattainment area SIP's must include contingency measures (see generally 57 FR 13543-44). These measures were required to be submitted by November 15, 1993 for the moderate PM<INF>10 nonattainment areas. [see 57 FR 13543 (April 16, 1992)]. Contingency measures should consist of other available measures, not already part of the area's control strategy, that take effect without further action by the Commonwealth or EPA upon a determination by EPA that the area has failed to make Reasonable Further Progress (RFP) or attain the PM<INF>10 NAAQS by the applicable statutory deadline. The Municipality of Guaynabo PM<INF>10 nonattainment area SIP contains contingency measures which are included in Rule 423(D).

After review of the contingency measures contained in the SIP, EPA has determined they meet the requirements of the Act. [[Page 28335]]

F. Demonstration of Attainment

Moderate PM<INF>10 nonattainment areas were required to submit a demonstration (including air quality modeling) showing that the plan will provide for attainment as expeditiously as practicable but no later than December 31, 1994 [see sections 188(c)(1) and 189(a)(1)(B) of the Act).

EQB performed an attainment demonstration using the Industrial

Source Complex (ISC2) dispersion model and five years of National Weather Service meteorological data. EPA recommends that implementation plans show maintenance of the PM<INF>10 NAAQS for at least three years beyond the attainment date. Puerto Rico's demonstration, included in their PM<INF>10 implementation plan, indicates the NAAQS for PM<INF>10 were attained by December 31, 1994 in the Municipality of Guaynabo. In addition, Puerto Rico went beyond EPA's recommendation of demonstrating maintenance of the PM<INF>10 NAAQS for three years and demonstrated they would be maintained at least until 1999. EPA is approving the attainment demonstration.

G. Quantitative Milestones and RFP

The moderate PM<INF>10 nonattainment area plan revisions demonstrating attainment must contain quantitative milestones which are to be achieved every three years until the area is redesignated attainment and which demonstrate reasonable further progress (RFP) toward attainment by December 31, 1994 (see section 189(c)(1) of the Act). RFP is defined in section 171(1) as such annual incremental reductions in emissions of the relevant air pollutant as are required by Part D or may reasonably be required by the Administrator for the purpose of ensuring attainment of the applicable NAAQS by the applicable date.

The assurance that milestones and RFP will be achieved is based upon the Commonwealth adopting and implementing the particular control measures contained in the PM<INF>10 SIP, RACM (including RACT).

H. Enforceability

The SIP must include enforceable emission limitations and other control measures, means or techniques necessary or appropriate to meet the requirements of the Act. [see section 110(a)(2)(A) of the Act]. Nonattainment plan provisions must also include enforceable emission limitations and other control measures, means or techniques necessary or appropriate to provide for attainment of the NAAQS by the applicable attainment date. [see section 172(b)(6)]. The SIP must also contain a program which provides for enforcement of the control measures and

other elements in the SIP and the regulation of the modification and construction of any stationary source within the areas covered by the plan as necessary to assure that the NAAQS are achieved, including a permit program required under Part C or D of Title I of the Act. [see, section 110(a)(2)(C)]. All measures and other elements in the SIP must be enforceable by the Commonwealth and EPA [see sections 172(c)(6), 110(a)(2)(A) and 57 FR 13556]. Moderate PM<INF>10 nonattainment area plan provisions must also contain a program which provides for enforcement of the control measures and other elements in the SIP [see section 110(a)(2)(C)].

The SIP requires that all affected stationary sources must be in full compliance with the applicable RACT requirements by December 10, 1993. However, if a physical alteration of the stationary source is necessary to achieve compliance, the SIP requires that construction of the alteration must have been commenced by February 15, 1994, and must have been completed by November 30, 1994. EQB has prepared a compliance schedule for those sources that still need to make alterations. Compliance with these RACT requirements must be demonstrated using the applicable EPA Reference Test Methods. Puerto Rico has an enforcement program that will ensure that these RACT requirements are adequately enforced. There are civil penalties for noncompliance with the Regulation containing these RACT requirements.

In addition to the RACT requirements for stationary sources, the SIP contains enforceable commitments by EQB to achieve various RACM requirements. To implement these measures, EQB has signed an MOU with the Puerto Rico Department of Transportation, the Puerto Rico Electric Power Authority, the Municipality of Guaynabo, and the Port Authority that contain details on how each of these entities will meet these RACM commitments. The commitments to implement the RACM requirements are in the SIP itself, and thus are enforceable as requirements of the SIP. In addition, the MOU's, having gone through public review and comment, will be incorporated into the SIP by reference, and are effective as of the date each was signed. The attainment demonstration, which shows attainment of the PM<INF>10 NAAQS by December 31, 1994, uses emissions reductions from the identified RACM measures, and thus EPA expects them to be implemented pursuant to the MOU's. Once incorporated into the approved SIP, the requirements of the MOU may not be changed except by

a revision to the SIP that has been submitted to and approved by EPA.

Puerto Rico's revisions to the **regulations** include a new definition for ``PM<INF>10" in Rule 102. Although test methods are not contained in Puerto Rico's definition of ``PM<INF>10" as they are in 40 CFR 51.100 (qq), EPA is approving Puerto Rico's definition of ``PM<INF>10," since the relevant test methods are found in other provisions of the **regulations**.

I. PM<INF>10 Precursors

The Act states that ``control requirements applicable to major stationary sources of PM<INF>10 must also apply to major stationary sources of PM<INF>10 precursors except where the Administrator determines that such sources do not contribute significantly to PM<INF>10 levels which exceed the NAAQS in the area." Based on filter analyses of the Guaynabo nonattainment area, the relatively minor contribution of precursors to overall nonattainment, and the effectiveness of the Commonwealth's RACT/RACM strategies, EPA agrees with EQB's determination that no controls of PM<INF>10 precursors beyond what are already controlled in the Puerto Rico SIP are needed for attainment. Nonetheless, Puerto Rico has chosen to include within the NSR provisions a requirement for control of PM<INF>10 precursors unless EPA and EQB determine otherwise.

IV. Public Comment

EPA proposed to approve the Puerto Rico PM<INF>10 implementation plan on August 11, 1994, 57 FR 41265. Comments were received from ten interested parties. Comments were also received during the Public Meeting held by EPA Region II on September 11, 1994 in the Municipality of Catano. EPA evaluated all the comments with respect to EPA's proposed approval. Due to the large number of comments, EPA prepared a separate ``Responsiveness Document" which summarizes each comment and includes EPA's evaluation and detailed response. This document is available from EPA upon request. In this Federal Register notice EPA has summarized major comments and responses.

The following summaries of comments and responses is divided into

several major areas; the designation of the nonattainment area, the SIP attainment demonstration, and RACT determinations. [[Page 28336]]

Designation of Nonattainment

Comment: Puerto Rico's plan is based on air quality data which is incomplete and insufficient for determining that the Municipality of Guaynabo was not in attainment of the air quality standards. Air quality now meets the NAAQS.

Response: The Commonwealth presented no information which invalidates the air quality data previously collected which indicated nonattainment. Section 107(d)(4)(B) of the Act mandated the designation of areas as nonattainment for PM<INF>10 by operation of law:

``(B) PM<INF>10 Designations.--By operation of law, * * * (ii) any area containing a site for which air quality monitoring data show a violation of the national ambient air quality standard for PM<INF>10 before January 1, 1989 (as determined under part 50, appendix K of title 40 of the Code of Federal **Regulations**) is hereby designated nonattainment for PM<INF>10;"

This section of the Act confines the EPA to review air quality data prior to January 1, 1989, not after January 1, 1989, in designating an area for PM<INF>10. The designation of the Municipality of Guaynabo as nonattainment for PM<INF>10 was based on the PM<INF>10 concentration of 285 <greek-m>g/m<SUP>3, recorded at the Electrical Substation #24 on August 1, 1987. There was no evidence presented by the Commonwealth that showed this reading to be invalid. Further, air quality data available to the Administrator indicated that there were violations of the annual standard in 1987 and 1988. EPA does not find any evidence to conclude that the nonattainment designation was made in error.

If indeed the area is attaining the PM<INF>10 NAAQS in the Municipality of Guaynabo as a result of permanent reductions in emission, the Commonwealth can request a redesignation to attainment. Section 107 (d)(3) of the Act specifies the procedures and requirements for changing an area's designation. The redesignation of an area from nonattainment to attainment is an entirely separate procedure from

today's SIP approval action. However, one requirement of a redesignation is that the Commonwealth has an approved PM<INF>10 attainment SIP. A redesignation request, which may be submitted at any time, would be processed expeditiously by EPA as a separate rulemaking.

Comment: The location of EQB's PM<INF>10 air quality monitors are not representative of the air in the remainder of the nonattainment area and in the surrounding areas of Guaynabo. Monitors should be located in the center and southern end of the Municipality of Guaynabo and in the Municipality of Catano.

Response: EPA believes the current PM<INF>10 monitoring network in Puerto Rico is representative of the highest PM<INF>10 concentrations in the entire nonattainment area. This design is consistent with the monitoring objectives and methodologies described in Part 58 of the Code of Federal **Regulations**, Appendix D. They are sited immediately downwind of major point and area sources in locations where a long record of total suspended particulate monitors had measured the highest levels in Puerto Rico. Thus they meet the monitor-siting objective of measuring air quality in the area where the highest concentrations of a pollutant can be expected to occur.

Locations in southern Catano and Guaynabo do not have the same potential to measure high concentrations due to the lack of major sources of particulate matter, as demonstrated by the emission inventory of the Municipality of Guaynabo. Consequently, their absence should not make the Commonwealth's plan any less approvable.

Attainment Demonstration

Comments: The dispersion model used in the attainment demonstration is not conservative. Wrong meteorological data being used. The Puerto Rico Electrical Power Authority (PREPA) Palo Seco plant should have been included in the Plan.

Response: The dispersion model is conservative because it predicts higher concentrations than observed for almost the entire set of observed data. The graph in the Commonwealth's PM<INF>10 plan comparing concentrations predicted by the model with the observed data may not demonstrate this fact because the plotted predicted concentrations lack the background contribution from outside the modeled area of

(approximately 31 ug/m<SUP>3). When the concentrations predicted by the model are correctly included, however, the predicted concentrations are higher than the observed concentrations. Thus, EPA concludes that the model generally over predicts PM<INF>10 concentrations and is conservative. This is further supported by recent air quality measurements which show annual concentrations significantly well below concentrations predicted by the model, even after control measures have been enacted.

The San Juan Airport site is representative of the industrialized area of Guaynabo since it is also located on the north coast of Puerto Rico and subject to the same land-sea effects on the wind. The terrain in the Puerto Nuevo area where the largest emitting sources are located is mainly flat like the area near the Airport. Comparison between the San Juan Airport data and data collected at a meteorological tower in the Municipality of Guaynabo confirm that they are subject to the same meteorological patterns.

In reference to the PREPA Palo Seco issue, the attainment demonstration did consider the impact of the Palo Seco Power Plant's PM<INF>10 emissions on the Catano--Guaynabo area. The atmospheric dispersion model used in the attainment demonstration showed that the greatest impact of the power plant's emissions remained over water. The plants contribution to the Guaynabo nonattainment area (only about three and one half percent of the time) is less than the deminimis impact levels contained in EPA **regulations**. Since the power plant is located outside of the Guaynabo nonattainment area, EPA's guidance to the states is that RACT strategies need only be applied to those sources which have a significant impact on the nonattainment area. Thus RACT at the Palo Seco Power Plant would have no real benefit to attainment of PM<INF>10 standards in the Guaynabo. However, all power plants in Puerto Rico are subject to the same 20 percent opacity limit that is required of the power plant in Puerto Nuevo.

RACT Determinations for Electrical Utilities

Comment: A mass emissions limit should be adopted by Puerto Rico. The 1.5 percent sulfur-in-fuel limit is not cost effective nor stringent enough to show attainment. EQB has no independent way of

verifying sulfur-in-fuel limits.

Response: There is no requirement that a mass emission limit be used exclusively in state clean air plans. EPA can approve a SIP revision as long as it contains emission limits which are enforceable and which provide for attainment of the standards. The Act states ``each implementation plan submitted by a State * * * shall include enforceable emission limitations and other control measures, means, or techniques * * * as well as schedules and timetables for compliance, as may be necessary or appropriate to meet the applicable requirements of this Act, section 110(a)(2)(A)."

The Puerto Rico SIP relies on a sulfur-in-fuel limit and a 20% opacity limitation, both of which are enforceable. Further, the Agency has collected emission data from a variety of fuel oil burning power plants from which the particulates can be [[Page 28337]] calculated. These factors are contained in the Compilation of Air Pollutant Emission Factors (AP-42), Supplement F, emissions factor equation. These emissions were factored into the Puerto Rico plan and attainment with health related ambient air quality standards was demonstrated.

EQB included in their SIP submittal an Economic Feasibility Analysis of Alternative Emission Control Strategies in the Guaynabo Municipality. This document presented an analysis of the cost of reducing emissions in Guaynabo and the cost effectiveness of alternative control strategies.

EPA reviewed the document and determined the costs of low sulfur residual oil were accurate to determine the cost effectiveness of controls applicable to PREPA. The analysis showed that 1.0, 1.5, and 2.0 percent sulfur oils cost about the same for each ton of sulfur reduced, however, according to the Economic Feasibility Analysis provided with the SIP, it will cost more than $6.6 million per year to reduce the sulfur content from 1.5 to 1.0 percent at the PREPA San Juan plant.

EQB has informed EPA that it has the necessary equipment to analyze fuel samples. Compliance of the sulfur-in-fuel limit will be verified by a variety of methods. In accordance with the January 31, 1994 Memorandum Of Understanding (MOU), PREPA and its fuel supplier will send sampling data to EQB. When the fuel supplier delivers the fuel, it will send its analysis of the fuel content to EQB. EQB can compare the

supplier's analysis against reports from the facility.

In summary, the two procedures set forth in the PM<INF>10 SIP, the sulfur-in-fuel limit that correlates to a 0.08 #/MMBtu mass emission rate, and the 20% opacity restriction are easily measured, readily enforceable, and when combined with the other control measures adopted by the Commonwealth, can demonstrate attainment of the PM<INF>10 NAAQS. The Agency therefore has determined that the limits provided can and should be approved.

RACT Determinations for Grain Handling Facilities

Comment: Puerto Rico's ban on the use of clamshell unloading of ships is not supportable as RACT. The 99.9% filtration efficiency required of grain mills is not technically achievable.

Response: The General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990 defines RACT as ``the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility." Congress specified that nonattainment area plans were to ``require * * * reasonable further progress * * * including such reduction in emissions from existing sources in the area as may be obtained through the adoption, at a minimum, of RACT."

Through modeling, EQB's contractor demonstrated that emissions from the grain mills contributed in a large way to the violations of the PM<INF>10 air quality standard predicted by the model. Taking this into consideration, EQB determined that stringent RACT measures were needed at these facilities to show attainment.

EPA guidance identifies that Industrial process fugitive particulate emissions are produced during all phases of grain handling and processing including: unloading, receiving, handling, drying, cleaning, milling, and land-out. EPA's Control Techniques for Particulate Emissions from Stationary Sources recommends that for grain handling and storage ``the most common control strategy is to enclose and hood the processing equipment or area with ventilation to cyclones and filters." Thus, the emission reductions that can be obtained from this strategy depend upon both process modifications to optimize the

capture efficiency of the ventilation system and the installation of control devices.

EQB determined that for a very dusty process such as Clamshell loading and unloading, RACT for this process would be the prohibition of Clamshell loading and unloading and the utilization of telescopic loading spouts in a fully enclosed area with a ventilation system. This control strategy is considered both technologically and economically feasible. EPA has verified this in discussions with grain facilities in the United States who are currently using the telescopic loading spouts.

EPA has not been able to conclude that a ban on loading/unloading using clamshells is not an acceptable RACT determination. Telescoping loading spouts are used in the industry to load and unload grain or grain products. However, EPA would object to a RACT determination that is less stringent than could be technologically and economically justified. Should the Commonwealth decide in the future to propose an alternative to a ban on the use of clamshells, the SIP could be revised accordingly.

The SIP requires the installation of control equipment with a 99.5% efficiency. Upon review EPA has concluded that this is achievable even in warm climates. In other parts of the country, (PM<INF>10 attainment and nonattainment areas), 99.9% is routinely required. One commenter argued that conditions at grain handling facilities in Puerto Rico would prevent 99.5% efficiency from being achieved. EPA has reviewed permits issued to grain mills in warm climates and determined that the 99.5% limit proposed in the SIP is achievable on a continuous basis providing there is proper operation and maintenance of the control systems.

Environmental Justice Concerns

Comment: Several commenters raised environmental justice concerns in their comments.

Response: EPA recognizes that air pollution sources in the SIP area raise environmental justice issues, and EPA has taken steps to address these concerns in the SIP process. In particular, EPA has had meetings and contacts with affected communities and organizations, and intends

to continue these contacts as air programs are implemented and enforced. In addition, EPA and other agencies such as the Centers for Disease Control have been assessing environmental health factors in these communities. EPA will continue to review progress in implementing the SIP and other environmental programs with respect to Executive Order 12898 and the EPA Environmental Justice Strategy.

V. Summary

In this action, EPA is approving the SIP revision submitted to EPA on November 14, 1993 and supplemented on March 18, 1994 and March 30, 1994 by Puerto Rico for the Municipality of Guaynabo PM<INF>10 nonattainment area. Specifically, EPA is approving the emissions inventory, the control strategy including RACM and RACT, the demonstration that the Municipality of Guaynabo PM<INF>10 nonattainment area will attain the PM<INF>10 NAAQS by December 31, 1994 and maintain the PM<INF>10 NAAQS through 1999, the NSR permit provisions and the contingency measures. EPA determined that PM<INF>10 precursor controls are not needed for attainment. EPA is approving the revisions to the Puerto Rico **Regulations** for the Control of Atmospheric Pollution which include the following: Part I; Rule 102, ``Definitions," Part II; Rule 201, ``Location Approval," Rule 202, ``Air Quality Impact Analysis," Rule 203, ``Permit to Construct a Source," and Part IV; Rule 401, ``Generic Prohibitions," Rule 402, ``Open Burning," Rule 403, ``Visible Emissions," Rule 404, ``Fugitive Dust," [[Page 28338]] and Rule 423, ``Limitations for the Guaynabo PM<INF>10 Nonattainment Area." EPA is approving this PM<INF>10 SIP submittal in relation to its satisfying all Act requirements.

Previously, the Governor of Puerto Rico was notified on December 16, 1991 by the EPA Regional Administrator that Puerto Rico had not submitted the PM<INF>10 SIP requirements due on November 15, 1991. This action formally started both an 18-month Sanction clock and a 24-month Federal Implementation Plan (FIP) clock. In a January 15, 1993 letter, the Governor was notified that another 18-month Sanction clock and 24-month FIP clock, for the failure to submit a permit program for the NSR requirements by June 30, 1992, had begun. Since the November 14, 1993 submittal was found to be complete, the findings made on December 16,

1991 and January 15, 1993 of non-submittal have been corrected and no sanctions will be imposed. With the approval of this SIP revision, all Clean Air Act requirements have been met and it is no longer necessary for EPA to adopt a FIP to address the PM<INF>10 deficiencies.

This notice is issued as required by Section 110 of the Clean Air Act, as amended. The Administrator's decision regarding the approval of this plan revision is based on its meeting the requirements of Section 110 of the Clean Air Act, and 40 CFR Part 51.

The Agency has reviewed this request for revision of the federally-approved SIP for conformance with the provisions of the 1990 Amendments enacted on November 15, 1990. The Agency has determined that this action conforms with those requirements irrespective of the fact that the submittal preceded the date of enactment.

Nothing in this rule should be construed as permitting or allowing or establishing a precedent for any future request for revision to any SIP. Each request for revision to any SIP shall be considered separately in light of specific technical, economic, and environmental factors and in relation to relevant statutory and regulatory requirements.

Under sections 202, 203, and 205 of the Unfunded Mandates Reform Act of 1995 (``Unfunded Mandates Act''), signed into law on March 22, 1995, EPA must undertake various actions in association with proposed or final rules that include a federal mandate that may result in estimated annual costs of $100 million or more to the private sector, or to state, local, or tribal governments in the aggregate.

Through submission of this state implementation plan or plan revision, the state and any affected local or tribal governments have elected to adopt the program provided for under sections 110(a)(2), 172(c), 173 and 189(a) of the Clean Air Act. These rules may bind state, local and tribal governments to perform certain actions and also require the private sector to perform certain duties. To the extent that the rules being approved by this action would impose any mandate upon the state, local or tribal governments either as the owner or operator of a source or as a regulator, or would impose any mandate upon the private sector, EPA's action would impose no new requirements; such sources are already subject to these **regulations** under state law. Accordingly, no additional costs to state, local, or tribal

governments, or to the private sector, result from this action. EPA has also determined that this final action does not include a mandate that may result in estimated annual costs of $100 million or more to state, local, or tribal governments in the aggregate or to the private sector.

The Office of Management and Budget has exempted this action from review under Executive Order 12866.

Under section 307(b)(l) of the Act, petitions for judicial review of this rule must be filed in the United States Court of Appeals for the appropriate circuit within 60 days from date of publication. Filing a petition for reconsideration by the Administrator of this final rule does not affect the finality of this rule for the purposes of judicial review nor does it extend the time within which a petition for judicial review may be filed and shall not postpone the effectiveness of such rule or action. This rule may not be challenged later in proceedings to enforce its requirements. (See 307(b)(2)).

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Incorporation by reference, Intergovernmental relations, Particulate matter, Reporting and recordkeeping requirements, Sulfur oxides.

Dated: May 14, 1995.

William J. Muszynski,

Acting Regional Administrator.

Part 52, chapter I, title 40 of the Code of Federal **Regulations** is amended as follows:

PART 52--[AMENDED]

1. The authority citation for part 52 continues to read as follows:

Authority: 42 U.S.C. 7401-7671q.

Subpart BBB--Puerto Rico

2. Section 52.2720 is amended by adding new paragraph (c)(35) to

read as follows:

Sec. 52.2720 Identification of plan.

* * * * *

(c) * * *

(35) A revision submitted on November 14, 1993 by the Chairman of the Puerto Rico Environmental Quality Board (EQB) for the Municipality of Guaynabo. The submittal was made to satisfy those moderate PM<INF>10 nonattainment area SIP requirements due for the Municipality of Guaynabo as outlined in the Clean Air Act of 1990.

(i) Incorporation by reference:

(A) **Regulations**:

(1) Amendments to Part I, Rule 102, ``Definitions," of the Puerto Rico **Regulations** for the Control of Atmospheric Pollution, effective April 2, 1994.

(2) Amendments to Part II, Rule 201, ``Location Approval," Rule 202, ``Air Quality Impact Analysis," and Rule 203, ``Permit to Construct a Source," of the Puerto Rico **Regulations** for the Control of Atmospheric Pollution, effective April 2, 1994.

(3) Amendments to Part IV, Rule 401, ``Generic Prohibitions," Rule 402, ``Open Burning," Rule 403, ``Visible Emissions," Rule 404, ``Fugitive Dust," and Rule 423, ``Limitations for the Guaynabo PM<INF>10 Nonattainment Area," of the Puerto Rico **Regulations** for the Control of Atmospheric Pollution, effective April 2, 1994.

(B) Memoranda of Understanding (MOU):

(1) MOU signed by the Chairman of EQB and the Executive Director of Puerto Rico Electrical Power Authority, San Juan plant, limiting the sulfur-in-fuel level, annual operation capacity, and requiring the submittal of monthly sampling reports of its fuel's sulfur content, effective January 31, 1994.

(2) MOU signed by the Chairman of EQB and the Secretary of Puerto Rico Department of Transportation and Public Works and the Executive Director of the Highway Authority to maintain and control the reconstruction of existing roads and the construction of new roads, effective July 2, 1993.

(3) MOU signed by the Chairman of EQB and the Mayor of the Municipality of Guaynabo to pave and maintain the streets, roads and parking areas located in the Municipality of Guaynabo, effective December 13, 1993.

(4) MOU signed by the Chairman of EQB and the Executive Director of the Puerto Rico Port Authority to pave and maintain the streets, roads, and parking areas that lead into the port area in Puerto Nuevo, Guaynabo and San Juan, effective October 14, 1993.

[FR Doc. 95-13181 Filed 5-30-95; 8:45 am]
BILLING CODE 6560-50-P

APÉNDICE E

24 Hour Design Value Calculation:1:1Guaynabo 2002-2006

Number of Observations Excluding exceptional events

	Station 7	Station 24
2002	111	340
2003	103	331
2004	105	333
2005	101	311
2006	102	298
Total	522	1613

Using the table 6-1 1987 PM_{10} SIP Development Guideline Document to determine which Value to Use

Table 6-1
Tabular Estimation of PM10 Design Concentrations

Number Of daily Values	Rank of Upper Bound	Rank of Lower Bound	Data Point Used for Design Concentration
<347	-	1	Highest Value
348-695	1	2	2nd Highest Value
696-1042	2	3	3rd Highest Value
1043-1390	3	4	4th Highest Value
1391-1738	4	5	5th Highest Value

Station # 7
Value 2002-2006

Obs = 522, must be 2nd Highest Value

	1st, 2nd Highest Values
2002	74,73
2003	86,71
2004	74,57
2005	74,69
2006	83,68

DV = 2ND HIGHEST VALUE = 83

Station #24
Value 2002-2006

Obs = 1613, must be 5th Highest Value

	1st, 2nd, 3rd Highest Valu
2002	78,74,74,73,72
2003	85,82,81,77,74
2004	96,91,78,73,72
2005	81,68,67,66,64
2006	90,89,77,76,72

DV = 5TH HIGHEST VALUE = 85

DESIGN VALUE FOR GUAYNABO IS 85 UG/M3

EPA-450/2-86-001

PM_{10} SIP Development Guideline

U. S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Radiation
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

June 1987

6.2 Data Base Requirements

The design concentrations for attainment of the 24-hour PM_{10} NAAQS can be based on ambient measurements of PM_{10}, or model estimates of ambient concentrations at individual sites during 1 or more years of stable emissions conditions. Ideally, (1) modeling estimates using 5 years of National Weather Service meteorological data (or at least 1 year of on-site data), or (2) 3 years of representative air quality measurements should be considered in determining 24-hour design concentrations. If more years of data with relatively unchanging emissions are available, they also may be considered in calculating design concentrations. The more years of data available, the more stable the estimate of PM_{10} design concentrations.

The preferred approach for estimating a design value is through the use of an applicable dispersion model corroborated by receptor models, any available TSP data (using Appendix B), and any available PM_{10} data. If there is no applicable dispersion model and at least 1 complete year of PM_{10} data are available,* the PM_{10} data would be used to estimate the design value; if the PM_{10} data are insufficient,* the design value would be based on Appendix B of this guideline and corroborated by the available PM_{10} data.

6.3 Methodologies for Determining Design Concentrations

The annual design concentration is the expected annual arithmetic mean determined by the approach discussed in Appendix K, of Part 50. In the simplest case, the design concentration can be determined by averaging 3 years of monitored or 5 years of modeled PM_{10} concentrations.

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*These data should meet first year sampling requirements found in CFR 58.13.

There are several acceptable approaches for determining appropriate 24-hour PM_{10} design concentrations. These approaches which are described in the next sections are based on monitored or modeled PM_{10} concentrations. They include: (1) a table look-up procedure; (2) fitting a statistical distribution; (3) graphical estimation; and (4) the use of conditional probabilities. Each of these approaches and corresponding data usage requirements are presented in detail in the ozone guideline.[1] The following sections briefly summarize each of these approaches and indicate how the technique may be applied for determining PM_{10} concentrations.

6.3.1 Table look-up

The 24-hour PM_{10} design concentration is influenced primarily by the few highest measured or estimated concentrations at a site. Availability of the highest concentrations makes it possible to construct a simple table look-up procedure to determine the design concentration. All portions of the year should be adequately reflected in the measurements.

To use the tabular approach for the 24-hour PM_{10} standard, it is necessary to know the total number of 24-hour PM_{10} concentrations at the site and then select the design value from among the highest concentrations. The number of available 24-hour concentrations determines which of the highest concentrations is chosen as the design concentration. For example, if a comprehensive monitoring program provides 1,095 24-hour concentration measurements (or 3 full years of data) at a site, then the ranks of the lower and upper bounds obtained from Table 6.1 are 4 and 3 respectively. This means that an appropriate design concentration

for that site would be between the fourth-highest and third-highest concentrations. In using this table, the lower of the two concentrations should be used as the design concentration, i.e., the fourth-highest concentration. Therefore, in this example, it suffices to know only the four highest values during the time period. With multiple monitoring sites, the highest PM_{10} concentrations at each site would have to be considered and a design concentration established for each location. For example, the "controlling" design concentration for an area with seven sites, each having 1,095 values, would be the highest of the seven fourth-highest values.

For routine model applications with 5 full years of 24-hour concentration estimates, the PM_{10} design concentration of critical interest becomes the highest of sixth-highest concentrations for the entire receptor network.

The look-up procedure is basically a tabular technique for determining what point on the empirical frequency distribution corresponds to a frequency of 1/365. By construction, the table look-up procedure tends to provide a design concentration slightly lower than would be derived using a continuous curve representing a theoretical frequency distribution for PM_{10} values. For example, use of the table-derived estimate might be modified by interpolation between the

TABLE 6-1

TABULAR ESTIMATION OF PM_{10} DESIGN CONCENTRATIONS

Number of Daily Values	Rank of Upper Bound	Rank of Lower Bound	Data Point Used for Design Concentration
$\leq$ 347	-	1	Highest Value
348 - 695	1	2	Second Highest Value
696 - 1042	2	3	Third Highest Value
1043 - 1096	3	4	Fourth Highest Value

third- and fourth-highest values. However, this adds an additional element of calculation. Nevertheless, if a more precise design concentration should be desirable, the use of interpolation formulas (Section 6.3.2) or more simple graphical procedures (Section 6.3.3) may be necessary.

For the cases which are limited to less than a complete year of data, (i.e., 365 observations) the maximum concentration must generally be used as a tentative design value. In this case it should be recognized that the maximum concentration generally represents a lower-bound estimate for the true design concentration. In order to provide an alternative higher estimate for the design concentration, the extrapolated value derived from a fitted distribution (Section 6.3.2) can be used.* With sparse data sets, the tentative design concentrations defined as the maximum concentration or the extrapolated concentration are quite likely to require further revision as more data become available. In addition, the failure to adequately account for yearly variations in meteorological conditions makes any estimate based on a single year of data very tentative.

6.3.2 Fitting one statistical distribution to several years of data

With several years of fairly complete PM_{10} 24-hour air quality measurements or model estimates, a statistical distribution could be selected that "fits" the data. Information on fitting statistical distributions can be found on pages 18-20 in the ozone guideline.[1,2,3] Because we are interested in peak concentrations, emphasis would be placed on the top

*An extrapolated value must be used, however, instead of the maximum observed concentration in order to evaluate the possibility that the 24-hour standard is controlling, using procedures described in Sections 6.3.2 - 6.3.4.

APÉNDICE F

Calculation of the Motor Vehicle Regional Analysis Methodology Municipality of Guaynabo

This criterion is related to mobile sources. According to the Limited Maintenance guidance the area should expect a limited growth in on-road motor vehicle PM_{10} emissions and should pass a motor regional analysis test. To determine if the emissions from on- road mobile sources could, in the next 10 years, increase concentrations in the area and threaten the assumption in the maintenance plan the following equation should be used:

$DV + (VMT_{pi} \times DV_{mv}) \leq MOS$

Where:

DV, is the area's design value based on the most recent 5 years of quality assured data in $\mu g/m^3$

VMT_{pi}, is the projected % increase in vehicle miles traveled (VMT) over the next 10 years

DV_{mv}, is the motor vehicle design value based on on-road mobile portion of the attainment year inventory in $\mu g/m^3$

MOS, is the margin of safety for the relevant PM_{10} standard for a given area: 98 $\mu g/m^3$ for the 24-hour standard

The following is the demonstration that the Municipality of Guaynabo complies with the criteria related to mobile sources:

DV:

The methodology used to determine the design value (DV) for the 24 –hour PM_{10} is the table look up procedure included in chapter 6 Development of Control Strategies of the document entitled the *PM_{10} SIP Development Guideline,* EPA-450/2-86-001, June 1987. The 24-hour PM_{10} DV for the years 2002 – 2006 is 85 $\mu g/m^3$.

VMT_{pi}:

For the calculation of the VMT_{pi} the following methods will be used:

1) an extrapolation of the most recent 10 years of Highway Performance Monitoring System (HPMS) data over the 10-year period to be addressed by the limited maintenance plan; and

2) a projection of VMT over the 10-year period that would be covered by the limited maintenance plan, using whatever method is in practice in the area (if different than #1).

The calculation of the VMT_{pi} is based on method #1. The HPMS for the Municipality of Guaynabo was provided by the Department of Transportation and Public Works (DTPW). The following table is the HPMS information for the municipality of Guaynabo:

Year-+	Total of HPMS Sections in Guaynabo	Sections of HPMS Monitored in Guaynabo	DVMT Total
1998	61	47	1,232,112
1999	62	41	1,200,497
2000	62	42	1,115,523
2001	61	36	1,235,002
2002	61	50	1,369,155
2003	61	61	1,553,419
2004	66	66	1,554,500
2005	66	66	1,513,110
2006	65	65	1,512,676
2007	64	63	1,442,075

For the purpose of obtaining the projected VMT for 2016 the slope was determine. Using the data included in the provided by DTPW the slope was calculated by linear regression and the result is 43670.38182.

	Slope Calculation		43670.38182
	Calculation of 2016 VMT		
			1,949,379.82

The VMT for the years 2006 and 2016 are

VMT Municipality of Guaynabo	
Years	VMT
2006	1,512,676
2016	1,949,379.82

The percent of increase in VMT during the10 year period is 28.87.

$DV_{mv,}$

The year 2006 is use as the attainment inventory year. The mobile sources emissions are represented by motor vehicle and paved roads. The emissions from these represent a 15.14 percent of the emissions for the attainment year .

Source Type	Actual Emissions (TPY)	
	2006	Percent
Point	1647	73.30
Area	10.59	0.47
Microinventory	121	5.38
Motor Vehicle	44.23	1.97
Paved Roads	294.45	13.10
Nonroad Marine Vessels	15.10	0.67
Nonroad Construction Equipment	97.37	4.33
Nonroad Lawn and Garden	9.62	0.43
Nonroad Off-Highway Small Industrial Fuel Combustion	3	0.14
Nonroad Off-Highway Small Commercial/Institutional Fuel Combustion	4.71	0.21
TOTAL	2247.07	100

Therefore the DV_{mv} = DV * percent of mobile source emission in the inventory year

Dv = 85 $\mu g/m^3$, Percent of mobile sources is 15.07.

DV_{mv} = 85*0.1507

DV_{mv} = 12.81 $\mu g/m^3$

MOS for 2006-2016

DV + (VMTpi * DVmv) $\leq$ MOS (i.e., 98$\mu g/m^3$ for 24-hour NAAQS)

85 + (0.2887*12.81) $\leq$ 98$\mu g/m^3$

88.70 $\mu g/m^3 \leq$ 98$\mu g/m^3$

Therefore, it passes the LMP VMT growth criteria.

APÉNDICE G

PM-10 EMISSION INVENTORY FOR THE GUAYNABO NON-ATTAINMENT AREA

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SECTION 1.0

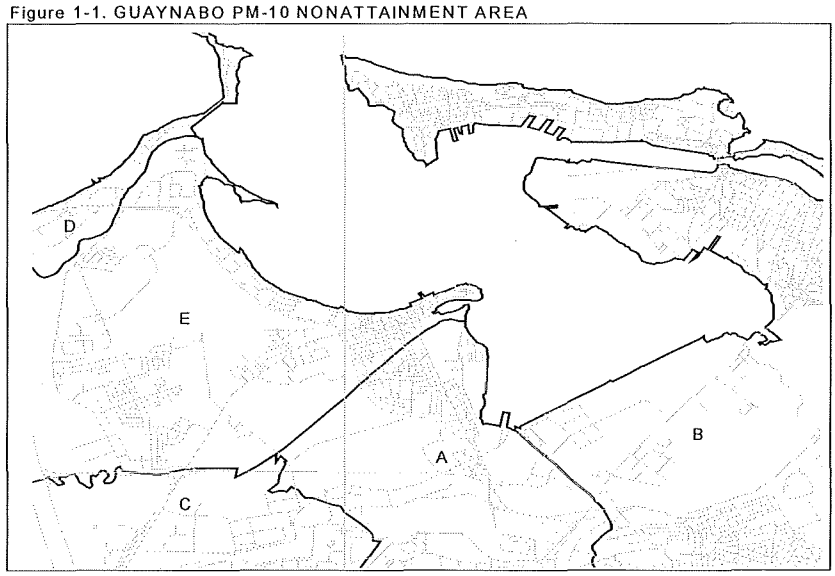
INTRODUCTION

1.1 EMISSION INVENTORY DATA

The PM-10 emission inventory from 1990 was updated. The Tables 1 and 2 presents the point emission sources that still operate in the area. For these point sources, all permits were reviewed and actual emissions were calculated for five years, 2002-2006. Rule 410 reports were used for the calculation of PM-10 emissions of the combustion sources. In the case that the Rule 410 reports were not available, the permit maximum fuel oil consumption was used to calculate the emissions. For the primary geological and grain industries, the permit maximum annual production was used to calculate the actual PM-10 emissions. The Figure 1.1 shows the municipalities that form part of the Guaynabo non-attainment area.

The area sources were also updated and Table 5.2 presents the summary of the PM-10 emissions by each category. At present, there are not new point or area sources in the Guaynabo area. The emission factors used were from AP-42, Fifth Edition, industry permits, Fire Data System and from other references. QA of the PM-10 emissions calculated electronically was conducted manually and a review of the emissions factors was performed. Copies of the QA sheets and sample calculations are in the Appendix A.

Figure 1-1. GUAYNABO PM-10 NONATTAINMENT AREA



Municipality
A Guaynabo
B San Juan
C Bayamon
D Toa Baja
E Cataño

SECTION 2.0

POINT SOURCES DATA

2.1 POINT SOURCES

All point sources inventoried in 1990 were reviewed. Some of them are not operating and others are closed. The PM-10 actual emissions were calculated for the five years of the inventory. No emissions were calculated for the industries that are closed or out of service. Copies of the emission inventory table with emission point data and the emissions calculation with all variables used, are in the Appendixes A & B.

Table 2.1 Point Source Emission Inventory

Source Category	Plant Name	Municipality	Actual Emissions TPY					
			1990	2002	2003	2004	2005	2006
Primary Geological	Betteroads Asphalt Plant 3	C	26.75	55.91	55.91	55.91	55.91	55.91
	Master Concrete (Formerly, Concreto Mixto)	B	2.52	1.13	1.13	1.13	1.13	1.13
	CEMEX Concretos, INC. (Formerly, Ready Mix)	A	2.33	1.69	1.69	1.69	1.69	1.69
	Cantera San Antonio	A	40.81	0.53	0.53	0.53	0.53	0.53
	Canteras de Puerto Rico	A	2.18	1.05	1.05	1.05	1.05	1.05
Primary Grain	Molinos de Puerto Rico (except boiler)	A	53.59	36	36	36	36	36
	Nutrimix Feed (Formerly Agro Ochoa) (except steam boiler)	A	58.25	0.08	0.08	0.08	0.08	0.08
	Pan American Grain, Amelia Plant (except boiler)	A	60.07	0.03	0.03	0.03	0.03	0.03
	Pan American Grain, Army Terminal	A	40.25	0.12	0.12	0.12	0.12	0.12
Primary Oil Combustion	Molinos de Puerto Rico Boiler	A	0.61	0.037	0.034	0.032	0.044	0.052
	Tradewind Foods, INC. (Formerly Goya de Puerto Rico)	C	0.58	2.1	2.4	2.6	2.4	2.3
	[1]Caribbean Petroleum Gulf	C	12.52	0	0	0	0	0
	[2]Easton, Inc.	A	0.01	0	0	0	0	0
	Edelcar	A	0.09	0.03	0.03	0.03	0.03	0.03
	Petroleum Emulsion (Formerly Petroleum Chemical)	C	0.03	0.04	0.04	0.04	0.04	0.04
	Smurfit Stone PR, INC. (Formerly Cartonera Nacional)	A	1.25	1.24	1.3	1.21	0.86	0.68
	Bacardí	E	26.87	15.04	11.45	11.85	7.51	6.32
	Puerto Rico Electric Power Authority, San Juan	B	927.5	917	634.21	781.54	908.95	896.27
	Nutrimix Feed Boiler (Formerly Agro Ochoa)	A	0.27	0.07	0.07	0.04	0.06	0.04
	Puerto Rico Electric Power Authority, Palo Seco	D	1269.4	1332.7	754.47	579.38	633.42	644.12
	[2]The Placco Co. of Puerto Rico	A	0.8	0	0	0	0	0
Other	[1]PRASA	B	1.25	0	0	0	0	0
Total			2527.93	2364.79	1500.54	1473.26	1649.85	1646.39

[1]This source is out of service.
[2]This source is closed.

Figure 2.1 Distribution of Point Source Emissions by Source Category

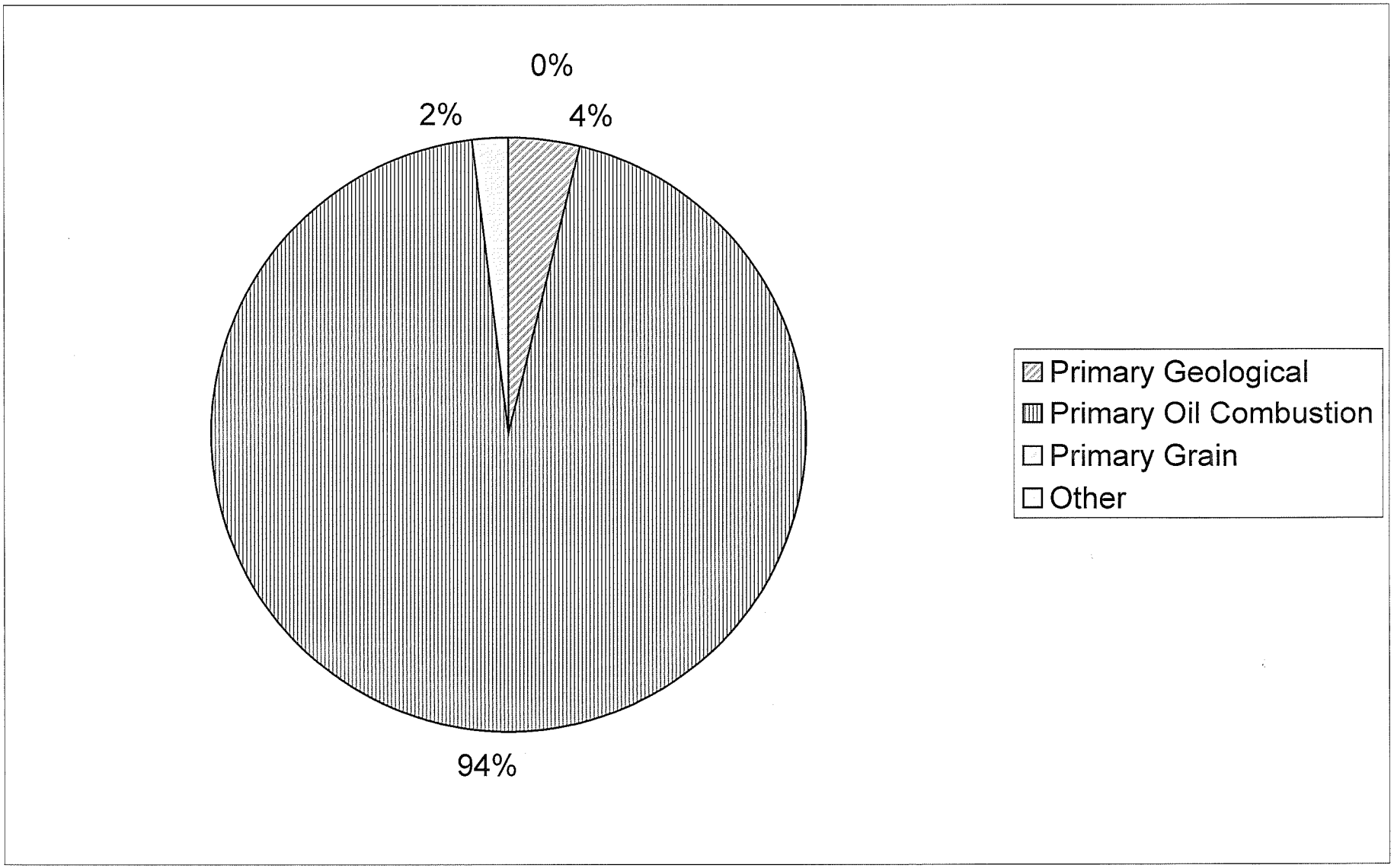


Table 2.2 Emission Point Source Data

Industry	Emission Unit	Point Id	Coordinates				Stack Height (m)	Stack Diameter (m)	Stack Exit Velocity (m/s)	Stack Temperature (K)
			Lambert		UTM					
			East	North	East	North				
Puerto Rico Electric Power Authority, San Juan	Boiler 7	SJ7-1, 7-2	187230	66130	805971	2040146	53.5	1.8	28.028	408.15
	Boiler 8	SJ8-1, 8-2	187250	66140	805991	2040156	53.5	1.8	28.028	408.15
	Boiler 9	SJ9-1, 9-2	187090	66040	805832	2040053	55.2	1.8	29.46	408.15
	Boiler 10	SJ10-1, 10-2	187070	66030	805813	2040043	55.2	1.8	29.46	408.15
Puerto Rico Electric Power Authority, Palo Seco	Palo Seco 1	PS1	182450	69100	801146	2043049	53.5	2.5	27.46	430
	Palo Seco 2	PS2	182420	69100	801116	2043049	53.5	2.5	27.46	430
	Palo Seco 3	PS3-1, 3-2	182400	69100	801096	2043049	64.3	2.4	26.6	420
	Palo Seco 4	PS4-1, 4-2	182340	69100	801036	2043049	64.3	2.4	26.6	420
	Power Block 1	PSGT1-1, 1-2	182320	69010	801017	2042958	12	2.9	19.19	783
	Power Block 2	PSGT2-1, 2-2	182290	69010	800987	2042958	12	2.9	19.19	783
	Power Block 3	PSGT3-1, 3-2	182270	69010	800967	2042958	12	2.9	19.19	783
Bacardí	Boiler 1	EU 1&2	183400	69000	802098	2042963	20.422	1.2192	13.946748	574.82
	Boiler 2	EU 1&2	183400	69000	802098	2042963	20.422	1.3716	21.229281	574.82
Tradewind Foods, INC. (Formerly Goya de Puerto Rico)	Boiler (GPR-ES-01)	GPR-EP-01	182809	64532	801571	2038485	13.716	1.143	0.1432563	519.26
	Boiler (GPR-ES-02)	GPR-EP-01	182809	64532	801571	2038485	13.716	1.143	1.37E-02	519.26
	Boiler (GPR-ES-03)	GPR-EP-01	182809	64532	801571	2038485	13.716	1.143	3.35E-02	519.26
Edelcar Inc.	Eclipse Boiler		186500	66800	805231	2040806	10.668	0.3048	8.5344	452.5944
	Holman Steam Boiler		186500	66800	805231	2040806	12.192	0.508	6.096	450.9278
	Cleaver Brooks Boiler		186500	66800	805231	2040806	12.192	0.508	7.62	449.8167

Table 2.2 Emission Point Source Data (Continued)

Industry	Emission Unit	Point Id	Coordinates				Stack	Stack	Stack Exit	Stack
			Lambert		UTM		Height	Diameter	Velocity	Temperature
			East	North	East	North	(m)	(m)	(m/s)	(K)
Smurfit Stone PR, INC. (Formerly Cartonera Nacional)	Boiler Cleaver Brooks		186450	65250	805203	2039254	44.196	0.9144	50.49	307.59
Betteroads Asphalt Plant 3	Drum Mixer AF-100		183200	65100	801953	2039058	7.01	1.0668	32.736	392.59
	Asphalt Heater		183200	65100	801953	2039058	7.01	1.0668	32.736	392.59
CEMEX Concretos, INC. (Formerly, Ready Mix, Plant 20)	Aggregate Delivery to Ground Storage									
	Sand Delivery to Ground Storage									
	Aggregate Transfer to Conveyor									
	Sand Transfer to Conveyor									
	Vehicle Traffic (paved road)									
	Wind Erosion in Aggregates Storage									
	Loading of Transit Mix Truck		186500	65800	805245	2039805	10.668	0.1	0.1000002	293
	Cement Supplement Delivered to Silo		186500	65800	805245	2039805	10.668	0.1	0.1000002	293
	Cement Delivery to Silo		186500	65800	805245	2039805	10.668	0.1	0.1000002	293
	Sand Transfer to Elevated Bins		186500	65800	805245	2039805	10.668	0.1	0.1000002	293
	Aggregate Transfer to Elevated Bins		186500	65800	805245	2039805	10.668	0.1	0.1000002	293
	Weight Hopper		186500	65800	805245	2039805	10.668	0.1	0.1000002	293
Molinos de Puerto Rico	Boiler	EP-BO	186441	66650	805174	2040655	25.6	0.4572	28.747	505.37
	Grain Receiving (Marine Tower)	EP-RE	186442	66630	805176	2040635	32.4	0.99695	8.9916	307.5944
	Pellets Cooler	EP-FC	186260	66400	804997	2040402	10.759	0.8001	8.29056	307.5944
	Wheat Cleaning	EP-WC	186442	66630	805176	2040635	32.4	0.99695	8.9916	307.5944
	Pellet Mill loading		186425	66630	805159	2040634	10.744	0.8001	8.29056	307.5944

Table 2.2 Emission Point Source Data (Continued)

Industry	Emission Unit	Point Id	Coordinates				Stack	Stack	Stack Exit	Stack
			Lambert		UTM		Height	Diameter	Velocity	Temperature
			East	North	East	North	(m)	(m)	(m/s)	(K)
Molinos de Puerto Rico	Wheat Flour Bin	EP-WBN	186382	66600	805116	2040604	32.4	0.6985	9.6012	307.5944
	Wheat Mill Pneumatic	EP-WP	186425	66630	805159	2040634	32.4	0.99695	8.9916	307.5944
	Wheat Flour Mill	EP-PL	186425	66630	805159	2040634	32.4	0.6985	9.6012	307.5944
	Corn Cleaning	EP-CC	186425	66630	805159	2040634	10.759	0.8001	8.29056	307.5944
	Corn Mill	EP-CN	186425	66630	805159	2040634	10.759	0.8001	8.29056	307.5944
	Grain Handling		186551	66608	805285	2040614	32.4	0.99695	8.9916	300.9278
	Corn Grits Bin	EP-CG								
	Corn Meal Bin	EP-CBN	186551	66608	805285	2040614	10.759	0.8001	8.29056	307.5944
	Gluten Bin	EP-GB								
	Corn Flour Bin	EP-CF								
	Midds Bin	EP-BB								
	Bin 14	EP-B14	186551	66608	805285	2040614	10.759	0.8001	8.29056	307.5944
	Grain Shipping Truck	EP-SH	186260	66400	804997	2040402	10.759	0.8001	8.29056	307.5944
Petroleum Emulsion (Formerly Petroleum Chemical)	Afterburner		183539	64954	802295	2038917				
	Oxidator Burner		183539	64954	802295	2038917				
	Oxidator Burner		183539	64954	802295	2038917				
Nutrimix Feed (Formerly Agro Ochoa)	Steam Boiler		186494	66713	805226	2040718	10.973	0.4572	16.764	452.5944
	Marine Tower		186365	66702	805098	2040706	10.973	0.4572	14.6304	298
	Corn Cleaning									
	Corn Grinding		186482	66683	805215	2040688	10.973	0.4572	14.6304	298
	Belt Conveyor 2		186503	66693	805236	2040699	12.192	0.4572	14.6304	298

Table 2.2 Emission Point Source Data (Continued)

Industry	Emission Unit	Point Id	Coordinates				Stack Height	Stack Diameter	Stack Exit Velocity	Stack Temperature
			Lambert		UTM					
			East	North	East	North	(m)	(m)	(m/s)	(K)
Nutrimix Feed (Formerly Agro Ochoa)	Belt Conveyor 1		186503	66693	805236	2040699	12.192	0.4572	14.6304	298
	Flat Storage Warehouse						12.192	0.4572	14.6304	298
	Secondary Ingredients Unloading		186383	66686	805166	2040690	12.192	0.4572	14.6304	298
	Truck Loading Area 1		186365	66706	805097	2040710	12.192	0.4572	14.6304	298
	Pelletizing Units		186400	66700	805133	2040704	10.973	0.4572	14.6304	298
	Concrete Storage Silos		186503	66693	805236	2040699	36.576	0.4572	14.6304	298
Pan American Grain	AMELIA PLANT									
	Amelia Boiler	Boiler	186100	65100	804855	2039099	21.336	0.42672	7.769352	420
	Corn Aspirator									
	Grain Separator									
	Corn Grinding (Hammermill)									
	Pellet Granulator									
	Pellet Cooler & Separator									
	Grain Elevator Riley Mars Receiving									
	Grain Elevator Riley Mars Receiving									
	Grain Elevator Riley Mars Handling									
	Grain Elevator Riley Mars Handling									
	Grain Elevator Riley Saturn Shipping		186100	65100	804855	2039099	7.9248	1.0668	15.24	307
	ARMY TERMINAL									
	Flat Storage Rico Annex	Flat Storage	186512	66948	805241	2040954	1.8288	0.9144	10.75944	298
	Rico Rice Mill	Rice Mill	186418	66897	805148	2040901	1.8288	1.0668	12.43584	298

Table 2.2 Emission Point Source Data (Continued)

Industry	Emission Unit	Point Id	Coordinates				Stack	Stack	Stack Exit	Stack
			Lambert		UTM		Height	Diameter	Velocity	Temperature
			East	North	East	North	(m)	(m)	(m/s)	(K)
Master Concrete (Formerly, Concreto Mixto)	Cement Delivery to Silo		189125	66538	807863	2040582				
	Weight Hopper		189125	66538	807863	2040582				
	Aggregate Delivery to Ground Storage		189125	66538	807863	2040582				
	Aggregate Transfer		189125	66538	807863	2040582				
	Central Mix Loading		189125	66538	807863	2040582				
	Aggregate Transfer to Elevated Bins		189125	66538	807863	2040582				
Cantera San Antonio	Diester Feeder		184063	55300	802957	2029265				
	Nordberg Mill HP-300		184063	55300	802957	2029265				
	Nordberg Mill HP-300		184063	55300	802957	2029265				
	Jaw Mill		184063	55300	802957	2029265				
	Symons Mill		184063	55300	802957	2029265				
	Diester Screening 1		184063	55300	802957	2029265				
	Diester Screening 3		184063	55300	802957	2029265				
	Cedarapids Screening 4		184063	55300	802957	2029265				
	Diester Screening 7		184063	55300	802957	2029265				
	Diester Screening 8 BHM-3620		184063	55300	802957	2029265				
	Diester Screening 9 BHM-3620		184063	55300	802957	2029265				
	Diester Screening Tertiary Process		184063	55300	802957	2029265				
	Belt 48"		184063	55300	802957	2029265				
	Belt 36"		184063	55300	802957	2029265				
	Belt 36"		184063	55300	802957	2029265				
	Belt 36"		184063	55300	802957	2029265				
	Belt 30"		184063	55300	802957	2029265				

Table 2.2. Emission Point Source Data (Continued)

Industry	Emission Unit	Point Id	Coordinates				Stack	Stack	Stack Exit	Stack
			Lambert		UTM		Height	Diameter	Velocity	Temperature
			East	North	East	North	(m)	(m)	(m/s)	(K)
Cantera San Antonio	Belt 30"		184063	55300	802957	2029265				
	Belt 30"		184063	55300	802957	2029265				
	Belt 30"		184063	55300	802957	2029265				
	Belt 30"		184063	55300	802957	2029265				
	Belt 30"		184063	55300	802957	2029265				
	Belt 30"		184063	55300	802957	2029265				
	Belt 30"		184063	55300	802957	2029265				
	Belt 30"		184063	55300	802957	2029265				
	Belt 30"		184063	55300	802957	2029265				
	Belt 30"		184063	55300	802957	2029265				
	Belt 24"		184063	55300	802957	2029265				
	Belt 24"		184063	55300	802957	2029265				
	Belt 24"		184063	55300	802957	2029265				
	Belt 24"		184063	55300	802957	2029265				
	Belt 24"		184063	55300	802957	2029265				
	Belt 24"		184063	55300	802957	2029265				
	Belt 24"		184063	55300	802957	2029265				
	Belt 24"		184063	55300	802957	2029265				
	Belt 24"		184063	55300	802957	2029265				
	Belt 24"		184063	55300	802957	2029265				
	Belt 24"		184063	55300	802957	2029265				
	Belt 24"		184063	55300	802957	2029265				
	Belt 24"		184063	55300	802957	2029265				
	Belt 24"		184063	55300	802957	2029265				

Table 2.2. Emission Point Source Data (Continued)

Industry	Emission Unit	Point Id	Coordinates				Stack	Stack	Stack Exit	Stack
			Lambert		UTM		Height	Diameter	Velocity	Temperature
			East	North	East	North	(m)	(m)	(m/s)	(K)
Cantera San Antonio	Belt 24"		184063	55300	802957	2029265				
	Belt 24"		184063	55300	802957	2029265				
	Belt 24"		184063	55300	802957	2029265				
	Belt 24"		184063	55300	802957	2029265				
	Belt 24"		184063	55300	802957	2029265				
	Truck Loading		184063	55300	802957	2029265				
	Storage Piles		184063	55300	802957	2029265				
Canteras de Puerto Rico	PORTABLE PLANT									
	Primary Crushing		188869	53645	807789	2027676				
	Double Deck Vibrating Screen		188869	53645	807789	2027676				
	Triple Deck Vibrating Screen		188869	53645	807789	2027676				
	Eljay Cone Crusher		188869	53645	807789	2027676				
	Conveyor		188869	53645	807789	2027676				
	Portable Barmac 9000 VSI		188869	53645	807789	2027676				
	Truck Loading		188869	53645	807789	2027676				
	Truck Unloading		188869	53645	807789	2027676				
	STATIONARY PLANT									
	Primary Crushing		188869	53645	807789	2027676				
	Two Deck Vibrating Screen		188869	53645	807789	2027676				
	Rollercone Crusher Tellsmith 48" S		188869	53645	807789	2027676				
	Conveyor		188869	53645	807789	2027676				
	Truck Loading		188869	53645	807789	2027676				
	Truck Unloading		188869	53645	807789	2027676				

SECTION 3.0

MOBILE SOURCES DATA

3.1 ONROAD MOBILE SOURCES

The information used for the 2002 PM-10 motor vehicle emissions were from the EPA document entitled Documentation for the Development of Air Toxics Area Source Inventory for Puerto Rico and the U.S. Virgin Islands and Onroad Mobile Source Inventory for Puerto Rico, Final Report, March 2007. The 2002 total PM-10 motor vehicle emissions are in the Table 3.2. Table 3.3 includes the vehicle classes used in this EPA document and the PM-10 emissions for each class.

The data used to calculate the motor vehicle PM-10 emissions for 2003-2006 and the PM-10 emissions for 2002-2006 fugitive dust in paved roads due to traffic was from the document 2030 Plan of the San Juan Metropolitan Region, prepared by Department of Transportation and Public Works (DTPW). They used Mobile 6.2 to calculate the motor vehicle PM-10 emission factors. The onroad mobile sources considered in this plan were Light Duty Gasoline Vehicle, Light Duty Gasoline Truck 1, 2, 3 & 4, Heavy Duty Gasoline Vehicle, Light Duty Diesel Vehicle, Light Duty Diesel Truck, Heavy Duty Diesel Vehicle and Motorcycles. The Mobile model input and output files are in Appendix C.

The following section was subtracted from the DTPW document 2030 Plan of the San Juan Metropolitan Region. In this section is explained how DTPW calculated the emission factors.

4.3 PM_{10} Emission Factors

For this analysis, the motor vehicle PM-10 emission factors were derived from the EPA motor emissions model Mobile 6.2. Based on the transportation conformity methodology, default input parameters were used to run Mobile 6.2. The default input parameters are design to represent "national average" input data values. Local parameters such as inspection/maintenance programs, anti-tempering, sulfur fuel content, reformulated gasolines and various others can be substituted into Mobile 6.2 input files to reflect local conditions. These local parameters could be considered when Mobile 6.2 is run in the future. Using EPA-default recommended input parameters for the motor vehicle fleet mix and operating characteristics combined with local climate conditions, Mobile 6.2 provided PM-10 emission factors for the entire fleet. These factors include PM-10 from motor vehicle exhaust, tire and break wear. Separate PM-10 factors for fugitive dust from paved roadways were calculated using predictive emission factor equation located in the December 2003 edition of Chapter 13 of compilation of Air pollutant Factors, AP-42 Fifth Edition, Volume I: Stationary Point and Area Sources.

As shown in Table 8, the motor vehicle PM-10 emission factors decrease over time as newer, less polluting, cars, buses and trucks replace the older fleets of motor vehicles, which are less efficient and more polluting. Expressed as grams of PM-10 generated per vehicle mile traveled, the Mobile 6.2 emission

factors do not vary by motor vehicle speed or roadway operating condition, as do carbon monoxide emission factors. Similarly, the roadway fugitive dust PM-10 emission factors do not vary by calendar year, since roadway dust does not depend on fuel or vehicle operating characteristics, but rather on silt loading/deposition are, fleet characteristics, and roadway cleaning/precipitation frequency.

Table 8 Mobile 6.2 PM-10 Factors (g/VMT)

Year	Motor Vehicle[1]	Roadway[2]	Total
2000	0.0801	0.5333	0.6134
2005	0.0592	0.5333	0.5925
2010	0.0430	0.5333	0.5763
2020	0.0300	0.5333	0.5633
2030	0.0286	0.5333	0.5619

[1]Includes emissions from motor vehicle exhaust, brakes and tires given in grams of PM-10/VMT.
[2]Includes fugitive (re-entrained) dust from roadway. Assumes all roadways are paved.

Table 9 PM_{10} Emissions for Roadway Fugitive Dust Factor Calculation
Source: December 2003 edition of Chapter 13 of Compilation of Air Pollutant Emission Factors, AP-42 Fifth Edition, Volume I: Stationary Point and Area Source

Predictive Emission Factor Equation

$$E=k(sL/2)^{0.65}x(W/3)^{1.5}-C$$

where:

E= particulate emission factor (having units matching the units of k).
K= particulate size multiplier for particulate size range and units of interest (see Table 13.2-1.1)
sL= road surface silt loading (grams per square meter) g/m^2
W= average weight (tons) for the vehicles fleet exhaust, brake wear and tire use.

E= Calculated
K= 7.3 g/VMT From Table 13.2-1.1, used particle size PM_{10}
SL= 0.1 g/m^2 From Part 5 input files used in the Transportation Air Quality Conformity Analysis-March 2002
W= 2.4 tons from Part 5 output files used in the Transportation Air Quality Conformity Analysis-March 2002
C= 0.2119 g/VMT From Table 13.2.1-2, used particle size of PM_{10}

$$E= 7.3(0.1/2)^{0.65}x(2.4/3)^{1.5}-0.2119$$

E= 0.5333

The Table 3.1 has the information that DTPW used in the Guaynabo municipality. This table includes the roadway classification, the road sections sampled and the total DVMT in the Guaynabo municipality.

Table 3.1 Department of Transportation and Public Works Data for Guaynabo Municipality

Year	Total Road Sections HPMS in Guaynabo	Road Sections Sample	Total DVMT	Roadway Classification / Sections Sampled											
				Principal Arterial		Minor Arterial		Freeway & Expressway		Interstate		Collector		Local	
				Section	DVMT	Section	DVMT	Section	DVMT	Section	DVMT	Section	DVMT	Section	DVMT
2002	61	50	1,369,155	17	441,654	19	269,914	8	296,140	3	339,299	3	22,149	-	-
2003	61	61	1,553,419	17	492,238	9	205,628	8	342,485	3	380,430	13	98,387	11	34,251
2004	66	66	1,554,500	17	511,260	23	256,938	9	340,440	3	388,761	8	33,477	6	23,623
2005	66	66	1,513,110	17	501,776	23	244,210	9	321,135	3	388,440	8	33,105	6	24,444
2006	65	65	1,512,676	17	515,903	23	244,786	8	305,367	3	386,106	8	34,666	6	25,848

The DTPW data presented above was used to calculate the motor vehicle PM-10 emissions in the Guaynabo municipality for the years 2003-2006 and the PM-10 emissions for fugitive dust in paved roads due to traffic during 2002-2006. To obtain conservative results, the 2000 motor vehicle emission factor was used to calculate the PM-10 emissions. The Table 3.2 shows the PM-10 emissions for the motor vehicles and paved roads in the area. A copy of the emissions calculation is in Appendix A.

Table 3.2 PM-10 Onroad Mobile Source Emissions in Guaynabo Municipality

Year	Total DVMT[1] Guaynabo Municipality	Motor Vehicle Emission Factor[2]	Paved Roads Emission Factor[2]	Onroad Mobile Source	
				Paved Roads Tons/yr	Motor Vehicle Tons/yr
2002	1,369,155	-	0.5333	266.51	48.89
2003	1,553,419	0.0801	0.5333	302.38	45.42
2004	1,554,500	0.0801	0.5333	302.59	45.45
2005	1,513,110	0.0801	0.5333	294.53	44.24
2006	1,512,676	0.0801	0.5333	294.45	44.23

1Table 3.1 Department of Transportation and Public Works Data for Guaynabo Municipality. These values were used to calculate the paved roads emissions and the motor vehicle emissions for the 2003-2006. Total DVMT used for 2002 motor vehicle emissions are in the document entitled Documentation for the Development of Air Toxics Area Source Inventory for Puerto Rico and the U.S. Virgin Islands and Onroad Mobile Source Inventory for Puerto Rico, Final Report, March 2007.

2Table 8 of Section 4.3 from the 2030 Plan of the San Juan Metropolitan Region. Motor vehicle emission factor used for 2002 motor vehicle emissions are in the document entitled Documentation for the Development of Air Toxics Area Source Inventory for Puerto Rico and the U.S. Virgin Islands and Onroad Mobile Source Inventory for Puerto Rico, Final Report, March 2007.

Table 3.3 PM-10 Emissions by Vehicle Class[1]

Source Category	SCC_DESC	Municipality	Emissions (TON/ YEAR)
HDDV	Mobile SourcesHighway Vehicles - DieselHeavy Duty Diesel Vehicles (HDDV) Class 2B	Guaynabo	0.09315
HDDV	Mobile SourcesHighway Vehicles - DieselHeavy Duty Diesel Vehicles (HDDV) Class 3, 4, & 5	Guaynabo	2.338
HDDV	Mobile SourcesHighway Vehicles - DieselHeavy Duty Diesel Vehicles (HDDV) Class 6 & 7	Guaynabo	7.652
HDDV	Mobile SourcesHighway Vehicles - DieselHeavy Duty Diesel Vehicles (HDDV) Class 8A & 8B	Guaynabo	7.15
HDDV	Mobile SourcesHighway Vehicles - DieselHeavy Duty Diesel Buses (School & Transit)	Guaynabo	4.374
HDGV	Mobile SourcesHighway Vehicles - GasolineHeavy Duty Gasoline Vehicles 2B thru 8B & Buses (HDGV)	Guaynabo	7.702
LDDT	Mobile SourcesHighway Vehicles - DieselLight Duty Diesel Trucks 1 thru 4 (M6) (LDDT)	Guaynabo	0.1317
LDDV	Mobile SourcesHighway Vehicles - DieselLight Duty Diesel Vehicles (LDDV)	Guaynabo	0.3808
LDGT1	Mobile SourcesHighway Vehicles - GasolineLight Duty Gasoline Trucks 1 & 2 (M6) = LDGT1 (M5)	Guaynabo	2.412
LDGT2	Mobile SourcesHighway Vehicles - GasolineLight Duty Gasoline Trucks 3 & 4 (M6) = LDGT2 (M5)	Guaynabo	0.965
LDGV	Mobile SourcesHighway Vehicles - GasolineLight Duty Gasoline Vehicles (LDGV)	Guaynabo	15.62
MC	Mobile SourcesHighway Vehicles - GasolineMotorcycles (MC)	Guaynabo	0.07103
Total			48.89

1Table from Documentation for the Development of Air Toxics Area Source Inventory for Puerto Rico and the U.S. Virgin Islands and Onroad Mobile Source Inventory for Puerto Rico, Final Report, March 2007.

3.2 NONROAD MOBILE SOURCES

The nonroad mobile source considered for the PM-10 emission inventory of 1990 was marine vessels, which is explained in the next subsection. The other categories added to the 2002-2006 PM-10 emission inventory were construction equipment, lawn and garden equipment, off-highway small industrial fuel combustion and off-highway small commercial/institutional fuel combustion.

3.2.1 Marine Vessels

For these emissions, the Port of Long Beach Air Emission Inventory-2005 (PLB05) in California was used. This report was selected because the data from San Juan port was incomplete to calculate the PM-10 emissions in the area. The information of the vessels that visit the San Juan port was from the Lloyd Report US Port of Calls by Port and Vessel Type. This report presents the number of calls and the type of each vessel that visit the San Juan port yearly. The number of calls for the cruise ships is from the Puerto Rico Ports Authority Statistics Maritime Report. The data about the description of each vessel (speed, engine, loads, etc.) was from the PLB05.

At the moment of this inventory, the data for tugs boats in the San Juan port was not available in the Puerto Rico Ports Authority reports, then emissions for this category were excluded from the inventory.

The following equations were utilized to calculate the PM-10 emissions:

E=Energy x EF
E= pollutant emissions
Energy= KW-hrs of energy demand
    Energy= MCR x LF x A
        MCR=maximum continuous rated engine power, KW
        LF= load factor (unitless)
        A= activity in hours
            Activity= D/S
                D= distance, nautical miles
                S= ship speed, Knots
EF= emission factor

All calculations were made using the number of calls a year by type of vessel, from the Lloyd's report and the vessels default specific data

presented in the PLB05. Two types of scenarios were considered, the transit of the vessel through the San Juan Bay and the time that the vessel is in the port (hotelling at berth).

For the transit scenario the maximum continuous rated engine power was used and for the hotelling scenario the total auxiliary engine power was considered. Both values were selected from the default main and auxiliary engine data by vessel type, presented in the Tables 2.10 and 2.12 of the PLB05. The load factors used for transit and hotelling were from the Figure 2.17 and the Table 2.12 of the PLB05, respectively.

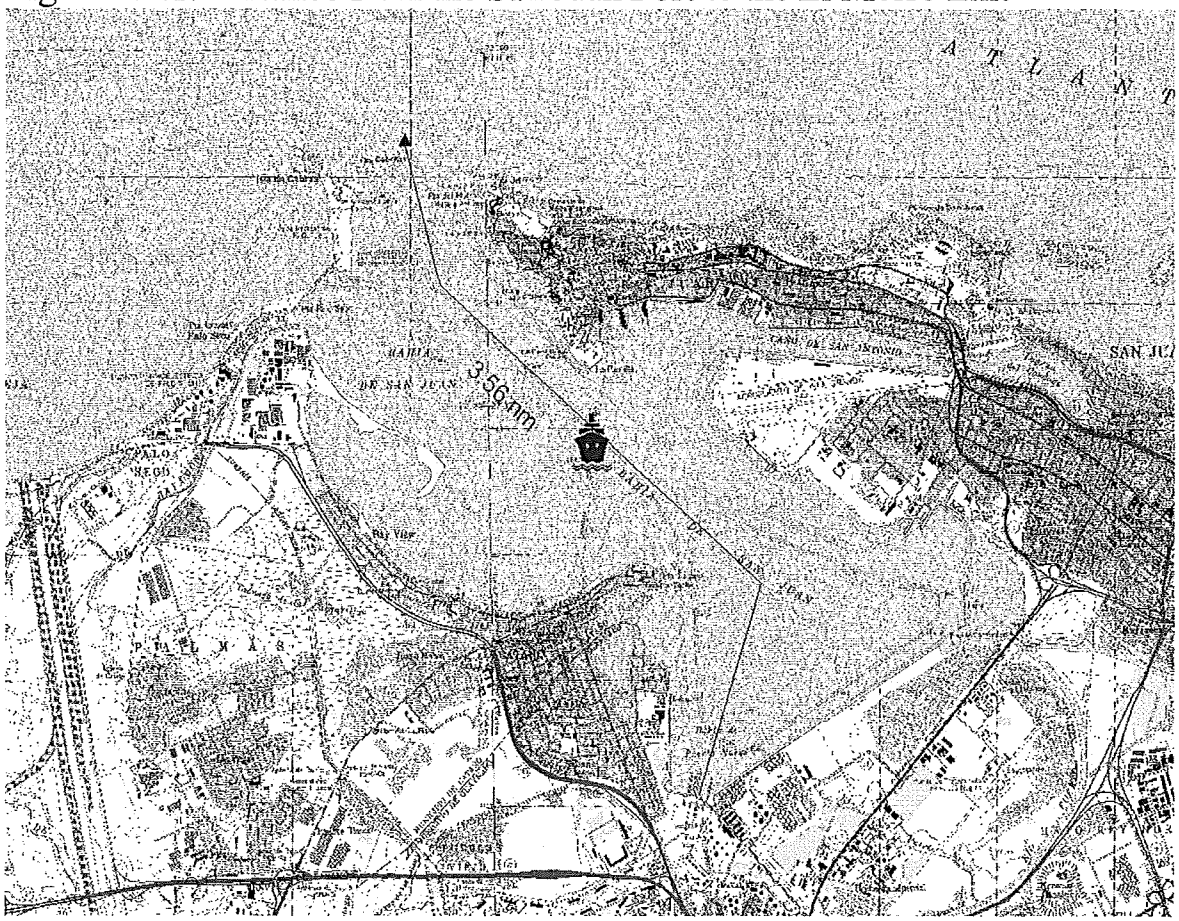
The activity hours for the transit were calculated dividing the approximate distance from the San Juan port to the exit of the El Morro Fort enter the maximum speed of the vessel. This value was multiply by the calls a year of each vessel, to obtain the total hours of transit a year. The distance was calculated using the measure tool in the program ArcView and a DRG map from San Juan area. (Figure 3.2.1) To have a more conservative result, the transit distance to the farthest berth was used. The speed used was from the data in the Table 2.9 of the PLB05. The activity hours for the hotelling scenario were from the Table 2.20 of the PLB05.

The Table 3.2.1 presents a summary of the PM-10 emissions for the marine vessels in the Guaynabo non-attainment area.

Table 3.2.1 Marine Vessels PM-10 Emission Inventory for the Guaynabo Municipality

Source Type	Emissions (TPY)				
	2002	2003	2004	2005	2006
Marine Vessels	15.75	15.46	16.51	15.88	15.10

Figure 3.2.1. Distance from the San Juan Port to the El Morro Exit



The emission factors used were for vessels using residual oil to have a more conservative result. All the calculations are in Appendix A and there is a copy of the emission inventory in Appendix B.

3.2.2 Construction Equipment

These emissions were from the 2002 EPA National Emission Inventory. The Table 3.2.2 present the PM-10 emissions for this category. The PM-10 emission values were used for 2002-2006.

Table 3.2.2 Construction Equipment PM-10 Emissions Inventory for the Guaynabo Municipality

Description	Fuel Oil	Emissions (TPY)
Off-Highway	Gasoline	2.833
Off-Highway	Diesel	94.532

3.2.3 Lawn and Garden

These emissions were from the 2002 EPA National Emission Inventory. The Table 3.2.3 present the PM-10 emissions for this category. The PM-10 emission values were used for 2002-2006.

Table 3.2.3 Lawn and Garden Equipment PM-10 Emissions Inventory for the Guaynabo Municipality

Description	Fuel Oil	Emissions (TPY)
Off-Highway	Gasoline	8.3294
Off-Highway	Diesel	1.2917

3.2.4 Off-Highway Small Industrial Fuel Combustion

These emissions were from the 2002 EPA National Emission Inventory. The Table 3.2.4 present the PM-10 emissions for this category. The PM-10 emission values were used for 2002-2006.

Table 3.2.4 PM-10 Emissions Inventory for Off-Highway Small Industrial Fuel Combustion in the Guaynabo Municipality

Description	Fuel Oil	Emissions (TPY)
Off-Highway	Gasoline	0.02856
Off-Highway	Diesel	2.9792

3.2.5 Off-Highway Small Commercial/Institutional Fuel Combustion

These emissions were from the 2002 EPA National Emission Inventory. The Table 3.2.5 present the PM-10 emissions for this category. The PM-10 emission values were used for 2002-2006.

Table 3.2.5 PM-10 Emissions Inventory for Off-Highway Small Commercial/Institutional Fuel Combustion in the Guaynabo Municipality

Description	Fuel Oil	Emissions (TPY)
Off-Highway	Gasoline	0.9986
Off-Highway	Diesel	3.7171

SECTION 4.0

AREA SOURCES DATA

4.1 AREA SOURCES

The area sources inventoried in 1990 were updated and PM-10 emissions were calculated for the five-year period. The area sources considered in the 1990 inventory were: Residential Oil Combustion, Residential On-Site Incineration (Solid Waste Burning), Structural Fires, Fugitive Dust from Unpaved Roads and Parking Lots, and Microinventory Sources. Sample calculation and the equation used in each category are in Appendix A.

Two new categories were added to the 2002-2006 Guaynabo PM-10 emission inventory, the small industrial fuel combustion and the small commercial/institutional fuel combustion.

4.1.1 Residential Oil Combustion

The activity data used to calculate these emissions was from the Documentation for the Development of Air Toxics Area Source Inventory for Puerto Rico and the U.S. Virgin Islands and Onroad Mobile Source Inventory for Puerto Rico, Final Report, March 2007.

The emission factor used was from the AP-42, 5th Edition. This calculation is in Appendix A.

4.1.2 Residential On-Site Incineration

For this category the incinerators data in the Guaynabo area were from the Inventario de Incineradores de Desperdicios Sólidos en Puerto Rico, JCA 2001. This inventory was prepared by EQB in 2001 and has the emissions of all residential incinerators in the island. The PM-10 emissions calculation for the residential incinerators in the Guaynabo area is in Appendix A.

4.1.3 Structural Fires

For this section the document Structure Fires Volume III, establish a method to calculate the particulate emissions. The amount of structural fires in the Guaynabo area was obtained from the annual fire reports of the local Fire

Department. A default value of 1.15 tons of material burned in every fire was used and an emission factor of 10.8 lb/ton, both values from the above reference. These calculations are in Appendix A.

4.1.4 Unpaved Roads and Parking Lots

These PM-10 emissions were considered as microinventory sources.

4.1.5 Microinventory Sources

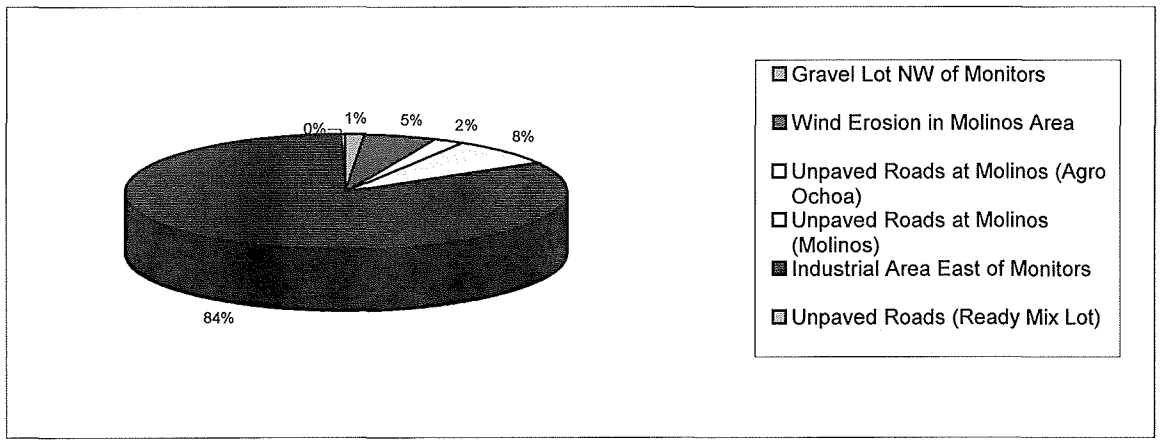
The PM-10 emissions calculated in the Puerto Rico PM10 State Implementation Plan for Guaynabo Area of 1990 were used. This data was used because in a conversation with the Department of Transportation they informed EQB that unpaved roads were not used in their inventories because in Puerto Rico all roads are considered paved. For that reason we decided to use the same emissions as the 1990 inventory to have a conservative scenario.

Table 4.1.5 Summary of Microinventory Emissions by Source Category for Guaynabo Municipality

Source Category	Emissions (TPY)
Gravel Lots NW of Monitors	1.69
Wind Erosion in Molinos Area	6.55
Unpaved Roads at Molinos (Agro Ochoa)	2.41
Unpaved Roads at Molinos (Molinos)	9.66
Industrial Area East of Molinos	100.69
Unpaved Roads (Ready Mix Lot)	0.21
Total	121

*Data from Puerto Rico PM10 State Implementation Plan for Guaynabo Area.

Figure 4.1.5 Distribution of Microinventory Area Source Emissions



4.1.6 Small Industrial Fuel Combustion

The activity data for this category was from the Documentation for the Development of Air Toxics Area Source Inventory for Puerto Rico and the U.S. Virgin Islands and Onroad Mobile Source Inventory for Puerto Rico, Final Report, March 2007. The Table 4.1.6 present the PM-10 emissions in tons per year. The PM-10 emission values were used for 2002-2006. The emissions calculations are in Appendix A.

Table 4.1.6 PM-10 Emissions Inventory for Small Industrial Fuel Combustion in the Guaynabo Municipality

Description	Fuel Oil	Emissions (TPY)
Small Industrial Fuel Combustion	Fuel Oil No. 2	1.49
	Residual Oil	6.41
	Kerosene	0.70

4.1.7 Small Commercial/Institutional Combustion

The activity data for this category was from the Documentation for the Development of Air Toxics Area Source Inventory for Puerto Rico and the U.S. Virgin Islands and Onroad Mobile Source Inventory for Puerto Rico, Final Report, March 2007. The Table 4.1.7 present the PM-10 emissions in tons per year. The PM-10 emission values were used for 2002-2006. The emissions calculations are in Appendix A.

Table 4.1.7 PM-10 Emissions Inventory for Small Commercial/ Institutional Fuel Combustion in the Guaynabo Municipality

Description	Fuel Oil	Emissions (TPY)
Small Commercial/Institutional Fuel Combustion	Fuel Oil No. 2	0.21
	LPG	0.30
	Kerosene	0.79

SECTION 5.0

EMISSIONS SUMMARY

5.1 PM-10 Emissions Summary

Table 5.1 Summary of 2002-2006 PM-10 Emissions by Source Type

Source Type	Actual Emissions (TPY)				
	2002	2003	2004	2005	2006
Point	2365	1501	1474	1650	1647
Area	10.73	10.24	10.62	10.52	10.59
Microinventory	121	121	121	121	121
Motor Vehicle	48.89	45.42	45.45	44.24	44.23
Paved Roads	266.51	302.38	302.59	294.53	294.45
Nonroad Marine Vessels	15.75	15.46	16.51	15.88	15.10
Nonroad Construction Equipment	97.37	97.37	97.37	97.37	97.37
Nonroad Lawn and Garden	9.62	9.62	9.62	9.62	9.62
Nonroad Off-Highway Small Industrial Fuel Combustion	3	3	3	3	3
Nonroad Off-Highway Small Commercial/Institutional Fuel Combustion	4.71	4.71	4.71	4.71	4.71
TOTAL	2942.58	2110.2	2084.87	2250.87	2247.07

Figure 5.1 Summary of 2002-2006 PM-10 Emissions by Source Type

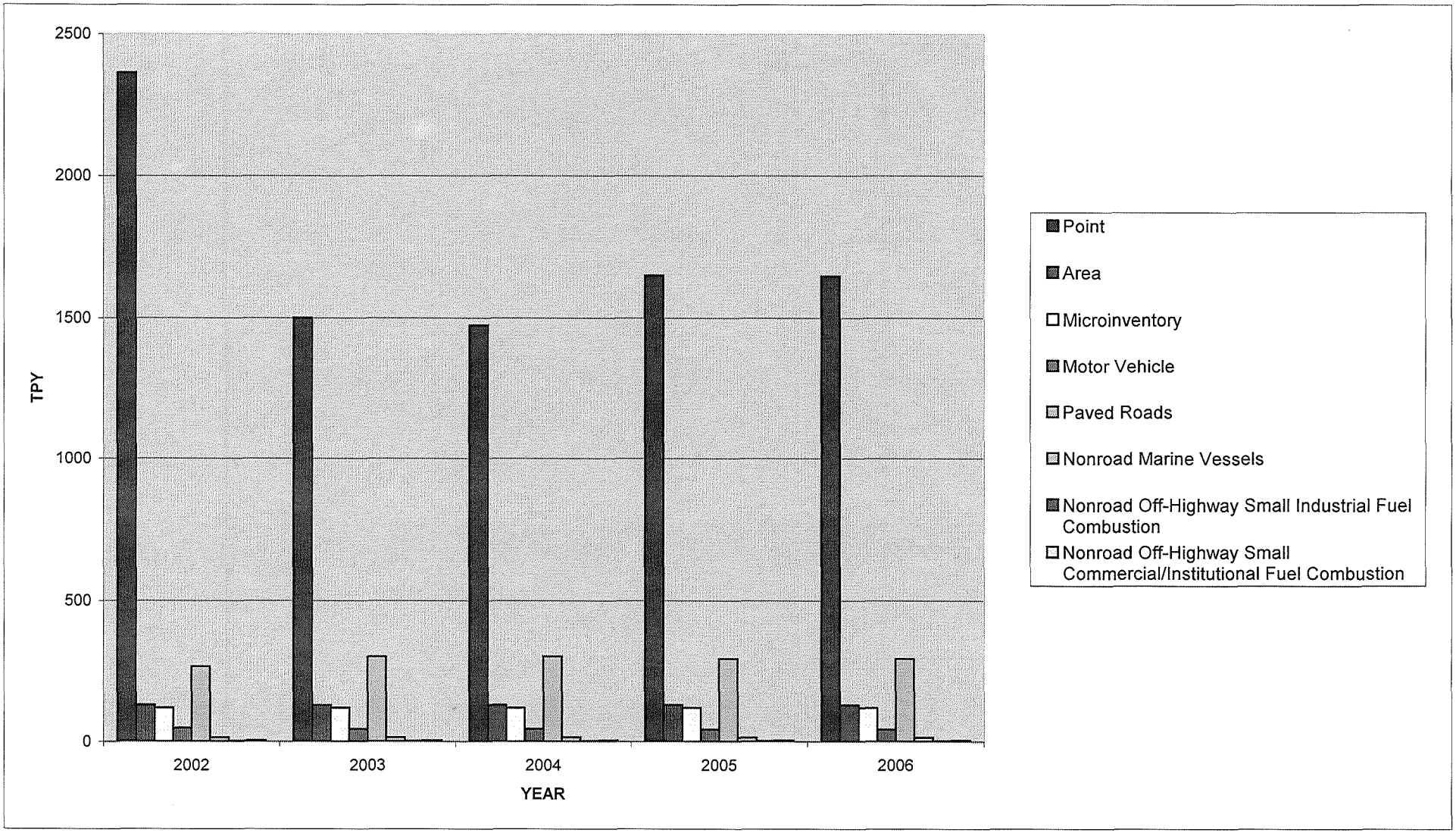


Table 5.2 Summary of Area Source Emission Inventory for Guaynabo Municipality

Source Type	Emissions (TPY)				
	2002	2003	2004	2005	2006
Residential Oil Combustion	0.269	0.269	0.269	0.269	0.269
Residential On-site Incineration	0.0676	0.0676	0.0676	0.0676	0.0676
Structural Fires	0.5	$6.21e^{-3}$	0.38	0.28	0.35
Microinventory	121	121	121	121	121
Small Industrial Fuel Combustion	8.6	8.6	8.6	8.6	8.6
Small Commercial/Institutional Fuel Combustion	1.3	1.3	1.3	1.3	1.3

SECTION 6.0

QA/QC

6.1 QUALITY ASSURANCE AND QUALITY CONTROL

The same QA/QC procedure used in the 1990 PM-10 inventory was applied in the revision. The QA/QC consist of a review of the data used to calculate the PM-10 emissions for the point and area sources. The QA includes the verification of the emission units, emission factors and the data used to calculate the PM-10 emissions. All PM-10 emission calculations were performed in excel spreadsheet. Manual verification of all the excel spreadsheet calculations was performed to verify the results correctness. Copies of the excel spreadsheets and the manual calculations sheets are included in the Appendix A.

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REFERENCES

Transportation Air Quality Analysis for the Year 2025 Transportation Plan of the San Juan Metropolitan Region. Puerto Rico Highway and Transportation Authority, San Juan, March 2002.

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APPENDIX A
EMISSION INVENTORY CALCULATIONS

A-1
RESIDENTIAL
OIL COMBUSTION

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Area Sources

Residential Fuel oil combustion

LPG usage for Comunoto - 1,348,351 gal/yr
Emission factor - 0.4 lb/1000 gal (AP-42, 5th Edition, Section 1.5)

$$1{,}348{,}351 \text{ gal/yr} \times 0.4 \text{ lb/1000 gal} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 0.269 \text{ ton/yr}$$

A-2
RESIDENTIAL
ON-SITE INCINERATION

INVENTARIO DE INCINERADORES DE DESPERDICIOS SOLIDOS

Condominio Altavista I-II

Dirección Postal	Cond. Alta Vista I, Buzón JDD Torre 1, PR833		
	Guaynabo	*P.R.*	*00969-*
Localización	Carr 833 int carr 177, Bo. Frailes, Guaynabo		
Contacto	*Bessie Schoder*	***Teléfono***	*(787) 720-3303*

Comentarios sobre la instalación

PFE-LC-32-0998-0977 ☐ I ☑ II ☑ III O

Comentarios sobre el permiso

ID Unidad	1		
Descripción del Equipo	Incinerador multicámara		
Tipo de Desperdicios	I - II	**Razon de Oxidación**	200 lb/hr
Combustible Auxiliar	Propano	**Consumo Combustible Auxiliar (GPH)**	3.1
Horario de Operación	-----		

Equipo de Control y Punto de Emisión

Equipo Control	Cámara de sedimentación húmedecida.	**Eficiencia control**	99%

Altura Chim (pies)	**Diámetro (pulgadas)**	**Temperatura Salida (°F)**	**Veloc (pies/seg.)**
185	23.9	200	10

Comentarios de la Unidad

María Sanchez inspecciono la facilidad y encontró que las cámaras de alimentación no estaban correctamente sella

INVENTARIO DE INCINERADORES DE DESPERDICIOS SOLIDOS

Condominio Garden Hills Towers

Dirección Postal	Buzón administración		
	Guaynabo	*P.R.*	*00976-*
Localización	Calle Miramonte, Guaynabo		
Contacto	*Sra. Rosario F. Vda. De Torro*	***Teléfono***	*(787) 783-6004*

Comentarios sobre la instalación

PFE-LC-00-32-0501-1016 ☐ I ☑ II ☑ III O

Comentarios sobre el permiso

ID Unidad	1		
Descripción del Equipo	Incinerador Multicámara		
Tipo de Desperdicios	I - II	**Razón de Oxidación**	42.5 lb/hr
Combustible Auxiliar	Propano	**Consumo Combustible Auxiliar (GPH)**	3.18
Horario de Operación	8 hr/día - 7 día/semana - 12 meses/año		

Equipo de Control y Punto de Emisión

Equipo Control	Lavador de Gases	**Eficiencia control**	90%

Altura Chim (pies)	**Diámetro (pulgadas)**	**Temperatura Salida (°F)**	**Veloc (pies/seg.)**
10	30.47	120	20

Comentarios de la Unidad

INVENTARIO DE INCINERADORES DE DESPERDICIOS SOLIDOS

Condominio Ponce de León Gardens

Dirección Postal Villa Caparra, Calle 8

Guaynabo *P.R.* *00920-*

Localización

Contacto *Raúl Hernandez* ***Teléfono***

Comentarios sobre la instalación

PFE-LC-32-0894-1057 ☐ I ☑ II ☑ III O

Comentarios sobre el permiso

Nuevo Permiso PFE-LC-32-0301-0515-II-O no contiene incinerador.

ID Unidad 1

Descripción del Equipo Incinerador

Tipo de Desperdicios I - II **Razón de Oxidación** 166.6 lb/hr

Combustible Auxiliar Propano **Consumo Combustible Auxiliar (GPH)** 8.29

Horario de Operación 3 hr/día - 6 día/semana - 52 semanas/año

Equipo de Control y Punto de Emisión

Equipo Control Lavador de Gases **Eficiencia control** 85%

Altura Chim (pies)	Diámetro (pulgadas)	Temperatura Salida (°F)	Veloc (pies/seg.)
170	30.47	270	5.2

Comentarios de la Unidad

Incinerador Clausurado

INVENTARIO DE INCINERADORES DE DESPERDICIOS SOLIDOS

Condominio Villa Caparra Executive

Dirección Postal	Carr. PR.#2 Km 6.1 M-229		
	Guaynabo	*P.R.*	*00966-*
Localización	Carr. PR.#2 Km 6.1 M-229, Guayanbo		
Contacto	*Sr. Alquimides Linares*	***Teléfono***	*(787) 781-3772*

Comentarios sobre la instalación

PFE-LC-32-1096-1058 ☐ I ☐ II ☑ III O

Comentarios sobre el permiso

ID Unidad	1		
Descripción del Equipo	Incinerador Multicámara		
Tipo de Desperdicios	Doméstico	**Razón de Oxidación**	400 lbs/hr
Combustible Auxiliar	propano	**Consumo Combustible Auxiliar (GPH)**	70
Horario de Operación	3 hr/día - 7 día/semana - 52 semanas/año		

Equipo de Control y Punto de Emisión

Equipo Control	Lavador de Gases	**Eficiencia control**	95%

Altura Chim (pies)	**Diámetro (pulgadas)**	**Temperatura Salida (°F)**	**Veloc (pies/seg.)**
168	28.35	160	20

Comentarios de la Unidad

INVENTARIO DE INCINERADORES DE DESPERDICIOS SOLIDOS

San Martín Twin Towers II

Dirección Postal

Localización Carr. 20 Km 2.6 Guaynabo

Contacto ***Teléfono***

Comentarios sobre la instalación

PFE-LC-32-1291-1627 ☐ I ☐ II ☑ III O

Comentarios sobre el permiso

Nuevo permiso PFE-LC-00-32-0798-0775-II-O no contiene incinerador.

ID Unidad **IDS-1**

Descripción del Equipo Incinerador

Tipo de Desperdicios Doméstico **Razon de Oxidación** -----

Combustible Auxiliar ----- **Consumo Combustible Auxiliar (GPH)** -----

Horario de Operación -----

Equipo de Control y Punto de Emisión

Equipo Control ----- **Eficiencia control**

Altura Chim (pies) **Diámetro (pulgadas)** **Temperatura Salida (°F)** **Veloc (pies/seg.)**

Comentarios de la Unidad

INVENTARIO DE INCINERADORES DE DESPERDICIOS SOLIDOS

Santa Paula Apartments, Torre A, B y C

Dirección Postal

Localización Ave, Regna Medina, Urb Santa Paula, Guaynabo

Contacto ***Teléfono***

Comentarios sobre la instalación

PFE-LC-32-0993-1417 ☐ I ☑ II ☑ III O

Comentarios sobre el permiso

Nuevo permiso PFE-LC-32-0201-0276-II-O no contiene incinerador.

ID Unidad 1

Descripción del Equipo Incinerador

Tipo de Desperdicios Doméstico **Razón de Oxidación** -----

Combustible Auxiliar ----- **Consumo Combustible Auxiliar (GPH)** -----

Horario de Operación -----

Equipo de Control y Punto de Emisión

Equipo Control ----- **Eficiencia control**

Altura Chim (pies) **Diámetro (pulgadas)** **Temperatura Salida (°F)** **Veloc (pies/seg.)**

Comentarios de la Unidad

CALCULOS DE EMISIONES PARA INCINERADORES DE DESPERDICIOS SOLIDOS

Condominio Altavista I-II

PFE-LC-32-0998-0977

ID Unidad	1		
Descripción del Equipo:	Incinerador multicámara		
Tipo de Desperdicio:	I - II	**Razón de Oxidación:**	200 lb/hr
Combustible Auxiliar	propano	**Consumo combustible(GPH)**	N.D.
Horario de Operación:	0		

Razón de consumo annual	0	Unidad/año	**% Azufre**	N.D.
Tipo Unidades	Toneladas			
SCC #:	5-02-001-01			

Factor de emisión (EF) lb/units

	PM10	SOx	NOx	CO	TOC	Pb
	4.7	2.5	3	10	3	0
Eficiencia control	99.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Descripción de equipo control: Lavador de Gases

Procedencia factores emisión *Fire Information Retrieval (FIRE) Data System versión 6.23*

Emisiones Anuales

	Rate		EF		PM10 ton/2000lbs		(1-efficiency)		Tons/yr
=	0	x	4.7	x	0.0005	x	0.01	=	0

	Rate		EF		SOx ton/2000lbs		(1-efficiency)		Tons/yr
=	0	x	2.5	x	0.0005	x	1	=	0

	Rate		EF		NOx ton/2000lbs		(1-efficiency)		Tons/yr
=	0	x	3	x	0.0005	x	1	=	0

	Rate		EF		CO ton/2000lbs		(1-efficiency)		Tons/yr
=	0	x	10	x	0.0005	x	1	=	0

	Rate		EF		TOC ton/2000lbs		(1-efficiency)		Tons/yr
=	0	x	3	x	0.0005	x	1	=	0

	Rate		EF		Pb ton/2000lbs		(1-efficiency)		Tons/yr
=	0	x	0	x	0.0005	x	1	=	0

Nota: El incinerador no se esta utilizando actualmente.

CALCULOS DE EMISIONES PARA INCINERADORES DE DESPERDICIOS SOLIDOS

Condominio Garden Hills Towers

PFE-LC-00-32-0501-1016

ID Unidad	1			
Descripción del Equipo:	Incinerador Multicamara			
Tipo de Desperdicio:	I - II	**Razón de Oxidación:**	42.5 lb/hr	
Combustible Auxiliar	Propano	**Consumo combustible(GPH)**	3.18	
Horario de Operación:	8 hr/día - 7 día/semana - 12 meses/año			
Razón de consumo annual	61.88	Unidad/año	**% Azufre**	N.D.
Tipo Unidades	Toneladas			
SCC #:	N.D			

Factor de emisión (EF) lb/units

	PM10	SOx	NOx	CO	TOC	Pb
	4.70E+00	2.5	3.00E+00	1.00E+01	3	0
Eficiencia control	90.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Descripción de equipo control: Lavador de Gases

Procedencia factores emisión *Fire Information Retrieval (FIRE) Data System versión 6.23*

Emisiones Anuales

PM10

	Rate		EF		ton/2000lbs		(1-efficiency)		Tons/yr
=	61.88	x	4.7	x	0.0005	x	0.1	=	0.014542

SOx

	Rate		EF		ton/2000lbs		(1-efficiency)		Tons/yr
=	61.88	x	2.5	x	0.0005	x	1	=	0.07735

NOx

	Rate		EF		ton/2000lbs		(1-efficiency)		Tons/yr
=	61.88	x	3	x	0.0005	x	1	=	0.09282

CO

	Rate		EF		ton/2000lbs		(1-efficiency)		Tons/yr
=	61.88	x	10	x	0.0005	x	1	=	0.3094

TOC

	Rate		EF		ton/2000lbs		(1-efficiency)		Tons/yr
=	61.88	x	3	x	0.0005	x	1	=	0.09282

Pb

	Rate		EF		ton/2000lbs		(1-efficiency)		Tons/yr
=	61.88	x	0	x	0.0005	x	1	=	0

Nota: Se presume que opera las 52 semanas de año.

CALCULOS DE EMISIONES PARA INCINERADORES DE DESPERDICIOS SOLIDOS

Condominio Ponce de León Gardens

PFE-LC-32-0894-1057

ID Unidad	1		
Descripción del Equipo:	Incinerador		
Tipo de Desperdicio:	I - II	**Razón de Oxidación:**	166.6 lb/hr
Combustible Auxiliar	Propano	**Consumo combustible(GPH)**	8.29
Horario de Operación:	3 hr/día - 6 día/semana - 52 semanas/año		
Razón de consumo annual	77.9688 Unidad/año	**% Azufre**	N.D.
Tipo Unidades	Toneladas		
SCC #:	5-02-001-01		

Factor de emisión (EF) lb/units

	PM10	SOx	NOx	CO	TOC	Pb
	4.70E+00	2.5	3.00E+00	1.00E+01	3.00E+00	0
Eficiencia control	85.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Descripción de equipo control: Lavador de Gases

Procedencia factores emisión *Fire Information Retrieval (FIRE) Data System versión 6.23*

Emisiones Anuales

	Rate		EF		ton/2000lbs		(1-efficiency)		Tons/yr
					PM10				
=	77.9688	x	4.7	x	0.0005	x	0.15	=	0.027484
					SOx				
=	77.9688	x	2.5	x	0.0005	x	1	=	0.097461
					NOx				
=	77.9688	x	3	x	0.0005	x	1	=	0.116953
					CO				
=	77.9688	x	10	x	0.0005	x	1	=	0.389844
					TOC				
=	77.9688	x	3	x	0.0005	x	1	=	0.116953
					Pb				
=	77.9688	x	0	x	0.0005	x	1	=	0

Nota:

CALCULOS DE EMISIONES PARA INCINERADORES DE DESPERDICIOS SOLIDOS

Condominio Villa Caparra Executive

PFE-LC-32-1096-1058

ID Unidad	i			
Descripción del Equipo:	Incinerador Multicámara			
Tipo de Desperdicio:	Doméstico	**Razón de Oxidación:**	400 lbs/hr	
Combustible Auxiliar	Propano	**Consumo combustible(GPH)**	70	
Horario de Operación:	3 hr/día - 7 día/semana - 52 semanas/año			
Razón de consumo annual	218.4	Unidad/año	**% Azufre**	N.D.
Tipo Unidades	Toneladas			
SCC #:	5-02-001-01			

Factor de emisión (EF) lb/units

	PM10	SOx	NOx	CO	TOC	Pb
	4.70E+00	2.5	3.00E+00	1.00E+01	3.00E+00	0
Eficiencia control	95.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Descripción de equipo control: Lavador de Gases

Procedencia factores emisión *Fire Information Retrieval (FIRE) Data System versión 6.23*

Emisiones Anuales

					PM10				
	Rate		**EF**		**ton/2000lbs**		**(1-efficiency)**		**Tons/yr**
=	218.4	x	4.7	x	0.0005	x	0.05	=	0.025662
					SOx				
	Rate		**EF**		**ton/2000lbs**		**(1-efficiency)**		**Tons/yr**
=	218.4	x	2.5	x	0.0005	x	1	=	0.273
					NOx				
	Rate		**EF**		**ton/2000lbs**		**(1-efficiency)**		**Tons/yr**
=	218.4	x	3	x	0.0005	x	1	=	0.3276
					CO				
	Rate		**EF**		**ton/2000lbs**		**(1-efficiency)**		**Tons/yr**
=	218.4	x	10	x	0.0005	x	1	=	1.092
					TOC				
	Rate		**EF**		**ton/2000lbs**		**(1-efficiency)**		**Tons/yr**
=	218.4	x	3	x	0.0005	x	1	=	0.3276
					Pb				
	Rate		**EF**		**ton/2000lbs**		**(1-efficiency)**		**Tons/yr**
=	218.4	x	0	x	0.0005	x	1	=	0

Nota: Se presume que opera los 365 días del año.

CALCULOS DE EMISIONES PARA INCINERADORES DE DESPERDICIOS SOLIDOS

San Martin Twin Towers II

PFE-LC-32-1291-1627

ID Unidad	IDS-i		
Descripción del Equipo:	Incinerador		
Tipo de Desperdicio:	Doméstico	**Razón de Oxidación:**	N.D.
Combustible Auxiliar	N.D.	**Consumo combustible(GPH)**	N.D.
Horario de Operación:	N.D.		

Razón de consumo annual	0	Unidad/año	**% Azufre**	0.00%
Tipo Unidades	Toneladas			
SCC #:	N.D.			

Factor de emisión (EF) lb/units

	PM10	SOx	NOx	CO	TOC	Pb
	4.7	2.5	3	10	3	0
Eficiencia control	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Descripción de equipo control: N.D.

Procedencia factores emisión *Fire Information Retrieval (FIRE) Data System versión 6.23*

Emisiones Anuales

					PM10				
	Rate		**EF**		**ton/2000lbs**		**(1-efficiency)**		**Tons/yr**
=	0	x	4.7	x	0.0005	x	1	=	0
					SOx				
	Rate		**EF**		**ton/2000lbs**		**(1-efficiency)**		**Tons/yr**
=	0	x	2.5	x	0.0005	x	1	=	0
					NOx				
	Rate		**EF**		**ton/2000lbs**		**(1-efficiency)**		**Tons/yr**
=	0	x	3	x	0.0005	x	1	=	0
					CO				
	Rate		**EF**		**ton/2000lbs**		**(1-efficiency)**		**Tons/yr**
=	0	x	10	x	0.0005	x	1	=	0
					TOC				
	Rate		**EF**		**ton/2000lbs**		**(1-efficiency)**		**Tons/yr**
=	0	x	3	x	0.0005	x	1	=	0
					Pb				
	Rate		**EF**		**ton/2000lbs**		**(1-efficiency)**		**Tons/yr**
=	0	x	0	x	0.0005	x	1	=	0

Nota:

CALCULOS DE EMISIONES PARA INCINERADORES DE DESPERDICIOS SOLIDOS

Santa Paula Apartments, Torre A, B y C

PFE-LC-32-0993-1417

ID Unidad	1			
Descripción del Equipo:	Incinerador			
Tipo de Desperdicio:	Doméstico	**Razón de Oxidación:**	N.D.	
Combustible Auxiliar	N.D.	**Consumo combustible(GPH)**	N.D.	
Horario de Operación:	N.D.			
Razón de consumo annual	0	Unidad/año	**% Azufre**	0.00%
Tipo Unidades	Toneladas			
SCC #:	N.D.			

Factor de emisión (EF) lb/units

	PM10	SOx	NOx	CO	TOC	Pb
	4.7	2.5	3	10	3	0
Eficiencia control	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Descripción de equipo control: N.D.

Procedencia factores emisión *Fire Information Retrieval (FIRE) Data System versión 6.23*

Emisiones Anuales

	Rate		EF		PM10 ton/2000lbs		(1-efficiency)		Tons/yr
=	0	x	4.7	x	0.0005	x	1	=	0

	Rate		EF		SOx ton/2000lbs		(1-efficiency)		Tons/yr
=	0	x	2.5	x	0.0005	x	1	=	0

	Rate		EF		NOx ton/2000lbs		(1-efficiency)		Tons/yr
=	0	x	3	x	0.0005	x	1	=	0

	Rate		EF		CO ton/2000lbs		(1-efficiency)		Tons/yr
=	0	x	10	x	0.0005	x	1	=	0

	Rate		EF		TOC ton/2000lbs		(1-efficiency)		Tons/yr
=	0	x	3	x	0.0005	x	1	=	0

	Rate		EF		Pb ton/2000lbs		(1-efficiency)		Tons/yr
=	0	x	0	x	0.0005	x	1	=	0

Nota: No hay suficiente información para calcular las emisiones de esta facilidad.

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Area Sources

Residential On-Site Incineration (Page 11 of 59)

① Condominio Altamesta 1-11

Control equipment = Scrubber 99%

annual refuse rate = 0 units/yr

Emission factor = 4.7 lb/units (Fire Data System)

PM-10 emissions

$$0 \text{ units/yr} \times 4.7 \text{ lb/units} \times \frac{1 \text{ ton}}{2000 \text{ lb}} \times 1-.99 = \boxed{0 \text{ tons/yr}}$$

② Condominio Garden Hills Towers (Page 24 of 59)

annual refuse rate = 61.88 units/yr

Emission factor = 4.7 lb/units (Fire Data System)

control equipment = Scrubber 90%

$$61.88 \text{ units/yr} \times 4.7 \text{ lb/units} \times \frac{1 \text{ ton}}{2000 \text{ lb}} \times 1-.90 = \boxed{0.0145 \text{ tons/yr}}$$

③ Condominio Ponce de León Gardens (Page 29 of 59)

annual refuse rate = 77.9688 units/yr

Emission factor = 4.7 lb/units (Fire)

control equipment = Scrubber 85%

$$77.9688 \text{ units/yr} \times 4.7 \text{ lb/units} \times \frac{1 \text{ ton}}{2000 \text{ lb}} \times 1 - .85 = \boxed{0.027484 \text{ ton/yr}}$$

④ Condominio Villa Capana Executive (Page 34 of 59)
Annual refuse rate = 218.4 units/yr
Emission factor = 4.7 lbs/units (fire)
Control Equipment = Scrubber 95%

$218.4 \text{ units/yr} \times 4.7 \text{ lbs/units} \times \frac{1 \text{ ton}}{2000 \text{ lb}} \times 1 - .95 = \boxed{0.025662 \text{ ton/yr}}$

⑤ San Martin Juan Towers II (Page 50 of 59)
Annual refuse rate = 0 units/yr
Emission factor = 4.7 lbs/units (fire)
Control Equipment = none

$0 \frac{\text{units}}{\text{yr}} \times 4.7 \text{ lbs/units} \times \frac{1 \text{ ton}}{2000 \text{ lb}} \times 1-0 = \boxed{0 \text{ tons/yr}}$

⑥ Santa Paula Apartments, Tone A, B y C. (Page 51 of 59)
Annual refuse rate = 0 units/yr
Emission factor = 4.7 lbs/units (fire)
Control Equipment = none

$0 \text{ units/yr} \times 4.7 \text{ lbs/units} \times \frac{1 \text{ ton}}{2000 \text{ lb}} \times 1-0 = \boxed{0 \text{ tons/yr}}$

A-3
STRUCTURAL FIRES

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Area Sources

Structure fires : Guaynabo Area

2002 = 81 fires/yr
2003 = 1 fire/yr
2004 = 61 fires/yr
2005 = 45 fires/yr
2006 = 56 fires/yr

According to Structure fires Volume III : Chapter 18

PM emissions = Emission factor * Activity * fuel loading

$$= \frac{10.8\ lb/ton * 81\ fires/yr * 1.15\ tons/fire}{2000\ \frac{lb}{ton}}$$

2002 = 0.5 ton/yr
2003 = $6.21e^{-3}$ ton/yr
2004 = 0.38 ton/yr
2005 = 0.28 ton/yr
2006 = 0.35 ton/yr

Comments:
The emission factor is from the reference above.
The activity is the number of structure fires/yr. This was from the PR Fire Department data.
The fuel loading is an estimated default number of the burned material presented in above reference.

A-4
SMALL INDUSTRIAL FUEL COMBUSTION

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Area Sources

Industrial Boilers

Fuel Usage:

NO.2 → 2,974,518 gal/yr

Residual Oil → 3,239,176 gal/yr

Kerosene → 161,946 gal/yr

Emission factor → Cap 42, Section 1.3

% S = 0.5

No.2 ⇒ 1.00 lb/1000 gal

Residual Oil ⇒ 7.17(0.5) + 0.37 = 3.955 lb/1000 gal

Kerosene ⇒ 7.17(1.2) = 8.604 lb/1000 gal

Calculation

No. 2

$$2{,}974{,}518 \text{ gal/yr} \times \left(1 \text{ lb}/1000 \text{ gal}\right) \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 1.48 \text{ ton/yr}$$

Residual Oil

$$3{,}239{,}176 \text{ gal/yr} \times 3.955 \text{ lb}/1000 \text{ gal} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 6.40 \text{ ton/yr}$$

Kerosene

$$161{,}946 \text{ gal/yr} \times 8.604 \text{ lb}/1000 \text{ gal} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 0.69 \text{ ton/yr}$$

A-5
SMALL COMMERCIAL/INSTITUTIONAL FUEL COMBUSTION

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Area Sources

Small Commercial / Institutional Boilers

Fuel Usage: (from Cy Topics Area Source Inventory)

No.2 → 385,565 gal/yr
LPG → 1,501,751 gal/yr
Kerosene → 256,205 gal/yr

Emission factor → AP-42 Sections 1.3 & 1.5.

No 2 → 1.08 lb/1000 gal
LPG → 0.4 lb/1000 gal
Kerosene → 5.17(1.2) = 6.204 lb/1000 gal

No 2 =
$385{,}565 \text{ gal/yr} \times 1.08 \text{ lb}/1000 \text{ gal} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 0.208 \text{ ton/yr}$

LPG =
$1{,}501{,}751 \text{ gal/yr} \times 0.4 \text{ lb}/1000 \text{ gal} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 0.3 \text{ ton/yr}$

Kerosene =
$256{,}205 \text{ gal/yr} \times 6.204 \text{ lb}/1000 \text{ gal} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 0.79 \text{ ton/yr}$

A-6
POINT SOURCES

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: PREPA SAN JUAN

SCC: 1-01-004-04

Unit: Boiler 7

Model Id:

Emission Factor Reference: PSD

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	6445894.8 MMBtu/yr	X	0.0753 lb/MMBtu	X	1 ton/2000 lb	X	(1 – 0.0)	= 242.68 ton/yr
2003=	5030883.45 MMBtu/yr	X	0.0753 lb/MMBtu	X	1 ton/2000 lb	X	(1 – 0.0)	= 189.4 ton/yr
2004=	5685425.85 MMBtu/yr	X	0.0753 lb/MMBtu	X	1 ton/2000 lb	X	(1 – 0.0)	= 214 ton/yr
2005=	5608029.45 MMBtu/yr	X	0.0753 lb/MMBtu	X	1 ton/2000 lb	X	(1 – 0.0)	= 211.14 ton/yr
2006=	5625838.65 MMBtu/yr	X	0.0753 lb/MMBtu	X	1 ton/2000 lb	X	(1 – 0.0)	= 211.81 ton/yr

Comments: Based on annual fuel NO 6 usage for these years.

$$2002 = \frac{42972632 \text{ gal/yr} \times 150{,}000 \text{ Btu/gal}}{1e6 \text{ Btu/MMBtu}} = 6445894.8 \text{ MMBtu/yr}$$

$$2003 = \frac{33539223 \text{ gal/yr} \times 150{,}000 \text{ Btu/gal}}{1e6} = 5030883.45 \text{ MMBtu/yr}$$

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: PREPA SAN JUAN

SCC: 1-01-004-04

Unit: Boiler 7

Model Id:

Emission Factor Reference: PSD

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=		X		X		X	(1 – 0.)	=
2003=		X		X		X	(1 – 0.)	=
2004=		X		X		X	(1 – 0.)	=
2005=		X		X		X	(1 – 0.)	=
2006=		X		X		X	(1 – 0.)	=

Comments: Continued

2004 = 3790 2839 gal/yr X 150,000 Btu/gal / 1e6 Btu/MMBtu = 5685425.85 MMBtu/yr

2005 = 3738 6863 gal/yr X 150,000 Btu/gal / 1e6 Btu/MMBtu = 5608029.45 MMBtu/yr

2006 = 3750 5591 gal/yr X 150,000 Btu/gal / 1e6 Btu/MMBtu = 5625838.65 MMBtu/yr

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: PREPA SAN JUAN

SCC: 1-01-004-04

Unit: Boiler 8

Model Id:

Emission Factor Reference: PSD

Pollutant: PM10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	4933230.45 MMBtu/yr	X	0.0753 lb/MMBtu	X	1 ton / 2000 lb	X	(1 – 0.0)	= 185.04 ton/yr
2003=	6370162.65 MMBtu/yr	X	0.0753 lb/MMBtu	X	1 ton / 2000 lb	X	(1 – 0.0)	= 239.83 ton/yr
2004=	3562292.25 MMBtu/yr	X	0.0753 lb/MMBtu	X	1 ton / 2000 lb	X	(1 – 0.0)	= 134.1 ton/yr
2005=	6126066.45 MMBtu/yr	X	0.0753 lb/MMBtu	X	1 ton / 2000 lb	X	(1 – 0.0)	= 230.6 ton/yr
2006=	6335818.5 MMBtu/yr	X	0.0753 lb/MMBtu	X	1 ton / 2000 lb	X	(1 – 0.)	= 238.54 ton/yr

Comments: Based on annual fuel oil 6 usage for these years.

2002 ⇒ 32888203 gal/yr × 150,000 Btu/gal / 1e6 Btu/MMBtu = 4933230.45 MMBtu/yr
2003 ⇒ 42467751 gal/yr × 150,000 Btu/gal / 1e6 Btu/MMBtu = 6370162.65 MMBtu/yr
2004 ⇒ 23748615 gal/yr × 150,000 Btu/gal / 1e6 Btu/MMBtu = 3562292.25 MMBtu/yr
2005 ⇒ 40840443 gal/yr × 150,000 Btu/gal / 1e6 Btu/MMBtu = 6126066.45 MMBtu/yr
2006 ⇒ 42238790 gal/yr × 150,000 Btu/gal / 1e6 Btu/MMBtu = 6335818.5 MMBtu/yr

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: PREPA SAN JUAN

SCC:

Unit: Boiler 9

Model Id:

Emission Factor Reference: PSD

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	6130284.45 MMBtu/gal	X	0.0753 lb/MMBtu	X	1 ton / 2000 lb	X	(1 – 0.0)	= 230.8 ton/yr
2003=	2279562.9 MMBtu/gal	X	0.0753 lb/MMBtu	X	1 ton / 2000 lb	X	(1 – 0.0)	= 85.8 ton/yr
2004=	5575653.3 MMBtu/gal	X	0.0753 lb/MMBtu	X	1 ton / 2000 lb	X	(1 – 0.0)	= 209.9 ton/yr
2005=	6403708.8 MMBtu/gal	X	0.0753 lb/MMBtu	X	1 ton / 2000 lb	X	(1 – 0.0)	= 241 ton/yr
2006=	5743634.7 MMBtu/gal	X	0.0753 lb/MMBtu	X	1 ton / 2000 lb	X	(1 – 0.0)	= 216.24 ton/yr

Comments: Based on the annual fuel No. 6 usage for these years

2002 ⇒ 40863563 gal/yr * 150,000 Btu/gal / 1e6 Btu/MMBtu = 6130284.45 MMBtu/gal
2003 ⇒ 15197086 gal/yr * 150000 Btu/gal / 1e6 Btu/MMBtu = 2279562.9 MMBtu/gal
2004 ⇒ 37171022 gal/yr * 150000 Btu/gal / 1e6 Btu/MMBtu = 5575653.3 MMBtu/gal
2005 ⇒ 42691392 gal/yr * 150000 Btu/gal / 1e6 Btu/MMBtu = 6403708.8 MMBtu/gal
2006 ⇒ 38290898 gal/yr * 150000 Btu/gal / 1e6 Btu/MMBtu = 5743634.7 MMBtu/gal

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: PREPA SAN JUAN

SCC: 1-01-004-04

Unit: Boiler 10

Model Id:

Emission Factor Reference: PSD

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	6847297.8 MMBtu/yr	X	0.0753 lb/MMBtu	X	1 ton / 2000 lb	X	(1 − 0.0)	= 258.8 ton/yr
2003=	3164396.55 MMBtu/yr	X	0.0753 lb/MMBtu	X	1 ton / 2000 lb	X	(1 − 0.0)	= 119.1 ton/yr
2004=	5934735.3 MMBtu/yr	X	0.0753 lb/MMBtu	X	1 ton / 2000 lb	X	(1 − 0.0)	= 223.4 ton/yr
2005=	6004426.05 MMBtu/yr	X	0.0753 lb/MMBtu	X	1 ton / 2000 lb	X	(1 − 0.0)	= 226 ton/yr
2006=	6100209.45 MMBtu/yr	X	0.0753 lb/MMBtu	X	1 ton / 2000 lb	X	(1 − 0.0)	= 229.6 ton/yr

Comments: Based on annual fuel No 6 usage for these years.
2002 ⇒ 45648652 gal/yr × 150,000 Btu/gal / 1e6 Btu/MMBtu = 6847297.8 MMBtu/yr
2003 ⇒ 21098999 gal/yr × 150,000 Btu/gal / 1e6 Btu/MMBtu = 3164396.55 MMBtu/yr
2004 ⇒ 39564902 gal/yr × 150 000 Btu/gal / 1e6 Btu/MMBtu = 5934735.3 MMBtu/yr
2005 ⇒ 40029507 gal/yr × 150 000 Btu/gal / 1e6 Btu/MMBtu = 6004426.05 MMBtu/yr
2006 ⇒ 40668063 gal/yr × 150 000 Btu/gal / 1e6 Btu/MMBtu = 6100209.45 MMBtu/yr

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: PREPA PALO SECO

SCC: 1-01-004-04

Unit: Boiler 1

Model Id:

Emission Factor Reference: Section 1.3 of AP-42, 5th Edition

Pollutant: PM10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	34599750 gal/yr	X	11.10 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 − 0.0)	= 192 $\frac{\text{ton}}{\text{yr}}$
2003=	39566542 gal/yr	X	5.7513 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 − 0.0)	= 113.9 $\frac{\text{ton}}{\text{yr}}$
2004=	14188776 gal/yr	X	5.222 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 − 0.0)	= 37 $\frac{\text{ton}}{\text{yr}}$
2005=	40891630 gal/yr	X	5.354 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 − 0.0)	= 109.4 $\frac{\text{ton}}{\text{yr}}$
2006=	40028909 gal/yr	X	5.156 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 − 0.0)	= 103.2 $\frac{\text{ton}}{\text{yr}}$

Comments: Based on annual fuel No. 6 usage for these years

2002 ⇒ 34599750 gal/yr, obs = 1.33, Ef = 5.9((1.12 × 1.35) + 0.39) = 11.10 lb/1000 gal
2003 ⇒ 39566542 gal/yr, obs = 0.54, Ef = 5.9((1.12 × .54) + 0.39) = 5.7513 lb/1000 gal
2004 ⇒ 14188776 gal/yr, obs = 0.46, Ef = 5.9((1.12 × .46) + 0.39) = 5.222 lb/1000 gal
2005 ⇒ 40891630 gal/yr, obs = 0.48, Ef = 5.9((1.12 × .48) + 0.39) = 5.354 lb/1000 gal
2006 ⇒ 40028909 gal/yr, obs = 0.45, Ef = 5.9((1.12 × .45) + 0.39) = 5.156 lb/1000 gal

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: PREPA PALO SECO

SCC: 1-01-004-04

Unit: Boiler 2

Model Id:

Emission Factor Reference: Section 1.3 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	24842916 gal/yr	X	11.1038 lb/1000 gal	X	1 ton / 2000 lb	X	(1 − 0.0)	= 130.9 ton/yr
2003=	38182835 gal/yr	X	5.7051 lb/1000 gal	X	1 ton / 2000 lb	X	(1 − 0.0)	= 109.8 ton/yr
2004=	37871988 gal/yr	X	5.354 lb/1000 gal	X	1 ton / 2000 lb	X	(1 − 0.0)	= 101.4 ton/yr
2005=	38195310 gal/yr	X	5.354 lb/1000 gal	X	1 ton / 2000 lb	X	(1 − 0.0)	= 102.2 ton/yr
2006=	36980845 gal/yr	X	5.156 lb/1000 gal	X	1 ton / 2000 lb	X	(1 − 0.0)	= 95.34 ton/yr

Comments: Based on annual fuel NO.6 usage for these years
2002 ⇒ 24842916 gal/yr, %S 1.35, EF = 5.9 ((1.12 × 1.35) + 0.37) = 11.1038 lb/1000 gal
2003 ⇒ 38182835 gal/yr, %S 0.54, EF = 5.9 ((1.12 × .54) + 0.37) = 5.7051 lb/1000 gal
2004 ⇒ 37871988 gal/yr, %S 0.48, EF = 5.9 ((1.12 × .48) + 0.37) = 5.354 lb/1000 gal
2005 ⇒ 38195310 gal/yr, %S 0.48, EF = 5.9 ((1.12 × .48) + 0.37) = 5.354 lb/1000 gal
2006 ⇒ 36980845 gal/yr, %S 0.45, EF = 5.9 ((1.12 × .45) + 0.37) = 5.156 lb/1000 gal

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: PREPA PALO SECO

SCC: 1-01-004-04

Unit: Boiler 3

Model Id:

Emission Factor Reference: Section 1.3 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	91718149 gal/yr	X	11.103 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	$(1-0.0)$	$= 509.2 \frac{\text{ton}}{\text{yr}}$
2003=	96201606 gal/yr	X	5.75 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	$(1-0.0)$	$= 276.6 \frac{\text{ton}}{\text{yr}}$
2004=	76254822 gal/yr	X	5.354 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	$(1-0.0)$	$= 204.16 \frac{\text{ton}}{\text{yr}}$
2005=	73904636 gal/yr	X	5.354 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	$(1-0.0)$	$= 197.8 \frac{\text{ton}}{\text{yr}}$
2006=	89498478 gal/yr	X	5.156 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	$(1-0.0)$	$= 230.7 \frac{\text{ton}}{\text{yr}}$

Comments: Based on annual fuel usage for these years

2002 ⇒ 91718149 gal/yr, %S = 1.35, EF = 5.9((1.12 × 1.35) + 0.39) = 11.103 lb/1000 gal
2003 ⇒ 96201606 gal/yr, %S = 0.54, EF = 5.9((1.12 × 0.54) + 0.39) = 5.75 lb/1000 gal
04 ⇒ 76254822 gal/yr, %S = 0.48, EF = 5.9((1.12 × .48) + 0.39) = 5.354 lb/1000 gal
05 ⇒ 73904636 gal/yr, %S = 0.48, EF = 5.9((1.12 × .48) + 0.39) = 5.354 lb/1000 gal
06 ⇒ 89498478 gal/yr, %S = 0.45, EF = 5.9((1.12 × .45) + 0.39) = 5.156 lb/1000 gal

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: PREPA PALO SECO

SCC: 1-01-004-04

Unit: Boiler 4

Model Id:

Emission Factor Reference: Section 1.3 of AP-42, 5th Edition.

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	87799319 gal/yr	X	11.163 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 – 0.0)	= 489.4 $\frac{\text{ton}}{\text{yr}}$
2003=	83224350 gal/yr	X	5.817 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 – 0.0)	= 242 $\frac{\text{ton}}{\text{yr}}$
2004=	85501248 gal/yr	X	5.354 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 – 0.0)	= 228.9 $\frac{\text{ton}}{\text{yr}}$
2005=	75751289 gal/yr	X	5.354 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 – 0.0)	= 202.8 $\frac{\text{ton}}{\text{yr}}$
2006=	81173937 gal/yr	X	5.156 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 – 0.0)	= 209.2 $\frac{\text{ton}}{\text{yr}}$

Comments: Based on annual fuel NO 6 usage for these years

2002 ⇒ 87799319 gal/yr, %S = 1.35, EF = 5.9((1.12 x 1.35) + 0.37) = 11.163 lb/1000 gal
2003 ⇒ 83224350 gal/yr, %S = 0.55, EF = 5.9((1.12 x .55) + 0.37) = 5.817 lb/1000 gal
2004 ⇒ 85501248 gal/yr, %S = 0.48, EF = 5.9((1.12 x .48) + 0.37) = 5.354 lb/1000 gal
2005 ⇒ 75751289 gal/yr, %S = 0.48, EF = 5.9((1.12 x .48) + 0.37) = 5.354 lb/1000 gal
2006 ⇒ 81173937 gal/yr, %S = 0.45, EF = 5.9((1.12 x .45) + 0.37) = 5.156 lb/1000 gal

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: PREPA DAWO SECO

SCC: 2-01-001-01

Unit: Power Block 1

Model Id:

Emission Factor Reference: Section 3.1 of ap.42, 5th Edition.

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	215174.945 MMBtu/yr	X	1.20 e-2 lb/MMBtu	X	1 ton / 2000 lb	X	(1 − 0.0)	= 1.29 ton/yr
2003=	952945.965 MMBtu/yr	X	1.2 e-2 lb/MMBtu	X	1 ton / 2000 lb	X	(1 − 0.0)	= 5.71 ton/yr
2004=	418016.43 MMBtu/yr	X	1.2 e-2 lb/MMBtu	X	1 ton / 2000 lb	X	(1 − 0.0)	= 2.50 ton/yr
2005=	1349978.465 MMBtu/yr	X	1.2 e-2 lb/MMBtu	X	1 ton / 2000 lb	X	(1 − 0.0)	= 8.09 ton/yr
2006=	304414.875 MMBtu/yr	X	1.2 e-2 lb/MMBtu	X	1 ton / 2000 lb	X	(1 − 0.0)	= 1.82 ton/yr

Comments: Based on annual fuel No 2 usage for these years
2002 ⇒ 1593887 gal/yr x 135,000 Btu/gal / 1e6 Btu/MMBtu = 215174.945 MMBtu/yr
2003 ⇒ 7058859 gal/yr x 135,000 Btu/gal / 1e6 Btu/MMBtu = 952945.965 MMBtu/yr
2004 ⇒ 3096418 gal/yr x 135000 Btu/gal / 1e6 Btu/MMBtu = 418016.43 MMBtu/yr
2005 ⇒ 9998359 gal/yr x 135000 Btu/gal / 1e6 Btu/MMBtu = 1349978.465 MMBtu/yr
2006 ⇒ 2259925 gal/yr x 135000 Btu/gal / 1e6 Btu/MMBtu = 304414.875 MMBtu/yr

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: PREPA-PALO SECO

SCC: 2-01-001-01

Unit: Power Block 2

Model Id:

Emission Factor Reference: Section 3.1 Of AP-42 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	651257.01 MMBtu/yr	X	1.2e-2 lb/MMBtu	X	1 ton / 2000 lb	X	(1 − 0.0)	= 3.9 ton/yr
2003=	1044418.59 MMBtu/yr	X	1.2e-2 lb/MMBtu	X	1 ton / 2000 lb	X	(1 − 0.0)	= 6.26 ton/yr
2004=	444294.18 MMBtu/yr	X	1.2e-2 lb/MMBtu	X	1 ton / 2000 lb	X	(1 − 0.0)	= 2.66 ton/yr
2005=	71958294 MMBtu/yr	X	1.2e-2 lb/MMBtu	X	1 ton / 2000 lb	X	(1 − 0.0)	= 4.31 ton/yr
2006=	281773.62 MMBtu/yr	X	1.2e-2 lb/MMBtu	X	1 ton / 2000 lb	X	(1 − 0.0)	= 1.69 ton/yr

Comments: Based on annual fuel No. 2 usage for these years,
2002 ⇒ 4824126 gal/yr × 135000 Btu/gal / 1e6 Btu/MMBtu = 651257.01 MMBtu/yr
2003 ⇒ 7736434 gal/yr × 135000 Btu/gal / 1e6 Btu/MMBtu = 1044418.59 MMBtu/yr
2004 ⇒ 3291068 gal/yr × 135000 Btu/gal / 1e6 Btu/MMBtu = 444294.18 MMBtu/yr
2005 ⇒ 530244 gal/yr × 135000 Btu/gal / 1e6 Btu/MMBtu = 71958.94 MMBtu/yr
2006 ⇒ 2089212 gal/yr × 135000 Btu/gal / 1e6 Btu/MMBtu = 281773.62 MMBtu/yr

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: PREPA YAKO SECO

SCC: 2-01-001-01

Unit: Power Block 3

Model Id:

Emission Factor Reference: Section 1.3 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	139010.31 MMBtu/yr	X	1.2×10^{-2} lb/MMBtu	X	1 ton/2000 lb	X	(1 − 0.0)	= 0.83 ton/yr
2003=	31521.42 MMBtu/yr	X	$1.2e^{-2}$ lb/MMBtu	X	1 ton/2000 lb	X	(1 − 0.0)	= 0.189 ton/yr
2004=	445950.9 MMBtu/yr	X	$1.2e^{-2}$ lb/MMBtu	X	1 ton/2000 lb	X	(1 − 0.0)	= 2.67 ton/yr
2005=	1426666.635 MMBtu/yr	X	$1.2e^{-2}$ lb/MMBtu	X	1 ton/2000 lb	X	(1 − 0.0)	= 8.55 ton/yr
2006=	333432.99 MMBtu/yr	X	$1.2e^{-2}$ lb/MMBtu	X	1 ton/2000 lb	X	(1 − 0.0)	= 2 ton/yr

Comments: Based on annual fuel No. 2 usage for these years.
2002 ⇒ 1029706 gal/yr × 135000 Btu/gal / 1e6 Btu/MMBtu = 139010.31 MMBtu/yr
2003 ⇒ 233492 gal/yr × 135000 Btu/gal / 1e6 Btu/MMBtu = 31521.42 MMBtu/yr
2004 ⇒ 3303340 gal/yr × 135000 Btu/gal / 1e6 Btu/MMBtu = 445950.9 MMBtu/yr
2005 ⇒ 10567901 gal/yr × 135000 Btu/gal / 1e6 Btu/MMBtu = 1426666.635 MMBtu/yr
2006 ⇒ 2469894 gal/yr × 135000 Btu/gal / 1e6 Btu/MMBtu = 333432.99 MMBtu/yr

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Bacardi

SCC: 1-02-004-01

Unit: Boiler 1

Model Id:

Emission Factor Reference: Section 1.3 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency		
2002=	1715296 gal/yr	X	8.526 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 – 0.0)	=	7.31 ton/yr
2003=	164653 gal/yr	X	10.575 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 – 0.0)	=	0.87 ton/yr
2004=	884818 gal/yr	X	9.319 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 – 0.0)	=	4.12 ton/yr
2005=	701513 gal/yr	X	6.34 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 – 0.0)	=	2.22 ton/yr
2006=	/	X	/	X	/	X	/ (1 – 0.)	=	/

Comments: Based on annual fuel #0.6 usage for these years.
2002 ⇒ 1715296 gal/yr, %S = 0.96 EF = 5.9((1.12 x .96) + 0.37) = 8.526 lb/1000 gal
2003 ⇒ 164653 gal/yr, %S = 1.29, EF = 5.9((1.12 x 1.29) + 0.37) = 10.575 lb/1000 gal
2004 ⇒ 884818 gal/yr, %S = 1.08, EF = 5.9((1.12 x 1.08) + 0.37) = 9.319 lb/1000 gal
2005 ⇒ 701513 gal/yr, %S = 0.63, EF = 5.9((1.12 x .63) + 0.37) = 6.34 lb/1000 gal

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Bacardí

SCC: 1-02-004-01

Unit: Boiler 2

Model Id:

Emission Factor Reference: Section 1.3 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	2186076 gal/yr	X	7.07 lb/1000 gal	X	1 ton / 2000 lb	X	(1 − 0.0)	= 7.73 ton/yr
2003=	2207260 gal/yr	X	9.583 lb/1000 gal	X	1 ton / 2000 lb	X	(1 − 0.0)	= 10.57 ton/yr
2004=	1590819 gal/yr	X	9.716 lb/1000 gal	X	1 ton / 2000 lb	X	(1 − 0.0)	= 7.72 ton/yr
2005=	1880306 gal/yr	X	5.61 lb/1000 gal	X	1 ton / 2000 lb	X	(1 − 0.0)	= 5.28 ton/yr
2006=	2481099 gal/yr	X	5.09 lb/1000 gal	X	1 ton / 2000 lb	X	(1 − 0.)	= 6.31 ton/yr

Comments: Based on annual fuel NO 6 use for these years.
2002 ⇒ 2186076 gal/yr, O/S = 0.74, Ef = 5.9((1.12 x .74) + 0.39) = 7.07 lb/1000 gal
2003 ⇒ 2207260 gal/yr, O/S = 1.12, Ef = 5.9((1.12 x 1.12) + 0.39) = 9.583 lb/1000 gal
2004 ⇒ 1590819 gal/yr, O/S = 1.14, Ef = 5.9((1.12 x 1.14) + 0.39) = 9.71 lb/1000 gal
2005 ⇒ 1880306 gal/yr, O/S = 0.52, Ef = 5.9((1.12 x 0.52) + 0.39) = 5.61 lb/1000 gal
2006 ⇒ 2481099 gal/yr, O/S = 0.44, Ef = 5.9((1.12 x 0.44) + 0.39) = 5.09 lb/1000 gal

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Tradewind Foods, Inc (Formerly Goya de Puerto Rico)

SCC: 1-02-004-01

Unit: Boiler GPR-ES-01

Model Id:

Emission Factor Reference: Section 1.3 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	488044 gal/yr	X	8.604 lb/1000 gal	X	1 ton / 2000 lb	X	(1 − 0.0)	= 2.0 ton/yr
2003=	565899 gal/yr	X	8.604 lb/1000 gal	X	1 ton / 2000 lb	X	(1 − 0.0)	= 2.43 ton/yr
2004=	597138 gal/yr	X	8.604 lb/1000 gal	X	1 ton / 2000 lb	X	(1 − 0.0)	= 2.56 ton/yr
2005=	560713 gal/yr	X	8.604 lb/1000 gal	X	1 ton / 2000 lb	X	(1 − 0.0)	= 2.41 ton/yr
2006=	545398 gal/yr	X	8.604 lb/1000 gal	X	1 ton / 2000 lb	X	(1 − 0.0)	= 2.34 ton/yr

Comments: Based on annual fuel No 5 usage for these years

2002 ⇒ 488044 gal/yr, %S = 0.98, Ef = (7.17 x 1.2) = 8.604 lb/1000 gal
2003 ⇒ 565899 gal/yr, %S = 0.98, Ef = (7.17 x 1.2) = 8.604 lb/1000 gal
2004 ⇒ 597138 gal/yr, %S = 1.05, Ef = (7.17 x 1.2) = 8.604 lb/1000 gal
2005 ⇒ 560713 gal/yr, %S = 1.3, Ef = (7.17 x 1.2) = 8.604 lb/1000 gal
2006 ⇒ 545398 gal/yr, %S = 1.2, Ef = (7.17 x 1.2) = 8.604 lb/1000 gal

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Edelcan

SCC: 1-03-004-04

Unit: Eclipse Boiler

Model Id:

Emission Factor Reference: Section 1.3 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	9,100 gal/yr	X	1.08 lb/1000 gal	X	1 ton/2000 lb	X	(1 − 0.0)	= 4.9e-3 ton/yr
2003=	9,100 gal/yr	X		X		X	(1 − 0.0)	= 4.9e-3 ton/yr
2004=	9,100 gal/yr	X		X		X	(1 − 0.0)	= 4.9e-3 ton/yr
2005=	9,100 gal/yr	X		X		X	(1 − 0.0)	= 4.9e-3 ton/yr
2006=	9,100 gal/yr	X		X		X	(1 − 0.0)	= 4.9e-3 ton/yr

Comments: Based on permit limit for fuel no 2 for all years of the inventory
9,100 gal/yr
Ef = 1.08 lb/1000 gal

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Edelca

SCC:

Unit: Halman Steam Boiler

Model Id:

Emission Factor Reference: Section 1.3 of AP 42, 5th Edition.

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	25480 gal/yr	X	1.08 lb / 1000 gal	X	1 ton / 2000 lb	X	(1 − 0.0)	= 0.013 ton/yr
2003=	25480 gal/yr	X		X		X	(1 − 0.0)	= 0.013 ton/yr
2004=	25480 gal/yr	X		X		X	(1 − 0.0)	= 0.013 ton/yr
2005=	25480 gal/yr	X		X		X	(1 − 0.0)	= 0.013 ton/yr
2006=	25480 gal/yr	X		X		X	(1 − 0.0)	= 0.013 ton/yr

Comments: Based on permit limit for fuel NO. 2 for all years in the inventory
EF = 1.08 lb/1000 gal
25,480 gal/yr

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Edelcas

SCC:

Unit: Cleaver Brooks Boiler

Model Id:

Emission Factor Reference: Section 1.3 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	25480 gal/yr	X	1.08 lb / 1000 gal	X	1 ton / 2000 lb	X	(1 – 0.0)	= 0.013 ton/yr
2003=	25480 gal/yr	X		X		X	(1 – 0.0)	= 0.013 ton/yr
2004=	25480 gal/yr	X		X		X	(1 – 0.0)	= 0.013 ton/yr
2005=	25480 gal/yr	X		X		X	(1 – 0.0)	= 0.013 ton/yr
2006=	25480 gal/yr	X		X		X	(1 – 0.0)	= 0.013 ton/yr

Comments: Based on permitted for fuel use for all years in the inventory.
Ef = 1.08 lb/1000 gal
25480 gal/yr

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Brunfut Stone PR, Inc. (Formerly Cantera Nacional)

SCC: 1-02-004-01

Unit: Boiler Cleaver Brooks

Model Id:

Emission Factor Reference: Section 13 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	213456 gal/yr	X	11.64 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 – 0.0)	= 1.24 $\frac{\text{ton}}{\text{yr}}$
2003=	204975 gal/yr	X	12.69 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 – 0.0)	= 1.29 $\frac{\text{ton}}{\text{yr}}$
2004=	215342 gal/yr	X	11.32 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 – 0.0)	= 1.219 $\frac{\text{ton}}{\text{yr}}$
2005=	208872 gal/yr	X	8.19 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 – 0.0)	= 0.85 $\frac{\text{ton}}{\text{yr}}$
2006=	215562 gal/yr	X	6.26 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 – 0.0)	= 0.675 $\frac{\text{ton}}{\text{yr}}$

Comments: Based on annual fuel oil usage for these years.
2002 ⇒ 213456 gal/yr, Ef ⇒ 7.17((1.12 x 1.12)+0.39) = 11.64 lb/1000 gal, %S = 1.12
2003 ⇒ 204975 gal/yr, %S ⇒ 1.25, Ef ⇒ 7.17((1.12 x 1.25)+0.39) = 12.69 lb/1000 gal
2004 ⇒ 215342 gal/yr, %S ⇒ 1.08, Ef ⇒ 7.17((1.12 x 1.08)+0.39) = 11.32 lb/1000 gal
2005 ⇒ 208872 gal/yr, %S ⇒ 0.69, Ef ⇒ 7.17((1.12 x 0.69)+0.39) = 8.19 lb/1000 gal
2006 ⇒ 215562 gal/yr, %S ⇒ 0.45, Ef ⇒ 7.17((1.12 x 0.45)+0.39) = 6.26 lb/1000 gal

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Betteroads Asphalt Plant 3

SCC: 3-05-002-07

Unit: Asphalt Heater

Model Id:

Emission Factor Reference: Section 1.3 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	435633 gal/yr	X	1.08 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	$(1-0.0)$	$= 0.23 \frac{\text{ton}}{\text{yr}}$
2003=	573409 gal/yr	X	1.08 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	$(1-0.0)$	$= 0.30 \frac{\text{ton}}{\text{yr}}$
2004=	618169 gal/yr	X	1.08 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	$(1-0.0)$	$= 0.33 \frac{\text{ton}}{\text{yr}}$
2005=	563692 gal/yr	X	1.08 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	$(1-0.0)$	$= 0.30 \frac{\text{ton}}{\text{yr}}$
2006=	509530 gal	X	1.08 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	$(1-0.0)$	$= 0.27 \frac{\text{ton}}{\text{yr}}$

Comments: Based on annual fuel No. 2 for these years
2002 ⇒ 435633 gal/yr, %S = 0.22, Ef = 1.08 lb/1000 gal
003 ⇒ 573409 gal/yr, %S = 0.29, Ef = 1.08 lb/1000 gal
004 ⇒ 618169 gal/yr, %S = 0.19, Ef = 1.08 lb/1000 gal
05 ⇒ 563692 gal/yr, %S = 0.2, Ef = 1.08 lb/1000 gal
006 ⇒ 509530 gal/yr, %S = 0.2, Ef = 1.08 lb/1000 gal

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Betterwoods Asphalt Plant 3

SCC: 3-05-002-05

Unit: Drum Mixer AF-100

Model Id:

Emission Factor Reference: Section 11.1 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	350,000 ton/yr	X	6.4 lb/ton	X	1 ton / 2000 lb	X	(1 – 0.95)	= 56 ton/yr
2003=	350,000 ton/yr	X		X		X	(1 – 0.95)	= 56 ton/yr
2004=	350,000 ton/yr	X		X		X	(1 – 0.95)	= 56 ton/yr
2005=	350,000 ton/yr	X		X		X	(1 – 0.95)	= 56 ton/yr
2006=	350,000 ton/yr	X		X		X	(1 – 0.95)	= 56 ton/yr

Comments: Based on maximum annual production of the permit 350,000 ton/yr, Ef = 6.4 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Molinos de PR

SCC: 1-02-005-02

Unit: Boiler

Model Id:

Emission Factor Reference: Section 1.3 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	68839 gal/yr	X	1.08 lb/1000 gal	X	1 ton / 2000 lb	X	(1 − 0.0)	= 0.037 ton/yr
2003=	62301 gal/yr	X	1.08 lb/1000 gal	X	1 ton / 2000 lb	X	(1 − 0.0)	= 0.033 ton/yr
2004=	60071 gal/yr	X	1.08 lb/1000 gal	X	1 ton / 2000 lb	X	(1 − 0.0)	= 0.032 ton/yr
2005=	80773 gal/yr	X	1.08 lb/1000 gal	X	1 ton / 2000 lb	X	(1 − 0.0)	= 0.043 ton/yr
2006=		X	1.08 lb/1000 gal	X	1 ton / 2000 lb	X	(1 − 0.0)	= 0.051 ton/yr

Comments: Based on annual fuel No 2 for these years
2002 ⇒ 68839 gal/yr, %S = 0.03, Ef = 1.08 lb/1000 gal
2003 ⇒ 62301 gal/yr, %S = 0.03, Ef = 1.08 lb/1000 gal
2004 ⇒ 60071 gal/yr, %S = 0.03, Ef = 1.08 lb/1000 gal
2005 ⇒ 80773 gal/yr, %S = 0.03, Ef = 1.08 lb/1000 gal
2006 ⇒ 95543 gal/yr, %S = 0.04, Ef = 1.08 lb/1000 gal

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Molinos de P.R.

SCC: 3-02-005-57

Unit: Marine Tower

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

Operating Rate	Emission Factor	Conversion Factor	Control Efficiency	
2002= 1559667.2 ton/yr X	X	X	(1 – 0.995)	= 0.148 ton/yr
2003= 1559667.2 ton/yr X	X	X	(1 – 0.995)	= 0.148 ton/yr
2004= 1559667.2 ton/yr X	X	X	(1 – 0.995)	= 0.148 ton/yr
2005= 1559667.2 ton/yr X	X	X	(1 – 0.995)	= 0.148 ton/yr
2006= 1559667.2 ton/yr X	X	X	(1 – 0.995)	= 0.148 ton/yr

0.038 lb/ton

1 ton / 2000 lb

Comments: Based on permit maximum annual production.
1559667.2 ton/yr , EF= 0.038 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Molinos de Puerto Rico

SCC: 3-02-008-16

Unit: Pellets Cooler

Model Id:

Emission Factor Reference: Section 9 9.1 of AP 42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	43097.6 ton/yr	X	1.8e-1 lb/ton	X	1 ton / 2000 lb	X	(1 – 0.995)	= 0.019 ton/yr
2003=	43097.6 ton/yr	X		X		X	(1 – 0.995)	= 0.019 ton/yr
2004=	43097.6 ton/yr	X		X		X	(1 – 0.995)	= 0.019 ton/yr
2005=	43097.6 ton/yr	X		X		X	(1 – 0.995)	= 0.019 ton/yr
2006=	43097.6 ton/yr	X		X		X	(1 – 0.995)	= 0.019 ton/yr

Comments: Based on permit maximum annual production 43097.6 ton/yr, Ef = 1.8e-1 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Molinos de Puerto Rico

SCC: 3-02-007-33

Unit: Wheat Cleaning

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	203840 ton/yr	X	0.0006 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.995)	= 3.0 x 10^-4 ton/yr
2003=	203840 ton/yr	X		X		X	(1 − 0.995)	= 3.0 x 10^-4 ton/yr
2004=	203840 ton/yr	X		X		X	(1 − 0.995)	= 3.0 x 10^-4 ton/yr
2005=	203840 ton/yr	X		X		X	(1 − 0.995)	= 3.0 x 10^-4 ton/yr
2006=	203840 ton/yr	X		X		X	(1 − 0.995)	= 3.0 x 10^-4 ton/yr

Comments: Based on peanut max run annual production 203840 ton/yr, Ef = 0.0006 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Molinos de Puerto Rico

SCC:

Unit: Pellet mill loading

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th Edition.

Pollutant: PM-10

Calculations:

Operating Rate	Emission Factor	Conversion Factor	Control Efficiency	
2002= 162489.6 ton/yr X	0.034 lb/ton	X 1 ton / 200 lb	X (1 – 0.995)	= 0.013 ton/yr
2003= 162489.6 ton/yr X		X	X (1 – 0.995)	= 0.013 ton/yr
2004= 162489.6 ton/yr X		X	X (1 – 0.995)	= 0.013 ton/yr
2005= 162489.6 ton/yr X		X	X (1 – 0.995)	= 0.013 ton/yr
2006= 162489.6 ton/yr X		X	X (1 – 0.995)	= 0.013 ton/yr

Comments: Based on permit maximum annual production 162489.6 ton/yr, Ef = 0.034 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Molinos de Puerto Rico

SCC: 3-02-005-40

Unit: Wheat flour Bin

Model Id:

Emission Factor Reference:

Pollutant:

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	203840 ton/yr	X	0.034 lb/ton	X	1 ton / 2000 lb	X	(1 – 0.99)	= 0.010 ton/yr
2003=	203840 ton/yr	X		X		X	(1 – 0.99)	= 0.010 ton/yr
2004=	203840 ton/yr	X		X		X	(1 – 0.99)	= 0.010 ton/yr
2005=	203840 ton/yr	X		X		X	(1 – 0.99)	= 0.010 ton/yr
2006=	203840 ton/yr	X		X		X	(1 – 0.99)	= 0.010 ton/yr

Comments: Based on permit maximum annual production.
203840 ton/yr, EF = 0.034 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Molinos de Puerto Rico

SCC: 3-02-007-34

Unit: Wheat Mill Pneumatic

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th Edition.

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	203840 ton/yr	X	35 lb/ton	X	1 ton / 2000 lb	X	(1 – 0.995)	= 10.83 ton/yr
2003=	203840 ton/yr	X		X		X	(1 – 0.995)	= 10.83 ton/yr
2004=	203840 ton/yr	X		X		X	(1 – 0.995)	= 10.83 ton/yr
2005=	203840 ton/yr	X		X		X	(1 – 0.995)	= 10.83 ton/yr
2006=	203840 ton/yr	X		X		X	(1 – 0.995)	= 10.83 ton/yr

Comments: Based on permit maximum annual production.
203840 ton/yr, Ef = 35 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Molinos de Puerto Rico

SCC: 3-02-007-34

Unit: Wheat Flour Mill

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th Edition.

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 203840 ton/yr	X		X		X	(1 − 0.995)	= 10.83 ton/yr
2003= 203840 ton/yr	X		X		X	(1 − 0.995)	= 10.83 ton/yr
2004= 203840 ton/yr	X	35 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.995)	= 10.83 ton/yr
2005= 203840 ton/yr	X		X		X	(1 − 0.995)	= 10.83 ton/yr
2006= 203840 ton/yr	X		X		X	(1 − 0.995)	= 10.83 ton/yr

Comments: Based on permit maximum annual production 203840 ton/yr, EF = 35 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Molinos de Puerto Rico

SCC: 3-02-007-44

Unit: Corn Cleaning

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	33196.8 ton/yr	X	0.019 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.995)	= 1.5e-3 ton/yr
2003=	33196.8 ton/yr	X		X		X	(1 − 0.995)	= 1.5e-3 ton/yr
2004=	33196.8 ton/yr	X		X		X	(1 − 0.995)	= 1.5e-3 ton/yr
2005=	33196.8 ton/yr	X		X		X	(1 − 0.995)	= 1.5e-3 ton/yr
2006=	33196.8 ton/yr	X		X		X	(1 − 0.995)	= 1.5e-3 ton/yr

Comments: Based on permit maximum annual production 33196.8 ton/yr, EF = 0.019 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Molinos de Puerto Rico

SCC: 3-02-007-41

Unit: Corn Mill

Model Id:

Emission Factor Reference: Fire Retrieval Data System 6.25

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	33196.8 ton/yr	X	0.059 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.995)	= 4.8e-3 ton/yr
2003=	33196.8 ton/yr	X		X		X	(1 − 0.995)	= 4.8e-3 ton/yr
2004=	33196.8 ton/yr	X		X		X	(1 − 0.995)	= 4.8e-3 ton/yr
2005=	33196.8 ton/yr	X		X		X	(1 − 0.995)	= 4.8e-3 ton/yr
2006=	33196.8 ton/yr	X		X		X	(1 − 0.995)	= 4.8e-3 ton/yr

Comments: Based on permit maximum annual production.
33196.8 ton/yr, EF = 0.059 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Molinos de Puerto Rico

SCC:

Unit: Grain Handling

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th Edition.

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 1259731.2 ton/yr	X	0.034 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.995)	= 0.10 ton/yr
2003= 1259731.2 ton/yr	X		X		X	(1 − 0.995)	= 0.10 ton/yr
2004= 1259731.2 ton/yr	X		X		X	(1 − 0.995)	= 0.10 ton/yr
2005= 1259731.2 ton/yr	X		X		X	(1 − 0.995)	= 0.10 ton/yr
2006= 1259731.2 ton/yr	X		X		X	(1 − 0.995)	= 0.10 ton/yr

Comments: Based on permit maximum annual production 1259731.2 ton/yr, EF = 0.034 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Molinos de Puerto Rico

SCC: 3-02-005-40

Unit: Corn Grits Bin & Corn Meal Bin

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th edition.

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 192192 ton/yr	X	0.00063 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.995)	= 3 X10⁻³ ton/yr
2003= 192192 ton/yr	X		X		X	(1 − 0.995)	= 3X10⁻³ ton/yr
2004= 192192 ton/yr	X		X		X	(1 − 0.995)	= 3X10⁻³ ton/yr
2005= 192192 ton/yr	X		X		X	(1 − 0.995)	= 3X10⁻³ ton/yr
2006= 192192 ton/yr	X		X		X	(1 − 0.995)	= 3X10⁻³ ton/yr

Comments: Based on peanut maximum annual production 192192 ton/yr, EF = 0.00063 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Molinos de Puerto Rico

SCC: 3-02-005-40

Unit: Corn Grits Bin, Corn Meal Bin, Gluten Bin, Corn Flour Bin, Middlings Bin, Bin 14

Model Id:

Emission Factor Reference: Section 9.9.1 of AP42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	192192 ton/yr	X	0.0063 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.991)	= 3×10⁻³ ton/yr
2003=	192192 ton/yr	X		X		X	(1 − 0.991)	= 3×10⁻³ ton/yr
2004=	192192 ton/yr	X		X		X	(1 − 0.991)	= 3×10⁻³ ton/yr
2005=	192192 ton/yr	X		X		X	(1 − 0.991)	= 3×10⁻³ ton/yr
2006=	192192 ton/yr	X		X		X	(1 − 0.991)	= 3×10⁻³ ton/yr

Comments: Based on permed maximum annual production 192192 ton/yr, 0.0063 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Molinos de Puerto Rico

SCC: 3-02-005-60

Unit: Grain Shipping Dust

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th Edition.

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	394867.2 ton/yr	X		X		X	(1 – 0.995)	= 0.028 ton/yr
2003=	394867.2 ton/yr	X		X		X	(1 – 0.995)	= 0.028 ton/yr
2004=	394867.2 ton/yr	X	0.029 lb/ton	X	1 ton / 2000 lb	X	(1 – 0.995)	= 0.028 ton/yr
2005=	394867.2 ton/yr	X		X		X	(1 – 0.995)	= 0.028 ton/yr
2006=	394867.2 ton/yr	X		X		X	(1 – 0.995)	= 0.028 ton/yr

Comments: Based on peanut maximum annual production 394867.2 ton/yr, Ef = 0.029 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Lemex Concretos Inc. (formerly Ready Mix, Plant 20)

SCC: 3-05-011-21

Unit: Aggregate Delivery to Ground Storage

Model Id:

Emission Factor Reference: Air emission permit

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	199888 yd³/yr	X	0.0031 lb/yd³	X	1 ton / 2000 lb	X	(1 – 0.0)	= 0.30 ton/yr
2003=	199888 yd³/yr	X		X		X	(1 – 0.)	= 0.30 ton/yr
2004=	199888 yd³/yr	X		X		X	(1 – 0.)	= 0.30 ton/yr
2005=	199 888 yd³/yr	X		X		X	(1 – 0.)	= 0.30 ton/yr
2006=	199888 yd³/yr	X		X		X	(1 – 0.)	= 0.30 ton/yr

Comments: Based on permit maximum annual production 199 888 yd³/yr, Ef = 0.0031 lb/yd³

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cemex Concrete, Inc. (Formerly, Ready Mix Plant 201)

SCC: 3-05-011-22

Unit: Sand Delivery to Ground Storage

Model Id:

Emission Factor Reference: Air emission permit

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	199888 yd³/yr	X	0.0007 lb/yd³	X	1 ton / 2000 lb	X	(1 – 0.)	= 0.069 ton/yr
2003=	199888 yd³/yr	X		X		X	(1 – 0.)	= 0.069 ton/yr
2004=	199888 yd³/yr	X		X		X	(1 – 0.)	= 0.069 ton/yr
2005=	199888 yd³/yr	X		X		X	(1 – 0.)	= 0.069 ton/yr
2006=	199888 yd³/yr	X		X		X	(1 – 0.)	= 0.069 ton/yr

Comments: Based on permit maximum annual production 199888 yd³/yr, Ef = 0.0007 lb/yd³

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cemex Concretos, Inc (formerly, Ready Mix Plant 20)

SCC: 3-05-011-23

Unit: Aggregate transfer to Conveyor

Model Id:

Emission Factor Reference: Air emission permit

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	199888 yd³/yr	X	0.0031 lb/yd³	X	1 Ton / 2000 lb	X	(1 − 0.0)	= 0.30 ton/yr
2003=	199888 yd³/yr	X		X		X	(1 − 0.0)	= 0.30 ton/yr
2004=	199888 yd³/yr	X		X		X	(1 − 0.0)	= 0.30 ton/yr
2005=	199888 yd³/yr	X		X		X	(1 − 0.0)	= 0.30 ton/yr
2006=	199888 yd³/yr	X		X		X	(1 − 0.0)	= 0.30 ton/yr

Comments: Based on permit maximum annual production 199888 yd³/yr, Ef = 0.0031 lb/yd³

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cemex Concretos Inc, (Formerly, Ready Mix Plant 20)

SCC: 3-05-011-24

Unit: Sand transfer to conveyor

Model Id:

Emission Factor Reference: Air emission permit.

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 199 888 yd³/yr	X		X		X	(1 − 0.0)	= 0.069 ton/yr
2003= 199888 yd³/yr	X		X		X	(1 − 0.0)	= 0.069 ton/yr
2004= 199888 yd³/yr	X	0.0007 lb/yd³	X	1 ton / 2000 lb	X	(1 − 0.0)	= 0.069 ton/yr
2005= 199888 yd³/yr	X		X		X	(1 − 0.0)	= 0.069 ton/yr
2006= 199888 yd³/yr	X		X		X	(1 − 0.0)	= 0.069 ton/yr

Comments: Based on permit maximum annual production 199 888 yd³/yr, Ef = 0.0007 lb/yd³

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cemex Concretos, Inc. (formerly, Ready Mix Plant 20)

SCC:

Unit: Vehicle traffic (paved road)

Model Id:

Emission Factor Reference: Air emission permit

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	440.4 VMT/hr	X	1.785 lb/VMT	X	1 ton / 2000 lb	X	(1 – 0.70)	= 0.10 ton/yr
2003=	440.4 VMT/hr	X		X		X	(1 – 0.70)	= 0.10 ton/yr
2004=	440.4 VMT/hr	X		X		X	(1 – 0.70)	= 0.10 ton/yr
2005=	440.4 VMT/hr	X		X		X	(1 – 0.70)	= 0.10 ton/yr
2006=	440.4 VMT/hr	X		X		X	(1 – 0.70)	= 0.10 ton/yr

Comments: Based on permit emissions calculation
= 400.4 VMT/hr, 1.785 lb/VMT

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cemex Concretos, Inc. (Formerly, Ready Mix Plant 20)

SCC:

Unit: Wind erosion in aggregates storage

Model Id:

Emission Factor Reference: Air emission permit

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	0.08 acre	X	1277.328 lb/acre/yr	X	1 ton / 2000 lb	X	(1 − 0.0)	= 0.05 ton/yr
2003=	0.08 acre	X		X		X	(1 − 0.0)	= 0.05 ton/yr
2004=	0.08 acre	X		X		X	(1 − 0.0)	= 0.05 ton/yr
2005=	0.08 acre	X		X		X	(1 − 0.0)	= 0.05 ton/yr
2006=	0.08 acre	X		X		X	(1 − 0.0)	= 0.05 ton/yr

Comments: Based on permit emissions calculation
0.08 acre, EF = 1277.328 lb/acre/yr

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cemex Concretos, Inc (formerly, Ready Mix Plant 20)

SCC: 3-05-011-10

Unit: Loading of hazit mix truck

Model Id:

Emission Factor Reference: An emission permit

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	199888 yd³/yr	X	0.014 lb/yd³	X	1 ton / 2000 lb	X	(1 – 0.99)	= 0.013 ton/yr
2003=	199888 yd³/yr	X		X		X	(1 – 0.99)	= 0.013 ton/yr
2004=	199888 yd³/yr	X		X		X	(1 – 0.99)	= 0.013 ton/yr
2005=	199888 yd³/yr	X		X		X	(1 – 0.99)	= 0.013 ton/yr
2006=	199888 yd³/yr	X		X		X	(1 – 0.99)	= 0.013 ton/yr

Comments: Based on permit maximum annual production 199888 yd³/yr, Ef = 0.014 lb/yd³

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cemex Concretos Inc. (Formerly, Ready Mix Plant 20)

SCC: 3-05-011-17

Unit: Cement Supplement Delivered to Silo (Flash-Ash Silo)

Model Id:

Emission Factor Reference: On emission permit

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 199888 yd³/yr	X	0.0002 lb/yd³	X	1 ton / 2000 lb	X	(1 – 0.99)	= 1.9e-4 ton/yr
2003= 199888 yd³/yr	X		X		X	(1 – 0.99)	= 1.9e-4 ton/yr
2004= 199888 yd³/yr	X		X		X	(1 – 0.99)	= 1.9e-4 ton/yr
2005= 199888 yd³/yr	X		X		X	(1 – 0.99)	= 1.9e-4 ton/yr
2006= 199888 yd³/yr	X		X		X	(1 – 0.99)	= 1.9e-4 ton/yr

Comments: Based on permit maximum annual production.
199888 yd³/yr , Ef = 0.0002 lb/yd³

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cemex Concretos Inc (Formerly Ready Mix, Plant 20)

SCC: 3-05-011-07

Unit: Cement Delivery to Silo

Model Id:

Emission Factor Reference: Air emission permit

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	199888 yd³/yr	X	0.0001 lb/yd³	X	1 ton / 2000 lb	X	(1 − 0.99)	= 0.0001 ton/yr
2003=	199888 yd³/yr	X		X		X	(1 − 0.99)	= 0.0001 ton/yr
2004=	199888 yd³/yr	X		X		X	(1 − 0.99)	= 0.0001 ton/yr
2005=	199888 yd³/yr	X		X		X	(1 − 0.99)	= 0.0001 ton/yr
2006=	199888 yd³/yr	X		X		X	(1 − 0.99)	= 0.0001 ton/yr

Comments: Based on permit maximum annual production.
199888 yd³/yr, EF = 0.0001 lb/yd³

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cemex Concretos Inc (formerly Ready Mix Plant 20)

SCC: 3-05-011-05

Unit: Sand Transfer to Elevated Bins

Model Id:

Emission Factor Reference: Our emission permit

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 199 888 yd3/yr	X	0.0007 lb/yd3	X	1 ton / 2000 lb	X	(1 − 0.0)	= 0.069 ton/yr
2003= 199 888 yd3/yr	X		X		X	(1 − 0.0)	= 0.069 ton/yr
2004= 199 888 yd3/yr	X		X		X	(1 − 0.0)	= 0.069 ton/yr
2005= 199 888 yd3/yr	X		X		X	(1 − 0.0)	= 0.069 ton/yr
2006= 199 888 yd3/yr	X		X		X	(1 − 0.0)	= 0.069 ton/yr

Comments: Based on permit maximum annual production
199 888 yd3/yr , EF = 0.0007 lb/yd3

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cemex Concretos Inc (Formerly Ready Mix, Plant 20)

SCC: 3-05-011-04

Unit: Aggregate transfer to Elevated Bins

Model Id:

Emission Factor Reference: Air emission permit

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	199888 yd³/yr	X	0.0031 lb/yd³	X	1 ton / 2000 lb	X	(1 − 0.0)	= 0.30 ton/yr
2003=	199888 yd³/yr	X		X		X	(1 − 0.0)	= 0.30 ton/yr
2004=	199888 yd³/yr	X		X		X	(1 − 0.0)	= 0.30 ton/yr
2005=	199888 yd³/yr	X		X		X	(1 − 0.0)	= 0.30 ton/yr
2006=	199888 yd³/yr	X		X		X	(1 − 0.0)	= 0.30 ton/yr

Comments: Based on permit maximum annual production 199888 yd³/yr, Ef = 0.0031 lb/yd³

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cemex Concretos Inc. (Formerly Ready Mix Plant 20)

SCC: 3-05-011-08

Unit: Weight Hopper

Model Id:

Emission Factor Reference: Our emission permit.

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 199888 yd³/yr	X	0.00038 lb/yd³	X	1 ton / 2000 lb	X	(1 − 0.0)	= 0.37 ton/yr
2003= 199888 yd³/yr	X		X		X	(1 − 0.0)	= 0.37 ton/yr
2004= 199888 yd³/yr	X		X		X	(1 − 0.0)	= 0.37 ton/yr
2005= 199888 yd³/yr	X		X		X	(1 − 0.0)	= 0.37 ton/yr
2006= 199888 yd³/yr	X		X		X	(1 − 0.0)	= 0.37 ton/yr

Comments: Based on permit maximum annual production 199888 yd³/yr, Ef = 0.0038 lb/yd³

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Petroleum Emulsion (Formerly Petroleum Chemical)

SCC:

Unit: Afterburner

Model Id:

Emission Factor Reference: Section 1.3 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=84,643 gal/yr	X	1.08 lb/1000gal	X	1 ton/2000 lb	X	(1 – 0.0)	= 0.045 ton/yr
2003= 84,643 gals/yr	X		X		X	(1 – 0.0)	= 0.45 ton/yr
2004=84,643 gal/yr	X		X		X	(1 – 0.0)	= 0.45 ton/yr
2005=84,643 gals/yr	X		X		X	(1 – 0.0)	= 0.45 ton/yr
2006= 84,643 gals/yr	X		X		X	(1 – 0.0)	= 0.45 ton/yr

Comments: Based on permit maximum fuel usage for these years 84,643 gal/yr, EF = 1.08 lb/1000gal

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Petroleum Emulsion (Formerly Petroleum Chemical)

SCC:

Unit: Oxidator Burner

Model Id:

Emission Factor Reference: Section 1.3 of AP-42, 5th Edition.

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	28,392 gal/yr	X	$\frac{1.08\ lb}{1000\ gal}$	X	$\frac{1\ ton}{2000\ lb}$	X	(1 – 0.90)	$= 1.53e^{-3}\ \frac{ton}{yr}$
2003=	28,392 gal/yr	X		X		X	(1 – 0.90)	$= 1.53e^{-3}\ \frac{ton}{yr}$
2004=	28,392 gal/yr	X		X		X	(1 – 0.90)	$= 1.53e^{-3}\ \frac{ton}{yr}$
2005=	28,392 gal/yr	X		X		X	(1 – 0.90)	$= 1.53e^{-3}\ \frac{ton}{yr}$
2006=	28,392 gal/yr	X		X		X	(1 – 0.90)	$= 1.53e^{-3}\ \frac{ton}{yr}$

Comments: Based on permit maximum fuel usage for these years.
28,392 gal/yr, Ef = 1.08 lb/1000 gal

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Petroleum Emulsion (Formerly Petroleum Chemical)

SCC:

Unit: Oxidator Burner

Model Id:

Emission Factor Reference: Section 1.3 of AP-42, 5th Edition.

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	13,520 gal/yr	X	$\frac{1.08\ lb}{1000\ gal}$	X	$\frac{1\ ton}{2000\ lb}$	X	(1 – 0.90)	= 7.3e-4 ton/yr
2003=	13,520 gal/yr	X		X		X	(1 – 0.90)	= 7.3e-4 ton/yr
2004=	13,520 gal/yr	X		X		X	(1 – 0.90)	= 7.3e-4 ton/yr
2005=	13,520 gal/yr	X		X		X	(1 – 0.90)	= 7.3e-4 ton/yr
2006=	13,520 gal/yr	X		X		X	(1 – 0.90)	= 7.3e-4 ton/yr

Comments: Based on permit maximum fuel usage for these years.
13,520 gal/yr , Ef=1.08 lb/1000 gal

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Nutrimix feed (formerly Agro Ochoa)

SCC:

Unit: Steam Boiler

Model Id:

Emission Factor Reference: Section 1.3 of AP-42, 5th Edition.

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	128001 gal/yr	X	1.08 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 − 0.0)	= 0.069 ton/yr
2003=	126928 gal/yr	X	1.08 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 − 0.0)	= 0.068 ton/yr
2004=	82438 gal/yr	X	1.08 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 − 0.0)	= 0.044 ton/yr
2005=	111913 gal/yr	X	1.08 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 − 0.0)	= 0.060 ton/yr
2006=	81974 gal/yr	X	1.08 lb/1000 gal	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	(1 − 0.0)	= 0.044 ton/yr

Comments: Based on annual fuel usage for these years.
2002 = 128001 gal/yr, Ef = 1.08 lb/1000 gal
2003 = 126,928 gal/yr, Ef = 1.08 lb/1000 gal
2004 = 82438 gal/yr, Ef = 1.08 lb/1000 gal
2005 = 111913 gal/yr, Ef = 1.08 lb/1000 gal
2006 = 81974 gal/yr, Ef = 1.08 lb/1000 gal

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Nutrimix feed (Formerly Quaker Oats)

SCC:

Unit: Mauve Tower

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=155750.4 ton/yr	X	0.038 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.995)	= 0.014 ton/yr
2003=155750.4 ton/yr	X		X		X	(1 − 0.995)	= 0.014 ton/yr
2004=155750.4 ton/yr	X		X		X	(1 − 0.995)	= 0.014 ton/yr
2005=155750.4 ton/yr	X		X		X	(1 − 0.995)	= 0.014 ton/yr
2006=155750.4 ton/yr	X		X		X	(1 − 0.995)	= 0.014 ton/yr

Comments: Based on permit maximum annual production.
155750.4 ton/yr, EF = 0.038 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Nutrimix Feed (formerly Cargo Ochoa)

SCC: 3-02-009-44

Unit: Corn Cleaning

Model Id:

Emission Factor Reference: Section 9.9.1 of AP42, 5th Edition

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 40959.36 ton/yr	X	0.019 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.991)	= 1.9e-3 ton/yr
2003= 40959.36 ton/yr	X		X		X	(1 − 0.991)	= 1.9e-3 ton/yr
2004= 40959.36 ton/yr	X		X		X	(1 − 0.991)	= 1.9e-3 ton/yr
2005= 40959.36 ton/yr	X		X		X	(1 − 0.991)	= 1.9e-3 ton/yr
2006= 40959.36 ton/yr	X		X		X	(1 − 0.991)	= 1.9e-3 ton/yr

Comments: Based on permit maximum annual production 40959.36 ton/yr, EF = 0.019 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Nutrimex Feed (formerly Agro Ochoa)

SCC:

Unit: Corn Grinding

Model Id:

Emission Factor Reference: Fire emission factor

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 64995.84 ton/yr	X	$6e^{-2}$ lb/ton	X	$\frac{1 \text{ ton}}{2000 \text{ lb}}$	X	$(1-0.99)$	$=9.7e^{-3}$ ton/yr
2003= 64995.84 ton/yr	X		X		X	$(1-0.99)$	$=9.7e^{-3}$ ton/yr
2004= 64995.84 ton/yr	X		X		X	$(1-0.99)$	$=9.7e^{-3}$ ton/yr
2005= 64995.84 ton/yr	X		X		X	$(1-0.99)$	$=9.7e^{-3}$ ton/yr
2006= 64995.84 ton/yr	X		X		X	$(1-0.99)$	$=9.7e^{-3}$ ton/yr

Comments: Based on permit maximum annual production
64995.84 ton/yr , Ef = $6e^{-2}$ lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Nutrimix feed (Formerly Agro Ochoa)

SCC:

Unit: Belt Conveyor 2

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	86860.8 ton/yr	X	0.034 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.995)	= 7.3e-3 ton/yr
2003=	86860.8 ton/yr	X		X		X	(1 − 0.991)	= 7.3e-3 ton/yr
2004=	86860.8 ton/yr	X		X		X	(1 − 0.991)	= 7.3e-3 ton/yr
2005=	86860.8 ton/yr	X		X		X	(1 − 0.991)	= 7.3e-3 ton/yr
2006=	86860.8 ton/yr	X		X		X	(1 − 0.991)	= 7.3e-3 ton/yr

Comments: Based on permit maximum annual production 86860.8 ton/yr, Ef = 0.034 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Nutrimix Feed (formerly Cerro Ochoa)

SCC:

Unit: Belt Conveyor 1

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 155750.4 $\frac{ton}{yr}$	X	0.034 $\frac{lb}{ton}$	X	$\frac{1\ ton}{2000\ lb}$	X	$(1-0.97)$	= 0.013 $\frac{ton}{yr}$
2003= 155750.4 $\frac{ton}{yr}$	X		X		X	$(1-0.97)$	= 0.013 $\frac{ton}{yr}$
2004= 155750.4 $\frac{ton}{yr}$	X		X		X	$(1-0.97)$	= 0.013 $\frac{ton}{yr}$
2005= 155750.4 $\frac{ton}{yr}$	X		X		X	$(1-0.97)$	= 0.013 $\frac{ton}{yr}$
2006= 155750.4 $\frac{ton}{yr}$	X		X		X	$(1-0.97)$	= 0.013 $\frac{ton}{yr}$

Comments: Based on permit maximum annual production 155750.4 ton/yr, EF = 0.034 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Nutrimix Feed (Formerly Agro Ochoa)

SCC:

Unit: Secondary Ingredients Unloading

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	14976 ton/yr	X	0.059 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.995)	= 2.12e⁻³ ton/yr
2003=	14976 ton/yr	X		X		X	(1 − 0.995)	= 2.12e⁻³ ton/yr
2004=	14976 ton/yr	X		X		X	(1 − 0.995)	= 2.12e⁻³ ton/yr
2005=	14976 ton/yr	X		X		X	(1 − 0.995)	= 2.12e⁻³ ton/yr
2006=	14976 ton/yr	X		X		X	(1 − 0.995)	= 2.12e⁻³ ton/yr

Comments: Based on permit maximum annual production 14976 ton/yr, Ef = 0.059 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Nutrimix feed (formerly Agro Ochoa)

SCC:

Unit: Truck loading Area 1

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 116064 ton/yr	X	0.029 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.999)	= 8.4e-3 ton/yr
2003= 116064 ton/yr	X		X		X	(1 − 0.995)	= 8.4e-3 ton/yr
2004= 116064 ton/yr	X		X		X	(1 − 0.995)	= 8.4e-3 ton/yr
2005= 116064 ton/yr	X		X		X	(1 − 0.995)	= 8.4e-3 ton/yr
2006= 116064 ton/yr	X		X		X	(1 − 0.995)	= 8.4e-3 ton/yr

Comments: Based on permit maximum annual production 116064 ton/yr, Ef = 0.029 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Nutrimix Feed (formaly Agro Ochoa)

SCC:

Unit: Pelletizing Units

Model Id:

Emission Factor Reference: Fire Emission factor

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=95097.6 $\frac{ton}{yr}$	X	$1e^{-1}\ \frac{lb}{ton}$	X	$\frac{1\ ton}{2000\ lb}$	X	$(1-0.991)$	$=0.023\ \frac{ton}{yr}$
2003=95097.6 $\frac{ton}{yr}$	X		X		X	$(1-0.991)$	$=0.023\ \frac{ton}{yr}$
2004=95097.6 $\frac{ton}{yr}$	X		X		X	$(1-0.991)$	$=0.023\ \frac{ton}{yr}$
2005=95097.6 $\frac{ton}{yr}$	X		X		X	$(1-0.991)$	$=0.023\ \frac{ton}{yr}$
2006=95097.6 $\frac{ton}{yr}$	X		X		X	$(1-0.991)$	$=0.023\ \frac{ton}{yr}$

Comments: Based on permit maximum annual production.
95097.6 ton/yr, Ef = 100 e^{-1} lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Nutrimix Feed (Formerly Agro Ochoa)

SCC:

Unit: Concrete Storage Silos

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002 = 98841.6 ton/yr	X	0.0063 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.99)	= 1.5e⁻³ ton/yr
2003 = 98841.6 ton/yr	X		X		X	(1 − 0.99)	= 1.5e⁻³ ton/yr
2004 = 98841.6 ton/yr	X		X		X	(1 − 0.99)	= 1.5e⁻³ ton/yr
2005 = 98841.6 ton/yr	X		X		X	(1 − 0.99)	= 1.5e⁻³ ton/yr
2006 = 98841.6 ton/yr	X		X		X	(1 − 0.99)	= 1.5e⁻³ ton/yr

Comments: Based on permit maximum annual production.
98841.6 ton/yr, Ef = 0.0063 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Pan American Grain, Amelia Plant

SCC:

Unit: Boiler

Model Id:

Emission Factor Reference: Section 1.3 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 272,688 gal/yr	X	1.08 lb/1000 gal	X	1 ton/2000 lb	X	(1 − 0.0)	= 0.14 ton/yr
2003= 272,688 gal/yr	X		X		X	(1 − 0.0)	= 0.14 ton/yr
2004= 272,688 gal/yr	X		X		X	(1 − 0.0)	= 0.14 ton/yr
2005= 272,688 gal/yr	X		X		X	(1 − 0.0)	= 0.14 ton/yr
2006= 272,688 gal/yr	X		X		X	(1 − 0.0)	= 0.14 ton/yr

Comments: Based on permit maximum fuel No. 2 usage for this unit 272,688 gal/yr, EF = 1.08 lb/1000 gal

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Pan American Grain, Amelia Plant

SCC:

Unit: Corn Aspirator

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	21600 ton/yr	X	0.038 lb/ton	X	1 ton / 2000 lb	X	$(1-0.997)$	$= 1.2e^{-3}$ ton/yr
2003=	21600 ton/yr	X		X		X	$(1-0.997)$	$= 1.2e^{-3}$ ton/yr
2004=	21600 ton/yr	X		X		X	$(1-0.997)$	$= 1.2e^{-3}$ ton/yr
2005=	21600 ton/yr	X		X		X	$(1-0.997)$	$= 1.2e^{-3}$ ton/yr
2006=	21600 ton/yr	X		X		X	$(1-0.997)$	$= 1.2e^{-3}$ ton/yr

Comments: Based on permit maximum annual production.
21600 ton/yr, EF = 3.80×10^{-2} lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Pan American Corrun, Amelia Plant

SCC:

Unit: Grain Separator

Model Id:

Emission Factor Reference: Section 9.9 1 of AP-42, 5th edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	21600 ton/yr	X	0.0019 lb/ton	X	1 ton / 2000 lb	X	(1 – 0.99)	= 6.1e-4 lb/ton
2003=	21600 ton/yr	X		X		X	(1 – 0.99)	= 6.1e-4 lb/ton
2004=	21600 ton/yr	X		X		X	(1 – 0.99)	= 6.1e-4 lb/ton
2005=	21600 ton/yr	X		X		X	(1 – 0.99)	= 6.1e-4 lb/ton
2006=	21600 ton/yr	X		X		X	(1 – 0.99)	= 6.1e-4 lb/ton

Comments: Based on permit maximum annual production 21600 ton/yr, Ef = 0.0019 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Pan American Grain, Amelia Plant

SCC:

Unit: Corn Grinding (Hammermill)

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th edition.

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 43200 ton/yr	X	0.012 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.997)	= 7.7e-4 lb/ton
2003= 43200 ton/yr	X		X		X	(1 − 0.997)	= 7.7e-4 lb/ton
2004= 43200 ton/yr	X		X		X	(1 − 0.997)	= 7.7e-4 lb/ton
2005= 43200 ton/yr	X		X		X	(1 − 0.997)	= 7.7e-4 lb/ton
2006= 43200 ton/yr	X		X		X	(1 − 0.997)	= 7.7e-4 lb/ton

Comments: Based on permit maximum annual production 43200 ton/yr, EF = 0.012 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Pan American Grain, Amelia Plant

SCC:

Unit: Pellet Cooler & Separator

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 43200 ton/yr	X	0.18 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.997)	= 0.011 ton/yr
2003= 43200 ton/yr	X		X		X	(1 − 0.997)	= 0.011 ton/yr
2004= 43200 ton/yr	X		X		X	(1 − 0.997)	= 0.011 ton/yr
2005= 43200 ton/yr	X		X		X	(1 − 0.997)	= 0.011 ton/yr
2006= 43200 ton/yr	X		X		X	(1 − 0.)	= 0.011 ton/yr

Comments: Based on permit maximum annual production 43200 ton/yr, EF = 0.18 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Pan American Grain, Amelia Plant

SCC: 3-02-005-30

Unit: Grain Elevation Riley Hopper Receiving

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	43200 ton/yr	X	0.059 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.9977)	= 3.8e-3 ton/yr
2003=	43200 ton/yr	X		X		X	(1 − 0.9977)	= 3.8e-3 ton/yr
2004=	43200 ton/yr	X		X		X	(1 − 0.9977)	= 3.8e-3 ton/yr
2005=	43200 ton/yr	X		X		X	(1 − 0.9977)	= 3.8e-3 ton/yr
2006=	43200 ton/yr	X		X		X	(1 − 0.)	= 3.8e-3 ton/yr

Comments: Based on permit maximum annual production 43200 ton/yr, EF = 0.059 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Pan American Grain, Arecibo Plant

SCC: 3-02-005-30

Unit: Grain Elevator Riley Hour Receiving

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	43200 ton/yr	X	0.059 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.997)	= 3.8e-3 ton/yr
2003=	43200 ton/yr	X		X		X	(1 − 0.997)	= 3.8e-3 ton/yr
2004=	43200 ton/yr	X		X		X	(1 − 0.997)	= 3.8e-3 ton/yr
2005=	43200 ton/yr	X		X		X	(1 − 0.997)	= 3.8e-3 ton/yr
2006=	43200 ton/yr	X		X		X	(1 − 0.997)	= 3.8e-3 ton/yr

Comments: Based on permit maximum annual production 43200 ton/yr, EF = 0.059 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Pan American Grain, Amelia Plant

SCC: 3-02-005-30

Unit: Grain Elevator Rely Mass Handling

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	50400 ton/yr	X	0.034 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.997)	= 2.5e-3 ton/yr
2003=	50400 ton/yr	X		X		X	(1 − 0.997)	= 2.5e-3 ton/yr
2004=	50400 ton/yr	X		X		X	(1 − 0.997)	= 2.5e-3 ton/yr
2005=	50400 ton/yr	X		X		X	(1 − 0.997)	= 2.5e-3 ton/yr
2006=	50400 ton/yr	X		X		X	(1 − 0.997)	= 2.5e-3 ton/yr

Comments: Based on permit maximum annual production 50400 ton/yr, EF = 0.034 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Pan American Grain, Amelia Plant

SCC: 3-02-005-30

Unit: Grain Elevator Relay Mass Handling

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th Edition.

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 21600 ton/yr	X	0.034 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.997)	= 1.1e-3 ton/yr
2003= 21600 ton/yr	X		X		X	(1 − 0.997)	= 1.1e-3 ton/yr
2004= 21600 ton/yr	X		X		X	(1 − 0.997)	= 1.1e-3 ton/yr
2005= 21600 ton/yr	X		X		X	(1 − 0.997)	= 1.1e-3 ton/yr
2006= 21600 ton/yr	X		X		X	(1 − 0.997)	= 1.1e-3 ton/yr

Comments: Based on permit maximum annual production.
21600 ton/yr, Ef = 0.034 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Pan American Grain, Amelia Plant

SCC: 3-02-005-30

Unit: Grain Elevator Riley Saturn Shipping

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	172800 ton/yr	X	0.029 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.997)	= 7.5e⁻³ ton/yr
2003=	172800 ton/yr	X		X		X	(1 − 0.997)	= 7.5e⁻³ ton/yr
2004=	172800 ton/yr	X		X		X	(1 − 0.997)	= 7.5e⁻³ ton/yr
2005=	172800 ton/yr	X		X		X	(1 − 0.997)	= 7.5e⁻³ ton/yr
2006=	172800 ton/yr	X		X		X	(1 − 0.997)	= 7.5E⁻³ ton/yr

Comments: Based on permit maximum annual production 172800 ton/yr, Ef = 0.029 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Pan American Grain, Army Terminal

SCC:

Unit: Flat Storage Rico Annex

Model Id:

Emission Factor Reference: Section 9.9.1 of A-42, 5th Edition

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 144,000 ton/yr	X	0.025 lb/ton	X	1 ton/2000 lb	X	(1 − 0.995)	= 9e-3 ton/yr
2003= 144,000 ton/yr	X		X		X	(1 − 0.995)	= 9e-3 ton/yr
2004= 144,000 ton/yr	X		X		X	(1 − 0.995)	= 9e-3 ton/yr
2005= 144,000 ton/yr	X		X		X	(1 − 0.995)	= 9e-3 ton/yr
2006= 144,000 ton/yr	X		X		X	(1 − 0.995)	= 9e-3 ton/yr

Comments: Based on permit maximum annual production, 144,000 ton/yr, EF = 0.025 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Pan American Grain, Army Terminal

SCC:

Unit: Rice Rice Mill

Model Id:

Emission Factor Reference: Section 9.9.1 of AP-42, 5th Edition.

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	164736 $\frac{ton}{yr}$	X	0.27 $\frac{lb}{ton}$	X	$\frac{1\ ton}{2000\ lb}$	X	$(1-0.99)$	$= 0.11\ \frac{ton}{yr}$
2003=	164736 $\frac{ton}{yr}$	X		X		X	$(1-0.99)$	$= 0.11\ \frac{ton}{yr}$
2004=	164736 $\frac{ton}{yr}$	X		X		X	$(1-0.99)$	$= 0.11\ \frac{ton}{yr}$
2005=	164736 $\frac{ton}{yr}$	X		X		X	$(1-0.99)$	$= 0.11\ \frac{ton}{yr}$
2006=	164736 $\frac{ton}{yr}$	X		X		X	$(1-0.99)$	$= 0.11\ \frac{ton}{yr}$

Comments: Based on permit maximum annual production 164736 ton/yr, Ef = 0.27 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Master Concrete (formerly Concreto Rugto)

SCC: 3-05-011-07

Unit: Cement Delivery to Silo

Model Id:

Emission Factor Reference: Air dimension permit

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	239928 yd³/yr	X	0.0001 lb/yd³	X	1 ton / 2000 lb	X	(1 − 0.98)	= 2.4e-4 ton/yr
2003=	239928 yd³/yr	X		X		X	(1 − 0.98)	= 2.4e-4 ton/yr
2004=	239928 yd³/yr	X		X		X	(1 − 0.98)	= 2.4e-4 ton/yr
2005=	239928 yd³/yr	X		X		X	(1 − 0.98)	= 2.4e-4 ton/yr
2006=	239928 yd³/yr	X		X		X	(1 − 0.98)	= 2.4e-4 ton/yr

Comments: Based on permit maximum annual production.
239928 yd³/yr, EF = 0.0001 lb/yd³

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Master Concrete (Formerly Concreto Rugto)

SCC: 3-05-011-08

Unit: Weight Hopper

Model Id:

Emission Factor Reference: Cur emission permit

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 239928 yd3/yr	X	0.0038 lb/yd3	X	1 ton/2000 lb	X	(1 – 0.98)	= 9.1e-2 ton/yr
2003= 239928 yd3/yr	X		X		X	(1 – 0.98)	= 9.1e-2 ton/yr
2004= 239928 yd3/yr	X		X		X	(1 – 0.98)	= 9.1e-2 ton/yr
2005= 239928 yd3/yr	X		X		X	(1 – 0.98)	= 9.1e-2 ton/yr
2006= 239928 yd3/yr	X		X		X	(1 – 0.98)	= 9.1e-2 ton/yr

Comments: Based on permit maximum annual production.
239928 yd3/yr , Ef = 0.0038 lb/yd3

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Master Concrete (Formerly Concreto Rhyto)

SCC: 3-05-011-21

Unit: Aggregate Delivery to Ground Storage

Model Id:

Emission Factor Reference: Our emission permit.

Pollutant: PM-10

Calculations:

Operating Rate	Emission Factor	Conversion Factor	Control Efficiency	
2002= 239928 yd³/yr X	X	X	(1 − 0.0)	= 0.37 ton/yr
2003= 239928 yd³/yr X	X	X	(1 − 0.0)	= 0.37 ton/yr
2004= 239928 yd³/yr X	0.0031 lb/yd³ X	1 ton/2000 lb X	(1 − 0.0)	= 0.37 ton/yr
2005= 239928 yd³/yr X	X	X	(1 − 0.0)	= 0.37 ton/yr
2006= 239928 yd³/yr X	X	X	(1 − 0.0)	= 0.37 ton/yr

Comments: Based on permit maximum annual production 239928 yd³/yr, Ef = 0.0031 lb/yd³

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Master Concrete (formerly Concreto Mixto)

SCC: 3-05-011-23

Unit: Aggregate handler

Model Id:

Emission Factor Reference: Our emission permit.

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 239928 yd³/yr	X	0.0031 lb/yd³	X	1 ton / 2000 lb	X	(1 − 0.)	= 0.37 ton/yr
2003= 239928 yd³/yr	X		X		X	(1 − 0.)	= 0.37 ton/yr
2004= 239928 yd³/yr	X		X		X	(1 − 0.)	= 0.37 ton/yr
2005= 239928 yd³/yr	X		X		X	(1 − 0.)	= 0.37 ton/yr
2006= 239928 yd³/yr	X		X		X	(1 − 0.)	= 0.37 ton/yr

Comments: Based on permit maximum annual production.
239928 yd³/yr, Ef = 0.0031 lb/yd³

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Master Concrete (formerly Concrete Mix Co)

SCC: 3-05-011-09

Unit: Central Mix loading

Model Id:

Emission Factor Reference: Air Emission permit

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 239928 yd³/yr	X	0.0011 lb/yd³	X	1 ton / 2000 lb	X	(1 − 0.98)	= 2.6e⁻³ ton/yr
2003= 239928 yd³/yr	X		X		X	(1 − 0.98)	= 2.6e⁻³ ton/yr
2004= 239928 yd³/yr	X		X		X	(1 − 0.98)	= 2.6e⁻³ ton/yr
2005= 239928 yd³/yr	X		X		X	(1 − 0.98)	= 2.6e⁻³ ton/yr
2006= 239928 yd³/yr	X		X		X	(1 − 0.98)	= 2.6e⁻³ ton/yr

Comments: Based on permit maximum annual production 239928 yd³/yr, Ef = 0.0011 lb/yd³

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Master Concrete (formerly Concreto Puerto)

SCC: 3-05-011-04

Unit: Aggregate transfer to Elevated Bins

Model Id:

Emission Factor Reference: Our Emission Permit

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	239928 yd³/yr	X	0.0031 lb/yd³	X	1 ton / 2000 lb	X	(1 − 0.0)	= 0.37 ton/yr
2003=	239928 yd³/yr	X		X		X	(1 − 0.0)	= 0.37 ton/yr
2004=	239928 yd³/yr	X		X		X	(1 − 0.0)	= 0.37 ton/yr
2005=	239928 yd³/yr	X		X		X	(1 − 0.0)	= 0.37 ton/yr
2006=	239928 yd³/yr	X		X		X	(1 − 0.0)	= 0.37 ton/yr

Comments: Based on permit maximum annual production.
239928 yd³/yr, Ef = 0.0031 lb/yd³

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera San Antonio

SCC:

Unit: Dester feeder

Model Id:

Emission Factor Reference: Air emission permit

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 624000 ton/yr	X	0.0022 lb/ton	X	1 ton / 2000 lb	X	(1 – 0.90)	= 0.068 ton/yr
2003= 624000 ton/yr	X		X		X	(1 – 0.90)	= 0.068 ton/yr
2004= 624000 ton/yr	X		X		X	(1 – 0.90)	= 0.068 ton/yr
2005= 624000 ton/yr	X		X		X	(1 – 0.90)	= 0.068 ton/yr
2006= 624000 ton/yr	X		X		X	(1 – 0.90)	= 0.068 ton/yr

Comments: Based on peanut maximum annual production.
624000 ton/yr , Ef = 0.0022 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera San Antonio

SCC:

Unit: Nordberg Rhell HP-300

Model Id:

Emission Factor Reference: Air Emission Permit

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 499208 ton/yr	X	0.0024 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.90)	= 0.059 ton/yr
2003= 499208 ton/yr	X		X		X	(1 − 0.90)	= 0.059 ton/yr
2004= 499208 ton/yr	X		X		X	(1 − 0.90)	= 0.059 ton/yr
2005= 499208 ton/yr	X		X		X	(1 − 0.90)	= 0.059 ton/yr
2006= 499208 ton/yr	X		X		X	(1 − 0.90)	= 0.059 ton/yr

Comments: Based on permit maximum annual production 499208 ton/yr, EF = 0.0024 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera San Antonio

SCC:

Unit: Nordberg Rhell HP-300

Model Id:

Emission Factor Reference: Air Emission Permit

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=572000 ton/yr	X	0.0024 lb/ton	X	1 ton / 2000 lb	X	(1 – 0.90)	= 0.068 ton/yr
2003=572000 ton/yr	X		X		X	(1 – 0.90)	= 0.068 ton/yr
2004=572000 ton/yr	X		X		X	(1 – 0.90)	= 0.068 ton/yr
2005=572000 ton/yr	X		X		X	(1 – 0.90)	= 0.068 ton/yr
2006=572000 ton/yr	X		X		X	(1 – 0.90)	= 0.068 ton/yr

Comments: Based on permit maximum annual production 572000 ton/yr, EF = 0.0024 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera San Antonio

SCC:

Unit: jaw mill

Model Id:

Emission Factor Reference: An Emission permit.

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 364000 ton/yr	X	0.0024 lb/ton	X	1 ton / 2000 lb	X	(1 – 0.90)	= 0.043 ton/yr
2003= 364000 ton/yr	X		X		X	(1 – 0.90)	= 0.043 ton/yr
2004= 364000 ton/yr	X		X		X	(1 – 0.90)	= 0.043 ton/yr
2005= 364000 ton/yr	X		X		X	(1 – 0.90)	= 0.043 ton/yr
2006= 364000 ton/yr	X		X		X	(1 – 0.90)	= 0.043 ton/yr

Comments: Based on permit maximum annual production 364000 ton/yr, EF = 0.0024 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera San Antonio

SCC:

Unit: Symons Mill

Model Id:

Emission Factor Reference: Air Emission Permit

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 520,000 ton/yr	X	0.0024 lb/ton	X	1 ton / 2000 lb	X	(1 – 0.90)	= 0.06 ton/yr
2003= 520,000 ton/yr	X		X		X	(1 – 0.90)	= 0.06 ton/yr
2004= 520,000 ton/yr	X		X		X	(1 – 0.90)	= 0.06 ton/yr
2005= 520,000 ton/yr	X		X		X	(1 – 0.90)	= 0.06 ton/yr
2006= 520,000 ton/yr	X		X		X	(1 – 0.90)	= 0.06 ton/yr

Comments: Based on permit maximum annual production.
520000 ton/yr, EF = 0.0024 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera San Antonio

SCC:

Unit: Dester Screening 1

Model Id:

Emission Factor Reference: Air Emission Permit

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 624,000 ton/yr	X	0.00074 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.90)	= 0.023 ton/yr
2003= 624,000 ton/yr	X		X		X	(1 − 0.90)	= 0.023 ton/yr
2004= 624,000 ton/yr	X		X		X	(1 − 0.90)	= 0.023 ton/yr
2005= 624,000 ton/yr	X		X		X	(1 − 0.90)	= 0.023 ton/yr
2006= 624,000 ton/yr	X		X		X	(1 − 0.90)	= 0.023 ton/yr

Comments: Based on permit maximum annual production 624,000 ton/yr, Ef = 0.00074 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera San Antonio

SCC:

Unit: Dester Screening 2

Model Id:

Emission Factor Reference: Air Emission permit

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	416,000 ton/yr	X	0.00074 lb/ton	X	1 ton / 2000 lb	X	(1 – 0.90)	= 0.015 ton/yr
2003=	416,000 ton/yr	X		X		X	(1 – 0.90)	= 0.015 ton/yr
2004=	416,000 ton/yr	X		X		X	(1 – 0.90)	= 0.015 ton/yr
2005=	416,000 ton/yr	X		X		X	(1 – 0.90)	= 0.015 ton/yr
2006=	416,000 ton/yr	X		X		X	(1 – 0.90)	= 0.015 ton/yr

Comments: Based on permit maximum annual production 416,000 ton/yr, ef = 0.00074 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera San Antonio

SCC:

Unit: Cedarapids Screening 4

Model Id:

Emission Factor Reference: Air Emission Permit

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	416,000 ton/yr	X	0.00074 lb/ton	X	1 ton / 2000 lb	X	(1 – 0.90)	= 0.015 ton/yr
2003=	416,000 ton/yr	X		X		X	(1 – 0.90)	= 0.015 ton/yr
2004=	416,000 ton/yr	X		X		X	(1 – 0.90)	= 0.015 ton/yr
2005=	416,000 ton/yr	X		X		X	(1 – 0.90)	= 0.015 ton/yr
2006=	416,000 ton/yr	X		X		X	(1 – 0.90)	= 0.015 ton/yr

Comments: Based on permit maximum annual production 416,000 ton/yr, Ef = 0.00074 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera San Antonio

SCC:

Unit: Dieter Screening 7

Model Id:

Emission Factor Reference: Au emission permit

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	416,000 ton/yr	X	0.00074 lb/ton	X	1 ton / 2000 lb	X	(1 – 0.90)	= 0.015 ton/yr
2003=	416,000 ton/yr	X		X		X	(1 – 0.90)	= 0.015 ton/yr
2004=	416,000 ton/yr	X		X		X	(1 – 0.90)	= 0.015 ton/yr
2005=	416,000 ton/yr	X		X		X	(1 – 0.90)	= 0.015 ton/yr
2006=	416,000 ton/yr	X		X		X	(1 – 0.90)	= 0.015 ton/yr

Comments: Based on peanut maximum annual production 416,000 ton/yr, Ef = 0.00074 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera San Antonio

SCC:

Unit: Nuevo Screening & B+M - 3620

Model Id:

Emission Factor Reference: Air emission permit

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 728,000 ton/yr	X	0.00074 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.90)	= 0.026 ton/yr
2003= 728,000 ton/yr	X		X		X	(1 − 0.90)	= 0.026 ton/yr
2004= 728,000 ton/yr	X		X		X	(1 − 0.90)	= 0.026 ton/yr
2005= 728,000 ton/yr	X		X		X	(1 − 0.90)	= 0.026 ton/yr
2006= 728,000 ton/yr	X		X		X	(1 − 0.90)	= 0.026 ton/yr

Comments: Based on permit maximum annual production. 728,000 ton/yr, Ef = 0.00074 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Centro San Antonio

SCC:

Unit: Dester Screening 91 BHM-3620

Model Id:

Emission Factor Reference: Our emission permit.

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 728,000 ton/yr	X	0.00074 lb/ton	X	1 ton / 2000 lb	X	(1 – 0.90)	= 0.026 ton/yr
2003= 728,000 ton/yr	X		X		X	(1 – 0.90)	= 0.026 ton/yr
2004= 728,000 ton/yr	X		X		X	(1 – 0.90)	= 0.026 ton/yr
2005= 728,000 ton/yr	X		X		X	(1 – 0.90)	= 0.026 ton/yr
2006= 728,000 ton/yr	X		X		X	(1 – 0.90)	= 0.026 ton/yr

Comments: Based on permit maximum annual production 728,000 ton/yr, Ef = 0.00074 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera San Antonio

SCC:

Unit: Aester Screening Tertiary Process

Model Id:

Emission Factor Reference: Air emission permit.

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 572,000 ton/yr	X	0.00074 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.90)	= 0.021 ton/yr
2003= 572,000 ton/yr	X		X		X	(1 − 0.90)	= 0.021 ton/yr
2004= 572,000 ton/yr	X		X		X	(1 − 0.90)	= 0.021 ton/yr
2005= 572,000 ton/yr	X		X		X	(1 − 0.90)	= 0.021 ton/yr
2006= 572,000 ton/yr	X		X		X	(1 − 0.90)	= 0.021 ton/yr

Comments: Based on permit maximum annual production.
572,000 ton/yr, Ef = 0.00074 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera San Antonio

SCC:

Unit: Belt 48"

Model Id:

Emission Factor Reference: Air emission permit

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 832,000 ton/yr	X	0.000046 lb/ton	X	1 ton / 2000 lb	X	(1 – 0.85)	= 2.8E-3 ton/yr
2003= 832,000 ton/yr	X		X		X	(1 – 0.85)	= 2.8e-3 ton/yr
2004= 832,000 ton/yr	X		X		X	(1 – 0.85)	= 2.8e-3 ton/yr
2005= 832,000 ton/yr	X		X		X	(1 – 0.85)	= 2.8e-3 ton/yr
2006= 832,000 ton/yr	X		X		X	(1 – 0.85)	= 2.8e-3 ton/yr

Comments: Based on peanut maximum annual production.
832,000 ton/yr, Ef = 0.000046 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera San Antonio

SCC:

Unit: Belt 36"

Model Id:

Emission Factor Reference: Air emission permit.

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 728,000 ton/yr	X	0.000046 lb/ton	X	1 ton / 2000 lb	X	(1 – 0.85)	= 25e-3 ton/yr
2003= 728,000 ton/yr	X		X		X	(1 – 0.85)	= 2.5e-3 ton/yr
2004= 728,000 ton/yr	X		X		X	(1 – 0.85)	= 2.5e-3 ton/yr
2005= 728,000 ton/yr	X		X		X	(1 – 0.85)	= 25e-3 ton/yr
2006= 728,000 ton/yr	X		X		X	(1 – 0.85)	= 25e-3 ton/y

Comments: Based on permit maximum annual production.
728,000 ton/yr, EF= 0.000046 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera San Antonio

SCC:

Unit: Belt 36"

Model Id:

Emission Factor Reference: Air emission permit

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 728,000 ton/yr	X	0.000046 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.85)	= 2.5e-3 ton/yr
2003= 728,000 ton/yr	X		X		X	(1 − 0.85)	= 2.5e-3 ton/yr
2004= 728,000 ton/yr	X		X		X	(1 − 0.85)	= 2.5e-3 ton/yr
2005= 728,000 ton/yr	X		X		X	(1 − 0.85)	= 2.5e-3 ton/yr
2006= 728,000 ton/yr	X		X		X	(1 − 0.85)	= 2.5e-3 ton/yr

Comments: Based on permit maximum annual production 728,000 ton/yr, EF = 0.000046 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera San Antonio

SCC:

Unit: Belt 36"

Model Id:

Emission Factor Reference: Air emission permit

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	832,000 ton/yr	X	0.000046 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.85)	= 2.8e-3 ton/yr
2003=	832,000 ton/yr	X		X		X	(1 − 0.85)	= 2.8e-3 ton/yr
2004=	832,000 ton/yr	X		X		X	(1 − 0.85)	= 2.8e-3 ton/yr
2005=	832,000 ton/yr	X		X		X	(1 − 0.85)	= 2.8e-3 ton/yr
2006=	832,000 ton/yr	X		X		X	(1 − 0.85)	= 2.8e-3 ton/yr

Comments: Based on permit maximum annual production.
832,000 ton/yr, EF=0.000046 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera San Antonio

SCC:

Unit: Belt 30" (Six)

Model Id:

Emission Factor Reference: Our emission permit.

Pollutant: PM-10

Calculations:

Operating Rate	Emission Factor		Conversion Factor		Control Efficiency	each Belt
2002= 832,000 ton/yr X	0.000046 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.85)	= 2.8e-3 ton/yr
2003= 832,000 ton/yr X		X		X	(1 − 0.85)	= 2.8e-3 ton/yr
2004= 832,000 ton/yr X		X		X	(1 − 0.85)	= 2.8e-3 ton/yr
2005= 832,000 ton/yr X		X		X	(1 − 0.85)	= 2.8e-3 ton/yr
2006= 832,000 ton/yr X		X		X	(1 − 0.85)	= 2.8e-3 ton/yr

Comments: Based on permit maximum annual production. 832,000 ton/yr (each), Ef = 0.000046 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera San Antonio

SCC:

Unit: Belt 30" (Five)

Model Id:

Emission Factor Reference: Our emission permit

Pollutant: PM-10

Calculations:

Operating Rate	Emission Factor	Conversion Factor	Control Efficiency	each Belt
2002= 499,200 ton/yr X	X	X	(1 − 0.85)	= 1.7e-3 ton/yr
2003= 499,200 ton/yr X	X	X	(1 − 0.85)	= 1.7e-3 ton/yr
2004= 499,200 ton/yr X	0.000046 lb/ton X	1 ton / 2000 lb X	(1 − 0.85)	= 1.7e-3 ton/yr
2005= 499,200 ton/yr X	X	X	(1 − 0.85)	= 1.7e-3 ton/yr
2006= 499,200 ton/yr X	X	X	(1 − 0.85)	= 1.7e-3 ton/yr

Comments: Based on peanut maximum annual production 499,200 ton/yr (each Belt), Ef = 0.000046 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera San Antonio

SCC:

Unit: Belt 24" (ton)

Model Id:

Emission Factor Reference: Our emission permit.

Pollutant: PM-10

Calculations:

Operating Rate	Emission Factor	Conversion Factor	Control Efficiency	each Belt
2002= 832,000 ton/yr X	0.000046 lb/ton	X $\frac{1 \text{ ton}}{2000 \text{ lb}}$ X	(1 – 0.85)	= 2.87e-3 ton/yr
2003= 832,000 ton/yr X		X X	(1 – 0.85)	= 2.87e-3 ton/yr
2004= 832,000 ton/yr X		X X	(1 – 0.85)	= 2.87e-3 ton/yr
2005= 832,000 ton/yr X		X X	(1 – 0.85)	= 2.87e-3 ton/yr
2006= 832,000 ton/yr X		X X	(1 – 0.85)	= 2.87e-3 ton/yr

Comments: Based on permit maximum annual production.
832,000 ton/yr (each Belt), Ef = 0.000046 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera San Antonio

SCC:

Unit: Belt 24" (nine)

Model Id:

Emission Factor Reference: Air emission permit

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	each Belt
2002= 364,000 ton/yr	X	0.000046 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.85)	= 1.2e-3 ton/yr
2003= 364,000 ton/yr	X		X		X	(1 − 0.85)	= 1.2e-3 ton/yr
2004= 364,000 ton/yr	X		X		X	(1 − 0.85)	= 1.2e-3 ton/yr
2005= 364,000 ton/yr	X		X		X	(1 − 0.85)	= 1.2e-3 ton/yr
2006= 364,000 ton/yr	X		X		X	(1 − 0.85)	= 1.2e-3 ton/yr

Comments: Based on permit maximum annual production 364,000 ton/yr (each Belt), Ef = 0.000046 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera San Antonio

SCC:

Unit: Truck Loading

Model Id:

Emission Factor Reference: Air Emission Permit

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	624,000 ton/yr	X	0.0001 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.90)	= 3.12e-3 ton/yr
2003=	624,000 ton/yr	X		X		X	(1 − 0.90)	= 3.12e-3 ton/yr
2004=	624,000 ton/yr	X		X		X	(1 − 0.90)	= 3.12e-3 ton/yr
2005=	624,000 ton/yr	X		X		X	(1 − 0.90)	= 3.12e-3 ton/yr
2006=	624,000 ton/yr	X		X		X	(1 − 0.90)	= 3.12e-3 ton/yr

Comments: Based on permit maximum annual production 624,000 ton/yr, EF = 0.0001 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera San Antonio

SCC:

Unit: Storage Piles

Model Id:

Emission Factor Reference: Av emission permit

Pollutant: PM-10

Calculations:

Operating Rate	Emission Factor	Conversion Factor	Control Efficiency	
2002= 624,000 ton/yr X	0.00017 lb/ton X	1 ton / 2000 lb X	(1 – 0.)	= 5.3e-3 ton/yr
2003= 624,000 ton/yr X	X	X	(1 – 0.)	= 5.3e-3 ton/yr
2004= 624,000 ton/yr X	X	X	(1 – 0.)	= 5.3e-3 ton/yr
2005= 624,000 ton/yr X	X	X	(1 – 0.)	= 5.3e-3 ton/yr
2006= 624,000 ton/yr X	X	X	(1 – 0.)	= 5.3e-3 ton/yr

Comments: Based on permit maximum annual production. 624,000 ton/yr, EF = 0.00017 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera de Puerto Rico (Portable Plant)

SCC:

Unit: Primary Crushing

Model Id:

Emission Factor Reference: Section 11.19.2 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	499998.72 ton/yr	X	0.0024 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.85)	= 0.089 ton/yr
2003=	499998.72 ton/yr	X		X		X	(1 − 0.85)	= 0.089 ton/yr
2004=	499998.72 ton/yr	X		X		X	(1 − 0.85)	= 0.089 ton/yr
2005=	499998.72 ton/yr	X		X		X	(1 − 0.85)	= 0.089 ton/yr
2006=	499998.72 ton/yr	X		X		X	(1 − 0.85)	= 0.089 ton/yr

Comments: Based on permit maximum annual production 499998.72 ton/yr, EF = 0.0024 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera de Puerto Rico (Portable Plant)

SCC:

Unit: Double Deck Vibrating Screen

Model Id:

Emission Factor Reference: Section 11.19.2 of AP-42, 5th edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	299994.24 ton/yr	X	0.015 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.85)	= 0.34 ton/yr
2003=	299994.24 ton/yr	X		X		X	(1 − 0.85)	= 0.34 ton/yr
2004=	299994.24 ton/yr	X		X		X	(1 − 0.85)	= 0.34 ton/yr
2005=	299994.24 ton/yr	X		X		X	(1 − 0.85)	= 0.34 ton/yr
2006=	299994.24 ton/yr	X		X		X	(1 − 0.85)	= 0.34 ton/yr

Comments: Based on permit maximum annual production 299994.24 ton/yr, EF = 0.015 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera de Puerto Rico (Portable Plant)

SCC:

Unit: Triple Deck Vibrating Screening

Model Id:

Emission Factor Reference: Section 11.19.2 of AP-42, 5th edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	200004.48 ton/yr	X	0.015 lb/ton	X	1 ton / 2000 lb	X	(1 – 0.85)	= 0.22 ton/yr
2003=	200004.48 ton/yr	X		X		X	(1 – 0.85)	= 0.22 ton/yr
2004=	200004.48 ton/yr	X		X		X	(1 – 0.85)	= 0.22 ton/yr
2005=	200004.48 ton/yr	X		X		X	(1 – 0.85)	= 0.22 ton/yr
2006=	200004.48 ton/yr	X		X		X	(1 – 0.85)	= 0.22 ton/yr

Comments: Based on permit maximum annual production 200004.48 ton/yr, EF = 0.015 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera de Puerto Rico (Portable Plant)

SCC:

Unit: Gyratory Cone Crusher

Model Id:

Emission Factor Reference: Section 11.19.2 of AP-42, 5th Edition.

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	400008.96 ton/yr	X	0.0024 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.85)	= 0.072 ton/yr
2003=	400008.96 ton/yr	X		X		X	(1 − 0.85)	= 0.072 ton/yr
2004=	400008.96 ton/yr	X		X		X	(1 − 0.85)	= 0.072 ton/yr
2005=	400008.96 ton/yr	X		X		X	(1 − 0.85)	= 0.072 ton/yr
2006=	400008.96 ton/yr	X		X		X	(1 − 0.85)	= 0.072 ton/yr

Comments: Based on permit maximum annual production. 400008.96 ton/yr, EF = 0.0024 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Canteras de Puerto Rico (Portable Plant)

SCC:

Unit: Conveyor

Model Id:

Emission Factor Reference: Section 11.19.2 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 499948.8 ton/yr	X	0.0014 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.85)	= 0.052 ton/yr
2003= 499948.8 ton/yr	X		X		X	(1 − 0.85)	= 0.052 ton/yr
2004= 499948.8 ton/yr	X		X		X	(1 − 0.85)	= 0.052 ton/yr
2005= 499948.8 ton/yr	X		X		X	(1 − 0.85)	= 0.052 ton/yr
2006= 499948.8 ton/yr	X		X		X	(1 − 0.85)	= 0.052 ton/yr

Comments: Based on permit maximum annual production 499948.8 ton/yr, Ef = 0.0014 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Canteras de Puerto Rico (Portable Plant)

SCC:

Unit: Portable Barmac 9000 VSI

Model Id:

Emission Factor Reference: Section 11.19.2 of AP-42, 5th Edition.

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	229.88 ton/yr	X	0.0024 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.85)	= 4.13e-5 ton/yr
2003=	229.88 ton/yr	X		X		X	(1 − 0.85)	= 4.13e-5 ton/yr
2004=	229.88 ton/yr	X		X		X	(1 − 0.85)	= 4.13e-5 ton/yr
2005=	229.88 ton/yr	X		X		X	(1 − 0.85)	= 4.13e-5 ton/yr
2006=	229.88 ton/yr	X		X		X	(1 − 0.85)	= 4.13e-5 ton/yr

Comments: Based on permit maximum annual production.
229.88 ton/yr, Ef = 0.0024 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera de Puerto Rico (Portable Plant)

SCC:

Unit: Truck loading

Model Id:

Emission Factor Reference: Section 11.19.2 of AP-42, 5th Edition.

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 499998.72 ton/yr	X	0.0001 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.0)	= 0.024 ton/yr
2003= 499998.72 ton/yr	X		X		X	(1 − 0.0)	= 0.024 ton/yr
2004= 499998.72 ton/yr	X		X		X	(1 − 0.0)	= 0.024 ton/yr
2005= 499998.72 ton/yr	X		X		X	(1 − 0.0)	= 0.024 ton/yr
2006= 499998.72 ton/yr	X		X		X	(1 − 0.0)	= 0.024 ton/yr

Comments: Based on permit maximum annual production 499998.72 ton/yr, Ef = 0.0001 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Canteras de Puerto Rico (Portable Plant)

SCC:

Unit: Truck Unloading

Model Id:

Emission Factor Reference: Section 11.19.2 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	499998.72 ton/yr	X	1.60 e-5 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.0)	= 0.004 ton/yr
2003=	499998.72 ton/yr	X		X		X	(1 − 0.0)	= 0.004 ton/yr
2004=	499998.72 ton/yr	X		X		X	(1 − 0.0)	= 0.004 ton/yr
2005=	499998.72 ton/yr	X		X		X	(1 − 0.0)	= 0.004 ton/yr
2006=	499998.72 ton/yr	X		X		X	(1 − 0.0)	= 0.004 ton/yr

Comments: Based on permit maximum annual production.
499998.72 ton/yr, Ef = 1.60 e-5 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera de Puerto Rico (Stationary Plant)

SCC:

Unit: Primary Crushing

Model Id:

Emission Factor Reference: Section 11.19.2 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	150009.6 $\frac{ton}{yr}$	X	$0.0024 \frac{lb}{ton}$	X	$\frac{1\ ton}{2000\ lb}$	X	$(1-0.85)$	$= 0.027 \frac{ton}{yr}$
2003=	150009.6 $\frac{ton}{yr}$	X		X		X	$(1-0.85)$	$= 0.027 \frac{ton}{yr}$
2004=	150009.6 $\frac{ton}{yr}$	X		X		X	$(1-0.85)$	$= 0.027 \frac{ton}{yr}$
2005=	150009.6 $\frac{ton}{yr}$	X		X		X	$(1-0.85)$	$= 0.027 \frac{ton}{yr}$
2006=	150009.6 $\frac{ton}{yr}$	X		X		X	$(1-0.85)$	$= 0.027 \frac{ton}{yr}$

Comments: Based on permit maximum annual production 150009.6 ton/yr, EF = 0.0024 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Canteras de Puerto Rico (Stationary Plant)

SCC:

Unit: Two Deck Vibrating Screen

Model Id:

Emission Factor Reference: Section 11.19.2 of AP-42, 5th Edition.

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	150009.6 ton/yr	X	0.015 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.85)	= 0.16 ton/yr
2003=	150009.6 ton/yr	X		X		X	(1 − 0.85)	= 0.16 ton/yr
2004=	150009.6 ton/yr	X		X		X	(1 − 0.85)	= 0.16 ton/yr
2005=	150009.6 ton/yr	X		X		X	(1 − 0.85)	= 0.16 ton/yr
2006=	150009.6 ton/yr	X		X		X	(1 − 0.85)	= 0.16 ton/yr

Comments: Based on permit maximum annual production.
150009.6 ton/yr, EF = 0.015 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cementos de Puerto Rico (Stationary Plant)

SCC:

Unit: Rollercone Crusher Sellsmith 48" S

Model Id:

Emission Factor Reference: Section 11.19.2 of AP-42, 5th edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	150009.6 ton/yr	X	0.0024 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.89)	= 0.027 ton/yr
2003=	150009.6 ton/yr	X		X		X	(1 − 0.89)	= 0.027 ton/yr
2004=	150009.6 ton/yr	X		X		X	(1 − 0.89)	= 0.027 ton/yr
2005=	150009.6 ton/yr	X		X		X	(1 − 0.89)	= 0.027 ton/yr
2006=	150009.6 ton/yr	X		X		X	(1 − 0.89)	= 0.027 ton/yr

Comments: Based on permit maximum annual production 150009.6 ton/yr, EF = 0.0024 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Canteras de Puerto Rico (Stationary Plant)

SCC:

Unit: Conveyor

Model Id:

Emission Factor Reference: Section 11.19.2 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002= 150009.6 ton/yr	X	0.0014 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.85)	= 0.015 ton/yr
2003= 150009.6 ton/yr	X		X		X	(1 − 0.85)	= 0.015 ton/yr
2004= 150009.6 ton/yr	X		X		X	(1 − 0.85)	= 0.015 ton/yr
2005= 150009.6 ton/yr	X		X		X	(1 − 0.85)	= 0.015 ton/yr
2006= 150009.6 ton/yr	X		X		X	(1 − 0.85)	= 0.015 ton/yr

Comments: Based on permit maximum annual production 150009.6 ton/yr, Ef = 0.0014 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Cantera de Puerto Rico (Stationary Plant)

SCC:

Unit: Truck loading

Model Id:

Emission Factor Reference: Section 11.19.2 of AP-42, 5th edition

Pollutant: PM-10

Calculations:

	Operating Rate		Emission Factor		Conversion Factor		Control Efficiency	
2002=	150009.6 ton/yr	X	0.0001 lb/ton	X	1 ton / 2000 lb	X	(1 − 0.0)	= 0.007 ton/yr
2003=	150009.6 ton/yr	X		X		X	(1 − 0.0)	= 0.007 ton/yr
2004=	150009.6 ton/yr	X		X		X	(1 − 0.0)	= 0.007 ton/yr
2005=	150009.6 ton/yr	X		X		X	(1 − 0.0)	= 0.007 ton/yr
2006=	150009.6 ton/yr	X		X		X	(1 − 0.0)	= 0.007 ton/yr

Comments: Based on permit maximum annual production 150009.6 ton/yr, EF = 0.0001 lb/ton

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Actual Emissions Calculations

Industry: Canteras de Puerto Rico (Stationary Plant)

SCC:

Unit: Truck Unloading

Model Id:

Emission Factor Reference: Section 11.19.2 of AP-42, 5th Edition

Pollutant: PM-10

Calculations:

Operating Rate	Emission Factor	Conversion Factor	Control Efficiency	
2002= 150009.6 ton/yr X	1.6 e-5 lb/ton X	1 ton / 2000 lb X	(1 − 0.0)	= 0.001 ton/yr
2003= 150009.6 ton/yr X	X	X	(1 − 0.0)	= 0.001 ton/yr
2004= 150009.6 ton/yr X	X	X	(1 − 0.0)	= 0.001 ton/yr
2005= 150009.6 ton/yr X	X	X	(1 − 0.0)	= 0.001 ton/yr
2006= 150009.6 ton/yr X	X	X	(1 − 0.0)	= 0.001 ton/yr

Comments: Based on permit maximum annual production 150009.6 ton/yr, Ef = 1.60 e-5 lb/ton

A-7
ONROAD
MOBILE SOURCES

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Area Sources

ONROAD Mobile Sources

Year	DVMT Total Guaynabo Municipality	Motor Vehicle[1] Emission Factor g/VMT	Roadway Emission Factor g/VMT
2002	1,369,155	0.0801	0.5333
2002	1,553,419	0.0801	0.5333
2004	1,554,500	0.0801	0.5333
2005	1,513,110	0.0801	0.5333
2006	1,512,676	0.0801	0.5333

[1] 2000 value used

365 days, 1×10^{-6} (conversion factor from g to tons)

Roadway

2002 = 1,369,155 VMT/day × 0.5333 g/VMT × 365 days/yr × 1×10^{-6} = 266.51 tn/yr

2003 = 1,553,419 × 0.5333 × 365 × 1×10^{-6} = 302.38 tons/yr

2004 = 1,554,500 × 0.5333 × 365 × 1×10^{-6} = 302.59 tons/yr

2005 = 1,513,110 × 0.5333 × 365 × 1×10^{-6} = 294.53 tons/yr

2006 = 1,512,676 × 0.5333 × 365 × 1×10^{-6} = 294.45 tons/yr

Motor Vehicle

2002 = 1,369,155 × 0.0801 × 365 × 1×10^{-6} = 40.03 tons/yr

2003 = 1,553,419 × 0.0801 × 365 × 1×10^{-6} = 45.42 tons/yr

2004 = 1,554,500 × 0.0801 × 365 × 1×10^{-6} = 45.45 tons/yr

2005 = 1,513,110 × 0.0801 × 365 × 1×10^{-6} = 44.24 tons/yr

2006 = 1,512,676 × 0.0801 × 365 × 1×10^{-6} = 44.23 tons/yr

A-8
NONROAD
MARINE VESSELS

PM-10 GUAYNABO NON-ATTAINMENT AREA

Emission Inventory: Area Sources

Moving Vessels : Transit & Hotelling

Vessel Type	calls/yr 2002	2003	2004	2005	2006	Engine KW Main	Auxiliary	Max Speed knots	Hotelling hrs/yr	Load Factor Hotelling	Transit
Tanker	83	123	95	109	86	6242	1911	15	25.9	0.26	0.33
Product Tanker	83	120	92	100	77	6242	1911	15	25.9	0.26	0.33
Crude Tanker	0	3	3	9	9	24967	3667	15	24.5	0.26	0.33
Container	482	477	498	485	453	63898	13501	25	100.9	0.15	1
Dry Bulks	66	97	51	55	69	9028	2850	14	247.4	0.1	0.3
RO-RO	165	242	203	214	253	19856	2850	21	72.3	0.26	0.96
Gas Carrier	9	10	17	6	9	10019	1776	16	279.7	0.22	0.4
Combination	5	4	0	0	0	6242	1911	15	38.6	0.26	0.33
General Cargo	260	299	216	217	218	1776	1795	16	31.5	0.22	0.4
Vehicle	99	127	103	107	125	11502	2850	19	16.3	0.26	0.66
Cruise	625	537	661	606	550	35682	8921	22	11.2	na	1

Ef = 1.5 g/kW-hr $E = MCR \times LF \times A \times Ef$ Activity = D/S

Transit distance = 3.56 nm 1 ton = 2000 lb

1 gram = $2.204\ e^{-3}$ lb

Emissions

① Tanker — TRANSIT

2002

$$\text{Activity} = \frac{3.56\ nm/calls}{15\ Knots} \times 83\ calls/yr = 19.69\ hrs/yr$$

$$E = \frac{(6242 \times 0.33 \times 19.69 \times 1.5) \times 2.204\ e^{-3}\ lb/g}{2000\ lb/1\ ton} = \boxed{0.067\ tons/yr}$$

2003

$$A = \frac{3.56}{15} \times 123 = 29.192\ hrs/yr$$

$$E = \frac{(6242 \times 0.33 \times 29.192 \times 1.5) \times 2.204\ e^{-3}}{2000}$$

$$= \boxed{0.099\ tons/yr}$$

2004

$$A = \frac{3.56}{15} \times 95 = 22.5$$

$$E = \frac{(6242 \times 0.33 \times 22.5 \times 1.5) \times 2.204 e^{-3}}{2000}$$

$$= \boxed{0.076\ tons/yr}$$

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Area Sources

TANKER TRANSIT

2005

$A = \frac{3.56}{15} \times 109 = 25.86$ $\quad E = \frac{(6242 \times 0.33 \times 25.86 \times 1.5) \times 2.204e^{-3}}{2000}$

$= 0.088$ tons/yr

2006

$A = \frac{3.56}{15} \times 86 = 20.41$ $\quad E = \frac{(6242 \times 0.33 \times 20.41 \times 1.5) \times 2.204e^{-3}}{2000}$

$= 0.069$ tons/yr

TANKER Hotelling

A = 25.9 hrs/yr → the same activity for 2002 - 2006

$E = \frac{(1911 \times 0.26 \times 25.9 \times 1.5) \times 2.204e^{-3}}{2000} = 0.021$ tons/yr

PRODUCT TANKER TRANSIT

2002

$A = \frac{3.56 \text{ nm/calls}}{15 \text{ Knots}} \times 83 \text{ calls/yr} = 19.69$ hrs/yr

$E = \frac{(6242 \text{ KW} \times 0.33 \times 19.69 \text{ hrs/yr} \times 1.5) \times 2.204e^{-3} \text{ lb/g}}{2000 \text{ lb/ton}} = 0.067$ tons/yr

2003

$A = \frac{3.56}{15} \times 120 = 28.48$

$E = \frac{(6242 \times 0.33 \times 28.48 \times 1.5) \times 2.204e^{-3}}{2000} = 0.097$ tons/yr

2004

$A = \frac{3.56}{15} \times 92 = 21.83$

$E = \frac{(6242 \times 0.33 \times 21.83 \times 1.5) 2.204e^{-3}}{2000} = 0.074$ tons/yr

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Area Sources

PRODUCT TANKER TRANSIT

2005

$A = \frac{3.56}{15} \times 100 = 23.73$ $\quad E = \frac{(6242 \times 0.33 \times 23.73 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.08 \text{ tons/yr}}$

2006

$A = \frac{3.56}{15} \times 77 = 18.27$ $\quad E = \frac{(6242 \times 0.33 \times 18.27 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.062 \text{ tons/yr}}$

Hotelling (the same emission for 2002 - 2006)

$A = 25.9$

$E = \frac{(1911 \times 0.26 \times 25.9 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.021 \text{ tons/yr}}$

CRUDE TANKER TRANSIT

2002

$A = \frac{3.56}{15} \times 0 \doteq 0$

$E = 0$

2003

$A = \frac{3.56}{15} \times 3 = 0.712$ $\quad E = \frac{(24967 \times 0.33 \times 0.712 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.097 \text{ tons/yr}}$

2004

$A = \frac{3.56}{15} \times 3 = 0.712$ $\quad E = \frac{(24967 \times 0.33 \times 0.712 \times 1.5) 2.204e^{-3}}{2000} = \boxed{0.097 \text{ tons/yr}}$

2005

$A = \frac{3.56}{15} \times 9 = 2.136$ $\quad E = \frac{(24967 \times 0.33 \times 2.136 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.029 \text{ tons/yr}}$

2006

$A = \frac{3.56}{15} \times 9 = 2.136$ $\quad E = \frac{(24967 \times 0.33 \times 2.136 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.029 \text{ tons/yr}}$

Hotelling (The same emission for 2002-2006)

$A = 24.5$ $\quad E = \frac{(3667 \times 0.26 \times 24.5 \times 1.5) 2.204e^{-3}}{2000} = \boxed{0.038 \text{ tons/yr}}$

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Area Sources

Container Transit

2002

$A = \frac{3.56}{25} \times 482 = 68.63$

$E = \frac{(63898 \times 1 \times 68.63 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{7.24 \text{ tons/yr}}$

2003

$A = \frac{3.56}{25} \times 477 = 67.92$

$E = \frac{(63898 \times 1 \times 67.92 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{7.17 \text{ tons/yr}}$

2004

$A = \frac{3.56}{25} \times 498 = 70.91$

$E = \frac{(63898 \times 1 \times 70.91 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{7.49 \text{ tons/yr}}$

2005

$A = \frac{3.56}{25} \times 485 = 69.06$

$E = \frac{(63898 \times 1 \times 69.06 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{7.29 \text{ tons/yr}}$

2006

$A = \frac{3.56}{25} \times 453 = 64.50$

$E = \frac{(63898 \times 1 \times 6450 \times 1.5) 2.204e^{-3}}{2000} = \boxed{6.81 \text{ tons/yr}}$

Hotelling (the same emission for 2002-2006)

$A = 100.9$

$E = \frac{(13501 \times 100.9 \times 0.15 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.337 \text{ tons/yr}}$

Dry Bulk Transit

2002

$A = \frac{3.56}{14} \times 66 = 16.98$

$E = \frac{(9028 \times 16.98 \times 0.3 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.095 \text{ tons/yr}}$

2003

$A = \frac{3.56}{14} \times 97 = 24.66$

$E = \frac{(9028 \times 24.66 \times 0.3 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.11 \text{ tons/yr}}$

2004

$A = \frac{3.56}{14} \times 51 = 12.97$

$E = \frac{(9028 \times 12.97 \times 0.3 \times 1.5) 2.204e^{-3}}{2000} = \boxed{0.058 \text{ tons/yr}}$

2005

$A = \frac{3.56}{14} \times 55 = 13.98$

$E = \frac{(9028 \times 13.98 \times 0.3 \times 1.5) 2.204e^{-3}}{2000} = \boxed{0.062 \text{ tons/yr}}$

2006

$A = \frac{3.56}{14} \times 69 = 17.54$

$E = \frac{(9028 \times 17.54 \times 0.3 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.078 \text{ tons/yr}}$

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Area Sources

Dry Bulk Hotelling (the same emission for 2002 - 2006)

$A = 247.4 \quad E = \frac{(2850 \times 247.4 \times 0.1 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.116 \text{ tons/yr}}$

Ro-Ro Transit

2002
$A = \frac{3.56}{21} \times 165 = 27.97 \quad E = \frac{(19856 \times 27.97 \times 0.96 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.88 \text{ tons/yr}}$

2003
$A = \frac{3.56}{21} \times 242 = 41.02 \quad E = \frac{(19856 \times 41.02 \times 0.96 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{1.29 \text{ tons/yr}}$

2004
$A = \frac{3.56}{21} \times 203 = 34.41 \quad E = \frac{(19856 \times 34.41 \times 0.96 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{1.08 \text{ tons/yr}}$

2005
$A = \frac{3.56}{21} \times 214 = 36.27 \quad E = \frac{(19856 \times 36.27 \times 0.96 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{1.14 \text{ tons/yr}}$

2006
$A = \frac{3.56}{21} \times 253 = 42.88 \quad E = \frac{(19856 \times 42.88 \times 0.96 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{1.35 \text{ tons/yr}}$

Hotelling (the same emission for 2002-2006)

$A = 72.3 \quad E = \frac{(2850 \times 72.3 \times 0.26 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.088 \text{ tons/yr}}$

Gas Carrier Transit

2002
$A = \frac{3.56}{16} \times 9 = 2 \quad E = \frac{(10019 \times 2 \times 0.40 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.03 \text{ tons/yr}}$

2003
$A = \frac{3.56}{16} \times 10 = 2.22 \quad E = \frac{(10019 \times 2.22 \times 0.4 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.0197 \text{ tons/yr}}$

2004
$A = \frac{3.56}{16} \times 17 = 3.78 \quad E = \frac{(10019 \times 3.78 \times 0.4 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.025 \text{ tons/yr}}$

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Area Sources

Gas Carrier Transit

2005

$A = \frac{3.56}{16} \times 6 = 1.335$ $\quad E = \frac{(10019 \times 1.335 \times 0.4 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.0088 \text{ tons/yr}}$

2006

$A = \frac{3.56}{16} \times 9 = 2$ $\quad E = \frac{(10019 \times 2 \times 0.4 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.013 \text{ tons/yr}}$

Hotelling (the same emission for 2002-2006)

$A = 279.7$ $\quad E = \frac{(1776 \times 279.7 \times 0.22 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.18 \text{ tons/yr}}$

Combination Transit

2002

$A = \frac{3.56}{15} \times 5 = 1.186$ $\quad E = \frac{(6242 \times 1.186 \times 0.33 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.004 \text{ tons/yr}}$

2003

$A = \frac{3.56}{15} \times 4 = 0.94$ $\quad E = \frac{(6242 \times 0.94 \times 0.33 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.003 \text{ tons/yr}}$

2004, 2005, 2006

$A = \frac{3.56}{15} \times 0 = 0$ $\quad E = 0$

Hotelling (the same emission for 2002-2006)

$A = 38.6$ $\quad E = \frac{(1911 \times 38.6 \times 0.26 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.031 \text{ tons/yr}}$

General Cargo Transit

2002

$A = \frac{3.56}{16} \times 260 = 57.85$ $\quad E = \frac{(8201 \times 57.85 \times 0.4 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.313 \text{ tons/yr}}$

2003

$A = \frac{3.56}{16} \times 299 = 66.53$ $\quad E = \frac{(8201 \times 66.53 \times 0.4 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.360 \text{ tons/yr}}$

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Area Sources

General Cargo Transit

2004

$A = \frac{3.56}{16} \times 216 = 48.06$

$E = \frac{(8201 \times 48.06 \times 0.4 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.26 \text{ tons/yr}}$

2005

$A = \frac{3.56}{16} \times 217 = 48.28$

$E = \frac{(8201 \times 48.28 \times 0.4 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.26 \text{ tons/yr}}$

2006

$A = \frac{3.56}{16} \times 218 = 48.50$

$E = \frac{(8201 \times 48.5 \times 0.4 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.26 \text{ tons/yr}}$

Hotelling (The same emissions for 2002-2006)

$A = 31.5$ $E = \frac{(1776 \times 31.5 \times 0.22 \times 1.5) \times 2.204e^{-3}}{200} = \boxed{0.02 \text{ tons/yr}}$

Vehicle Transit

2002

$A = \frac{3.56}{19} \times 99 = 18.55$

$E = \frac{(11502 \times 18.55 \times 0.66 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.23 \text{ tons/yr}}$

2003

$A = \frac{3.56}{19} \times 127 = 23.79$

$E = \frac{(11502 \times 23.79 \times 0.66 \times 1.5)}{2000} \times 2.204e^{-3} = \boxed{0.29 \text{ tons/yr}}$

2004

$A = \frac{3.56}{19} \times 103 = 19.29$

$E = \frac{(11502 \times 19.29 \times 0.66 \times 1.5)}{2000} \times 2.204e^{-3} = \boxed{0.24 \text{ tons/yr}}$

2005

$A = \frac{3.56}{19} \times 107 = 20.04$

$E = \frac{(11502 \times 20.04 \times 0.66 \times 1.5)}{2000} \times 2.204e^{-3} = \boxed{0.25 \text{ tons/yr}}$

2006

$A = \frac{3.56}{19} \times 125 = 23.42$

$E = \frac{(11502 \times 23.42 \times 0.66 \times 1.5)}{2000} \times 2.204e^{-3} = \boxed{0.293 \text{ tons/yr}}$

Vehicle Hotelling (The same emission for 2002-2006)

$A = 16.3$ $E = \frac{(2850 \times 16.3 \times 0.26 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{0.019 \text{ tons/yr}}$

PM-10 GUAYNABO NON-ATTAINMENT AREA
Emission Inventory: Area Sources

Cruise Transit

2002

$A = \frac{3.56}{22} \times 625 = 101.1$ $E = \frac{(35682 \times 101.1 \times 1 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{5.9 \text{ tons/yr}}$

2003

$A = \frac{3.56}{22} \times 539 = 86.89$ $E = \frac{(35682 \times 86.89 \times 1 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{5.12 \text{ tons/yr}}$

2004

$A = \frac{3.56}{22} \times 661 = 106.96$ $E = \frac{(35682 \times 106.96 \times 1 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{6.3 \text{ tons/yr}}$

2005

$A = \frac{3.56}{22} \times 606 = 98.06$ $E = \frac{(35682 \times 98.06 \times 1 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{5.78 \text{ tons/yr}}$

2006

$A = \frac{3.56}{22} \times 550 = 89$ $E = \frac{(35682 \times 89 \times 1 \times 1.5) \times 2.204e^{-3}}{2000} = \boxed{5.24 \text{ tons/yr}}$

Hotelling

No emissions for cruise ship hotelling because there is not a default load factor for cruises. Each cruise is different and specific calculations should be done for each vessel.

APPENDIX B
POINT SOURCE AND NONROAD MARINE VESSELS EMISSION INVENTORY

Emission Inventory for Marine Vessels

Vessel Type[1]	Calls/yr[1]					[2]Engine KW		[3]Max Speed	[4]Average Hotelling	[5]Load Factor %		[7]Transit Activity (hrs/yr)					[6]Ef	Emissions TPY (Transit & Maneuvering)					Emissions Hotelling (TPY)				
	2002	2003	2004	2005	2006	Main	Auxiliary	Knots	Berth (hrs/yr)	Hotelling	Transit	2002	2003	2004	2005	2006	g/KW-hr	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Tanker	83	123	95	109	86	6242	1911	15	25.9	0.26	0.33	19.69867	29.192	22.54667	25.86933	20.41067	1.5	0.0670729	0.0993973	0.0767702	0.08808375	0.06949727	0.0212719	0.021271918	0.021271918	0.0212719	0.021271918
Product Tanker	83	120	92	100	77	6242	1911	15	25.9	0.26	0.33	19.69867	28.48	21.83467	23.73333	18.27467	1.5	0.0670729	0.0969729	0.0743459	0.08081078	0.0622243	0.0212719	0.021271918	0.021271918	0.0212719	0.021271918
Crude Tanker	0	3	3	9	9	24967	3667	15	24.5	0.26	0.33	0	0.712	0.712	2.136	2.136	1.5	0	0.0096969	0.0096969	0.029090716	0.029090716	0.0386121	0.03861208	0.03861208	0.0386121	0.03861208
Container	482	477	498	485	453	63898	13501	25	100.9	0.15	1	68.6368	67.9248	70.9152	69.064	64.5072	1.5	7.2496518	7.1744479	7.4903041	7.294774083	6.813469401	0.3377701	0.337770111	0.337770111	0.3377701	0.337770111
Dry Bulks	66	97	51	55	69	9028	2850	14	247.4	0.1	0.3	16.78286	24.66571	12.96857	13.98571	17.54571	1.5	0.0751366	0.110428	0.0580601	0.062613836	0.078551903	0.1165514	0.116551377	0.116551377	0.1165514	0.116551377
Ro-Ro	165	242	203	214	253	19856	2850	21	72.3	0.26	0.96	27.97143	41.02476	34.41333	36.2781	42.88952	1.5	0.8813542	1.2926529	1.0843328	1.143089742	1.351409835	0.0885583	0.088558318	0.088558318	0.0885583	0.088558318
Gas Carrier	9	10	17	6	9	10019	1776	16	279.7	0.22	0.4	2.0025	2.225	3.7825	1.335	2.0025	1.5	0.0132657	0.0147397	0.0250574	0.008843791	0.013265687	0.1806471	0.180647087	0.180647087	0.1806471	0.180647087
Combination	5	4	0	0	0	6242	1911	15	38.6	0.26	0.33	1.186667	0.949333	0	0	0	1.5	0.0040405	0.0032324	0	0	0	0.0317025	0.03170255	0.03170255	0.0317025	0.03170255
General Cargo	260	299	216	217	218	8201	1776	16	31.5	0.22	0.4	57.85	66.5275	48.06	48.2825	48.505	1.5	0.3136917	0.3607454	0.2606054	0.261811914	0.263018421	0.0203446	0.020344595	0.020344595	0.0203446	0.020344595
Vehicle	99	127	103	107	125	11502	2850	19	16.3	0.26	0.66	18.54947	23.79579	19.29895	20.04842	23.42105	1.5	0.2327672	0.2986003	0.2421719	0.251576648	0.293897954	0.0199654	0.01996543	0.01996543	0.0199654	0.01996543
Cruise	625	537	661	606	550	35682	8921	22	11.2	0	1	101.1364	86.89636	106.9618	98.06182	89	1.5	5.96526	5.1253514	6.308859	5.783916089	5.249428794	0	0	0	0	0

[1]This data is from Lloyd's report from 2002-2006. Cruise data is from Puerto Rico Ports Authority Statistics Maritime Reports. 2007 data from U.S. Water Transportation Statistical Snapshot and cruise data from Puerto Rico Ports Authority Statistics Maritime Reports.

[2]Tables 2.10 and 2.12 of Long Beach Air Emissions Inventory for 2003.

[3]Table 2.9 of Long Beach Air Emissions Inventory for 2003.

[4]Table 2.20 of Long Beach Air Emissions Inventory for 2003.

[5]Figure 2.17 and Table 2.12 of Long Beach Air Emissions Inventory for 2003. Cruise ship default load factor is not available.

[6]Tables 2.5 and 2.11 of Long Beach Air Emissions Inventory for 2003.

PM-10 EMISSION SOURCE INVENTORY FOR GUAYNABO NON-ATTAINMENT AREA

Canteras de Puerto Rico (Continued)

Emission Unit	Address Physical/ Postal	SIC	Municipality	SCC	Point ID	Capacity MMBTU/ hr	Operating Rate Hrs/ day	Days/ wk	Wks/ yr	Control Equipment	Efficiency %	Fuel Oil	Heat Content Btu/gal	% S 2002	2003	2004	2005	2006	Raw Material tons/hr 2002	2003	2004	2005	2006	[1,2]Emission Factor lb/ton, lb/miles 2002	2003	2004	2005	2006	Emissions tons/yr 2002	2003	2004	2005	2006
Eljay Cone Crusher	Road PR 1, KM 23.6, Rio	1442	C			-	8	6	52	Sprinkler	85	-	-	0.0024	0.002	0.002	0.0024	0.002	160.26	160.26	160.26	160.26	160.26	0.002	0.0024	0.0024	0.002	0.0024	0.072	0.072	0.072	0.072	0.072
Conveyor	Guaynabo, PR/ PO Box 11370					-	8	6	52	Sprinkler	85	-	-	0.0014	0.001	0.001	0.0014	0.001	200.3	200.3	200.3	200.3	200.3	0.001	0.0014	0.0014	0.001	0.0014	0.0525	0.052	0.052	0.052	0.052
Portable Barmac 9000 VSI	Caparra Heights Sta. San Juan,					-	8	6	52	Sprinkler	85	-	-	0.0024	0.002	0.002	0.0024	0.002	0.0921	0.0921	0.0921	0.0921	0.0921	0.002	0.0024	0.0024	0.002	0.0024	4E-05	4E-05	4E-05	4E-05	4E-05
Truck Loading	PR 00922					-	8	6	52	-	-	-	-	0.0001	1E-04	1E-04	0.0001	1E-04	200.32	200.32	200.32	200.32	200.32	1E-04	0.0001	0.0001	1E-04	0.0001	0.025	0.025	0.025	0.025	0.025
Truck Unloading						-	8	6	52	-	-	-	-	2E-05	2E-05	2E-05	2E-05	2E-05	200.32	200.32	200.32	200.32	200.32	2E-05	1.6E-05	2E-05	2E-05	1.6E-05	0.004	0.004	0.004	0.004	0.004
STATIONARY PLANT																																	
Primary Crushing						-	8	6	52	Sprinkler	85	-	-	0.0024	0.002	0.002	0.0024	0.002	60.1	60.1	60.1	60.1	60.1	0.002	0.0024	0.0024	0.002	0.0024	0.027	0.027	0.027	0.027	0.027
Two Deck Vibrating Screen						-	8	6	52	Sprinkler	85	-	-	0.015	0.015	0.015	0.015	0.015	60.1	60.1	60.1	60.1	60.1	0.015	0.015	0.015	0.015	0.015	0.1688	0.169	0.169	0.169	0.169
Rollercone Crusher Tellsmith 48" S						-	8	6	52	Sprinkler	85	-	-	0.0024	0.002	0.002	0.0024	0.002	60.1	60.1	60.1	60.1	60.1	0.002	0.0024	0.0024	0.002	0.0024	0.027	0.027	0.027	0.027	0.027
Conveyor						-	8	6	52	Sprinkler	85	-	-	0.0014	0.001	0.001	0.0014	0.001	60.1	60.1	60.1	60.1	60.1	0.001	0.0014	0.0014	0.001	0.0014	0.0158	0.016	0.016	0.016	0.016
Truck Loading						-	8	6	52	-	-	-	-	0.0001	1E-04	1E-04	0.0001	1E-04	60.1	60.1	60.1	60.1	60.1	1E-04	0.0001	0.0001	1E-04	0.0001	0.0075	0.008	0.008	0.008	0.008
Truck Unloading						-	8	6	52	-	-	-	-	2E-05	2E-05	2E-05	2E-05	2E-05	60.1	60.1	60.1	60.1	60.1	2E-05	1.6E-05	2E-05	2E-05	1.6E-05	0.0012	0.001	0.001	0.001	0.001

[1]Emission factors for PM10 from Section 11.19.2 of AP-42, 5th Edition of Air Chief 11.

[2]Allowable and actual emissions based on permit maximum annual production.

Cantera San Antonio (Continued)

Emission Unit	Address Physical/ Postal	SIC	Municipality	SCC	Point Id	Capacity MMBTU/ hr	Operation Rate Hrs/ day	Days/ Wk	Wks/ yr	Control Equipment	Efficiency %	Fuel Oil	Heat Content Btu/gal	%S 2002	2003	2004	2005	2006	Raw Material ton/hr 2002	2003	2004	2005	2006	[1,2]Emission Factor lb/ton 2002	2003	2004	2005	2006	Emissions tons/yr 2002	2003	2004	2005	2006
Belt 24"	Road 833, Km 5.1, Guaraguao,	1442	A				8	5	52	Sprinklers	85	-	-				-	-	175	175	175	175	175	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0013	0.001	0.001	0.001	0.001
Belt 24"	Guaynabo/ PO Box 1839						8	5	52	Sprinklers	85	-	-				-	-	175	175	175	175	175	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0013	0.001	0.001	0.001	0.001
Belt 24"	Guaynabo, PR 00970-1839						8	5	52	Sprinklers	85	-	-				-	-	175	175	175	175	175	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0013	0.001	0.001	0.001	0.001
Belt 24"							8	5	52	Sprinklers	85	-	-				-	-	175	175	175	175	175	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0013	0.001	0.001	0.001	0.001
Truck Loading							8	5	52	Sprinklers	90	-	-				-	-	300	300	300	300	300	1E-04	0.0001	0.0001	1E-04	0.0001	0.0031	0.003	0.003	0.003	0.003
Storage Piles							8	5	52	Sprinklers	90	-	-				-	-	300	300	300	300	300	2E-04	0.00017	0.0002	2E-04	0.00017	0.0053	0.005	0.005	0.005	0.005

[1]Emission factors from air emission permit.

[2]Allowable and actual emissions based on permit maximum annual production.

[1]Gulf Caribbean Petroleum Refining

Emission Unit	Address Physical/ Postal	SIC	Municipality	SCC	Point Id	Capacity MMBTU/ hr	Operating Rate Hrs/ day	Days/ wk	mont h/yr	Control Equipment	Efficiency %	Fuel Oil	Heat Content Btu/gal, Btu/ft3	%S 2002	2003	2004	2005	2006	Fuel Rate 2002	2003	2004	2005	2006	Emission Factor 2002	2003	2004	2005	2006	Emissions tons/yr 2002	2003	2004	2005	2006
	Road 28, Km 2, Luchetti	2911	C									No. 6	148,746	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Tube Boiler (YB-1)	Industrial Park, Bayamon/				1	57.14	24	7	12	-	-	Fuel Gas	958.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PO Box 361988											No. 6	148,746	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Tube Boiler (YB-2)	San Juan, PR 00936-1988				2	57.14	24	7	12	-	-	Fuel Gas	958.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
												No. 6	148,746	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Tube Boiler (YB-3)					3	65.71	24	7	12	-	-	Fuel Gas	958.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[2]FCC Unit CO Boiler (YB-5)					4	30.6	24	7	12	-	-	Fuel Gas	958.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
												No. 6	148,746	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crude Fire Heater (CH-2)					6	44.95	24	7	12	-	-	Fuel Gas	958.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
												No. 6	148,746	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crude Fire Heater (CH-4)					8	35.6	24	7	12	-	-	Fuel Gas	958.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crude Fire Heater (CH-5)					9	31.3	24	7	12	-	-	Fuel Gas	958.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
												No. 6	148,746	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Crude Fire Heater (CH-6)					5	80	24	7	12	-	-	Fuel Gas	958.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vertical Radiant Convection Heater (PH-201)					10	7.16	24	7	12	-	-	Fuel Gas	958.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
												No. 6	148,746	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vertical Radiant Convection Heater (PH-202)					10	14.4	24	7	12	-	-	Fuel Gas	958.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asphalt Plant Fire Heater (BH-1)					11	9.14	24	7	12	-	-	Fuel Gas	958.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
												No. 6	148,746	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vertical Radiant Convection Heater (GFH-1)					12	20.13	24	7	12	-	-	Fuel Gas	958.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
												No. 6	148,746	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vertical Radiant Convection Heater (GFH-2)					13	17.33	24	7	12	-	-	Fuel Gas	958.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
												No. 6	148,746	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stabilizer Reboiler Fire Heater (GSH-1)					14	15.36	24	7	12	-	-	Fuel Gas	958.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Platformer Fire Heater (PH-1)					15	36.56	24	7	12	-	-	Fuel Gas	958.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Platformer Fire Heater (PH-2)					15	16.28	24	7	12	-	-	Fuel Gas	958.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Platformer Fire Heater (PH-3)					15	4.98	24	7	12	-	-	Fuel Gas	958.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluid Catalytic Cracking (FCC, FH-2)					16	42.5	24	7	12	-	-	Fuel Gas	958.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

[1]The industry is not operating.

Canteras de Puerto Rico

Emission Unit	Address Physical/ Postal	SIC	Municipality	SCC	Point ID	Capacity MMBTU/ hr	Operating Rate Hrs/ day	Days/ wk	Wks/ yr	Control Equipment	Efficiency %	Fuel Oil	Heat Content Btu/gal	% S 2002	2003	2004	2005	2006	Raw Material tons/hr 2002	2003	2004	2005	2006	[1,2]Emission Factor lb/ton, lb/miles 2002	2003	2004	2005	2006	Emissions tons/yr 2002	2003	2004	2005	2006
PORTABLE PLANT	Road PR 1, KM 23.6, Rio	1442	C																														
Primary Crushing	Guaynabo, PR/ PO Box 11370					-	8	6	52	Sprinkler	85	-	-	0.0024	0.002	0.002	0.0024	0.002	200.32	200.32	200.32	200.32	200.32	0.002	0.0024	0.0024	0.002	0.0024	0.09	0.09	0.09	0.09	0.09
Double Deck Vibrating Screen	Caparra Heights Sta. San Juan,					-	8	6	52	Sprinkler	85	-	-	0.015	0.015	0.015	0.015	0.015	120.19	120.19	120.19	120.19	120.19	0.015	0.015	0.015	0.015	0.015	0.3375	0.337	0.337	0.337	0.337
Triple Deck Vibrating Screen	PR 00922					-	8	6	52	Sprinkler	85	-	-	0.015	0.015	0.015	0.015	0.015	80.13	80.13	80.13	80.13	80.13	0.015	0.015	0.015	0.015	0.015	0.225	0.225	0.225	0.225	0.225

PM-10 EMISSION SOURCE INVENTORY FOR GUAYNABO NON-ATTAINMENT AREA

[1,2]Master Concrete (Formerly, Concreto Mixto) (Continued)

Emission Unit	Address Physical/ Postal	SIC	Municipality	SCC	Point Id	Capacity MMBTU/ hr	Operation Rate			Control Equipment	Efficiency %	Fuel Oil	Heat Content Btu/gal	%S					Raw Material yd^3/hr					Emission Factor lb/yd^3					Emissions tons/yr				
							Hrs/ day	Days/ Wk	Wks/ yr					2002	2003	2004	2005	2006	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Central Mix Loading		3273	B	3-05-011-09		-	10	6	52	Dust Collector	98	-	-	-	-	-	-	-	76.9	76.9	76.9	76.9	76.9	0.001	0.0011	0.0011	0.001	0.0011	0.0026	0.003	0.003	0.003	0.003
Aggregate Transfer to Elevated Bins				3-05-011-04		-	10	6	52	-	-	-	-	-	-	-	-	-	76.9	76.9	76.9	76.9	76.9	0.003	0.0031	0.0031	0.003	0.0031	0.3719	0.372	0.372	0.372	0.372

[1]Emission factor is from Sections 11.12 of AP-42, Fifth Edition. Emission calculations based on air emission permit.

[2]Actual emissions based on permit maximum annual production.

Cantera San Antonio

Emission Unit	Address Physical/ Postal	SIC	Municipality	SCC	Point Id	Capacity MMBTU/ hr	Operation Rate			Control Equipment	Efficiency %	Fuel Oil	Heat Content Btu/gal	%S					Raw Material ton/hr					[1,2]Emission Factor lb/ton					Emissions tons/yr				
							Hrs/ day	Days/ Wk	Wks/ yr					2002	2003	2004	2005	2006	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Diester Feeder	Road 833, Km 5.1, Guaraguao,	1442	A				8	5	52	Sprinklers	90	-	-				-	-	300	300	300	300	300	0.002	0.0022	0.0022	0.002	0.0022	0.0686	0.069	0.069	0.069	0.069
Nordberg Mill HP-300	Guaynabo/ PO Box 1839						8	5	52	Sprinklers	90	-	-				-	-	240	240	240	240	240	0.002	0.0024	0.0024	0.002	0.0024	0.0599	0.06	0.06	0.06	0.06
Nordberg Mill HP-300	Guaynabo, PR 00970-1839						8	5	52	Sprinklers	90	-	-				-	-	275	275	275	275	275	0.002	0.0024	0.0024	0.002	0.0024	0.0686	0.069	0.069	0.069	0.069
Jaw Mill							8	5	52	Sprinklers	90	-	-				-	-	175	175	175	175	175	0.002	0.0024	0.0024	0.002	0.0024	0.0437	0.044	0.044	0.044	0.044
Symons Mill							8	5	52	Sprinklers	90	-	-				-	-	250	250	250	250	250	0.002	0.0024	0.0024	0.002	0.0024	0.0624	0.062	0.062	0.062	0.062
Diester Screening 1							8	5	52	Sprinklers	90	-	-				-	-	300	300	300	300	300	7E-04	0.00074	0.0007	7E-04	0.00074	0.0231	0.023	0.023	0.023	0.023
Diester Screening 3							8	5	52	Sprinklers	90	-	-				-	-	200	200	200	200	200	7E-04	0.00074	0.0007	7E-04	0.00074	0.0154	0.015	0.015	0.015	0.015
Cedarapids Screening 4							8	5	52	Sprinklers	90	-	-				-	-	200	200	200	200	200	7E-04	0.00074	0.0007	7E-04	0.00074	0.0154	0.015	0.015	0.015	0.015
Diester Screening 7							8	5	52	Sprinklers	90	-	-				-	-	200	200	200	200	200	7E-04	0.00074	0.0007	7E-04	0.00074	0.0154	0.015	0.015	0.015	0.015
Diester Screening 8 BHM-3620							8	5	52	Sprinklers	90	-	-				-	-	350	350	350	350	350	7E-04	0.00074	0.0007	7E-04	0.00074	0.0269	0.027	0.027	0.027	0.027
Diester Screening 9 BHM-3620							8	5	52	Sprinklers	90	-	-				-	-	350	350	350	350	350	7E-04	0.00074	0.0007	7E-04	0.00074	0.0269	0.027	0.027	0.027	0.027
Diester Screening Tertiary Process							8	5	52	Sprinklers	90	-	-				-	-	275	275	275	275	275	7E-04	0.00074	0.0007	7E-04	0.00074	0.0212	0.021	0.021	0.021	0.021
Belt 48"							8	5	52	Sprinklers	85	-	-				-	-	400	400	400	400	400	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0029	0.003	0.003	0.003	0.003
Belt 36"							8	5	52	Sprinklers	85	-	-				-	-	350	350	350	350	350	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0025	0.003	0.003	0.003	0.003
Belt 36"							8	5	52	Sprinklers	85	-	-				-	-	350	350	350	350	350	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0025	0.003	0.003	0.003	0.003
Belt 36"							8	5	52	Sprinklers	85	-	-				-	-	400	400	400	400	400	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0029	0.003	0.003	0.003	0.003
Belt 30"							8	5	52	Sprinklers	85	-	-				-	-	400	400	400	400	400	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0029	0.003	0.003	0.003	0.003
Belt 30"							8	5	52	Sprinklers	85	-	-				-	-	400	400	400	400	400	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0029	0.003	0.003	0.003	0.003
Belt 30"							8	5	52	Sprinklers	85	-	-				-	-	400	400	400	400	400	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0029	0.003	0.003	0.003	0.003
Belt 30"							8	5	52	Sprinklers	85	-	-				-	-	400	400	400	400	400	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0029	0.003	0.003	0.003	0.003
Belt 30"							8	5	52	Sprinklers	85	-	-				-	-	400	400	400	400	400	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0029	0.003	0.003	0.003	0.003
Belt 30"							8	5	52	Sprinklers	85	-	-				-	-	400	400	400	400	400	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0029	0.003	0.003	0.003	0.003
Belt 30"							8	5	52	Sprinklers	85	-	-				-	-	240	240	240	240	240	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0017	0.002	0.002	0.002	0.002
Belt 30"							8	5	52	Sprinklers	85	-	-				-	-	240	240	240	240	240	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0017	0.002	0.002	0.002	0.002
Belt 30"							8	5	52	Sprinklers	85	-	-				-	-	240	240	240	240	240	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0017	0.002	0.002	0.002	0.002
Belt 30"							8	5	52	Sprinklers	85	-	-				-	-	240	240	240	240	240	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0017	0.002	0.002	0.002	0.002
Belt 30"							8	5	52	Sprinklers	85	-	-				-	-	240	240	240	240	240	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0017	0.002	0.002	0.002	0.002
Belt 24"							8	5	52	Sprinklers	85	-	-				-	-	400	400	400	400	400	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0029	0.003	0.003	0.003	0.003
Belt 24"							8	5	52	Sprinklers	85	-	-				-	-	400	400	400	400	400	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0029	0.003	0.003	0.003	0.003
Belt 24"							8	5	52	Sprinklers	85	-	-				-	-	400	400	400	400	400	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0029	0.003	0.003	0.003	0.003
Belt 24"							8	5	52	Sprinklers	85	-	-				-	-	400	400	400	400	400	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0029	0.003	0.003	0.003	0.003
Belt 24"							8	5	52	Sprinklers	85	-	-				-	-	400	400	400	400	400	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0029	0.003	0.003	0.003	0.003
Belt 24"							8	5	52	Sprinklers	85	-	-				-	-	400	400	400	400	400	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0029	0.003	0.003	0.003	0.003
Belt 24"							8	5	52	Sprinklers	85	-	-				-	-	400	400	400	400	400	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0029	0.003	0.003	0.003	0.003
Belt 24"							8	5	52	Sprinklers	85	-	-				-	-	400	400	400	400	400	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0029	0.003	0.003	0.003	0.003
Belt 24"							8	5	52	Sprinklers	85	-	-				-	-	400	400	400	400	400	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0029	0.003	0.003	0.003	0.003
Belt 24"							8	5	52	Sprinklers	85	-	-				-	-	400	400	400	400	400	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0029	0.003	0.003	0.003	0.003
Belt 24"							8	5	52	Sprinklers	85	-	-				-	-	175	175	175	175	175	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0013	0.001	0.001	0.001	0.001
Belt 24"							8	5	52	Sprinklers	85	-	-				-	-	175	175	175	175	175	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0013	0.001	0.001	0.001	0.001
Belt 24"							8	5	52	Sprinklers	85	-	-				-	-	175	175	175	175	175	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0013	0.001	0.001	0.001	0.001
Belt 24"							8	5	52	Sprinklers	85	-	-				-	-	175	175	175	175	175	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0013	0.001	0.001	0.001	0.001
Belt 24"							8	5	52	Sprinklers	85	-	-				-	-	175	175	175	175	175	5E-05	4.6E-05	5E-05	5E-05	4.6E-05	0.0013	0.001	0.001	0.001	0.001

PM-10 EMISSION SOURCE INVENTORY FOR GUAYNABO NON-ATTAINMENT AREA

Nutrimix Feed (Formerly Agro Ochoa) (Continued)

Emission Unit	Address Physical/ Postal	SIC	Municipality	SCC	Point Id	Capacity MMBTU/ hr	Operation Rate Hrs/ day	Days/ Wk	Wks/ yr	Control Equipment	Efficiency %	Fuel Oil	Heat Content Btu/gal	%S 2002	2003	2004	2005	2006	Fuel Usage/Raw Material gal/hr, ton/hr 2002	2003	2004	2005	2006	[1]Emission Factor lb/1000gal, lb/ton 2002	2003	2004	2005	2006	Emissions tons/yr 2002	2003	2004	2005	2006
Secondary Ingredients Unloading	Road A, Sabana Industrial,	2041	A			-	24	6	52	Baghouse	99.5	-	-	-	-	-	-	-	2	2	2	2	2	0.059	0.059	0.059	0.059	0.059	0.0022	0.002	0.002	0.002	0.002
Truck Loading Area 1	Guaynabo/					-	24	6	52	Baghouse	99.5	-	-	-	-	-	-	-	15.5	15.5	15.5	15.5	15.5	0.029	0.029	0.029	0.029	0.029	0.0084	0.008	0.008	0.008	0.008
[2]Pelletizing Units	PO Box 11433, San Juan, PR 00922					-	24	6	52	Baghouse	99.5	-	-	-	-	-	-	-	12.7	12.7	12.7	12.7	12.7	0.1	0.1	0.1	0.1	0.1	0.0238	0.024	0.024	0.024	0.024
Concrete Storage Silos						-	24	6	52	Baghouse	99.5	-	-	-	-	-	-	-	13.2	13.2	13.2	13.2	13.2	0.006	0.0063	0.0063	0.006	0.0063	0.0016	0.002	0.002	0.002	0.002

[1]Emission factors from Sections 1.3 an 9.9.1 of AP-42 5th Edition, Chief 12.

[2]Fire emission factor.

[3]Actual emissions based on permit maximum annual production.

Pan American Grain

Emission Unit	Address Physical/ Postal	SIC	Municipality	SCC	Point Id	Capacity MMBTU/ hr	Operation Rate Hrs/ day	Days/ Wk	Wks/ yr	Control Equipment	Efficiency %	Fuel Oil	Heat Content Btu/gal	%S 2002	2003	2004	2005	2006	Fuel Usage/Raw Material gal/hr, ton/hr 2002	2003	2004	2005	2006	[1]Emission Factor lb/1000gal, lb/ton 2002	2003	2004	2005	2006	Emissions tons/yr 2002	2003	2004	2005	2006
AMELIA PLANT	Central Street, Vietnam Sector,	5153, 2044	A																														
[2]Amelia Boiler	Amelia, Guaynabo/				Boiler	150	16	26	15	-	-	No. 2	135,000	0.5	0.5	0.5	0.5	0.5	43.7	43.7	43.7	43.7	43.7	1.08	1.08	1.08	1.08	1.08	0.1473	0.147	0.147	0.147	0.147
Corn Aspirator	Claudia Street 9, Beatriz Street Corner,					-	16	6	15	Dust Collector	99.7	-	-	-	-	-	-	-	15	15	15	15	15	0.038	0.038	0.038	0.038	0.038	0.0012	0.001	0.001	0.001	0.001
Grain Separator	Amelia Industrial Park,					-	16	6	15	Dust Collector	99.7	-	-	-	-	-	-	-	15	15	15	15	15	0.019	0.019	0.019	0.019	0.019	0.0006	6E-04	6E-04	6E-04	6E-04
Corn Grinding (Hammermill)	Guaynabo, PR 00968					-	16	6	15	Dust Collector	99.7	-	-	-	-	-	-	-	30	30	30	30	30	0.012	0.012	0.012	0.012	0.012	0.0008	8E-04	8E-04	8E-04	8E-04
Pellet Granulator							16	6	15	Dust Collector	99.7	-	-	-	-	-	-	-	30	30	30	30	30	ND	ND	ND	ND	ND					
Pellet Cooler & Separator						-	16	6	15	Dust Collector	99.7	-	-	-	-	-	-	-	30	30	30	30	30	0.18	0.18	0.18	0.18	0.18	0.0117	0.012	0.012	0.012	0.012
Grain Elevator Riley Mars Receiving				3-02-005-30		-	16	6	15	Dust Collector	99.7	-	-	-	-	-	-	-	30	30	30	30	30	0.059	0.059	0.059	0.059	0.059	0.0038	0.004	0.004	0.004	0.004
Grain Elevator Riley Mars Receiving				3-02-005-30		-	16	6	15	Dust Collector	99.7	-	-	-	-	-	-	-	30	30	30	30	30	0.059	0.059	0.059	0.059	0.059	0.0038	0.004	0.004	0.004	0.004
Grain Elevator Riley Mars Handling				3-02-005-30		-	16	6	15	Dust Collector	99.7	-	-	-	-	-	-	-	35	35	35	35	35	0.034	0.034	0.034	0.034	0.034	0.0026	0.003	0.003	0.003	0.003
Grain Elevator Riley Mars Handling				3-02-005-30		-	16	6	15	Dust Collector	99.7	-	-	-	-	-	-	-	15	15	15	15	15	0.034	0.034	0.034	0.034	0.034	0.0011	0.001	0.001	0.001	0.001
Grain Elevator Riley Saturn Shipping				3-02-005-30		-	16	6	15	Dust Collector	99.7	-	-	-	-	-	-	-	120	120	120	120	120	0.029	0.029	0.029	0.029	0.029	0.0075	0.008	0.008	0.008	0.008
ARMY TERMINAL																																	
Flat Storage Rico Annex					Flat Storage	-	16	6	50	Dust Collector	99.5	-	-	-	-	-	-	-	30	30	30	30	30	0.025	0.025	0.025	0.025	0.025	0.009	0.009	0.009	0.009	0.009
Rico Rice Mill					Rice Mill	-	16	6	52	Dust Collector	99.5	-	-	-	-	-	-	-	33	33	33	33	33	0.27	0.27	0.27	0.27	0.27	0.1112	0.111	0.111	0.111	0.111

[1]Emission factors are from Sections 1.3 and 9.9.1 of AP-42, 5th Edition.

[2]Maximum fuel usage in this unit is 272,688 gal/yr and will operate 6,240 hrs/yr. (permit condition).

[3]Actual emissions based on permit maximum annual production.

[1]PRASA Puerto Nuevo

Emission Unit	Address Physical/ Postal	SIC	Municipality	SCC	Point Id	Capacity Hp	Operation Rate Hrs/ day	Days/ Wk	Wks/ yr	Control Equipment	Efficiency %	Fuel Oil	Heat Content Btu/gal	%S 2002	2003	2004	2005	2006	Fuel Usage/Raw Material 2002	2003	2004	2005	2006	Emission Factor 2002	2003	2004	2005	2006	Emissions tons/yr 2002	2003	2004	2005	2006
	J. F. Kennedy Ave, Road 2, Km 2/ PO Box 930-0550 San Juan, PR 00930-0550	4952	B							Wet Impingement Scrubber	92.5			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fluidizied Sludge Incinerator						-	24	7	52	Wet Electrostatic Incinerator	99.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

[1]The incinerator is not operating.

[1,1]Master Concrete (Formerly, Concreto Mixto)

Emission Unit	Address Physical/ Postal	SIC	Municipality	SCC	Point Id	Capacity MMBTU/ hr	Operation Rate Hrs/ day	Days/ Wk	Wks/ yr	Control Equipment	Efficiency %	Fuel Oil	Heat Content Btu/gal	%S 2002	2003	2004	2005	2006	Raw Material yd^3/hr 2002	2003	2004	2005	2006	Emission Factor lb/yd^3 2002	2003	2004	2005	2006	Emissions tons/yr 2002	2003	2004	2005	2006
Cement Delivery to Silo	Road 2, San Miguel Industrial Park,	3273	B	3-05-011-07		-	10	6	52	Dust Collector	98	-	-	-	-	-	-	-	76.9	76.9	76.9	76.9	76.9	1E-04	0.0001	0.0001	1E-04	0.0001	0.0002	2E-04	2E-04	2E-04	2E-04
Weight Hopper	San Juan/ PO Box 2409,			3-05-011-08		-	10	6	52	Dust Collector	98	-	-	-	-	-	-	-	76.9	76.9	76.9	76.9	76.9	0.004	0.0038	0.0038	0.004	0.0038	0.0091	0.009	0.009	0.009	0.009
Aggregate Delivery to Ground Storage	Toa Baja, PR 00951-2409			3-05-011-21		-	10	6	52	-	-	-	-	-	-	-	-	-	76.9	76.9	76.9	76.9	76.9	0.003	0.0031	0.0031	0.003	0.0031	0.3719	0.372	0.372	0.372	0.372
Aggregate Transfer				3-05-011-23		-	10	6	52	-	-	-	-	-	-	-	-	-	76.9	76.9	76.9	76.9	76.9	0.003	0.0031	0.0031	0.003	0.0031	0.3719	0.372	0.372	0.372	0.372

PM-10 EMISSION SOURCE INVENTORY FOR GUAYNABO NON-ATTAINMENT AREA

Molinos de Puerto Rico

Emission Unit	Address Physical/ Postal	SIC	Municipality	SCC	Point Id	Capacity Hp	Operation Rate Hrs/ day	Days/ Wk	Wks/ yr	Control Equipment	Efficiency %	Fuel Oil	Heat Content Btu/gal	%S 2002	%S 2003	%S 2004	%S 2005	%S 2006	[4]Fuel Usage/Raw Material gal/hr, ton/hr 2002	2003	2004	2005	2006	[1]Emission Factor lb/1000gal, lb/ton 2002	2003	2004	2005	2006	Emissions tons/yr 2002	2003	2004	2005	2006
[3]Boiler	Cataño Port Area, Embarcadero	2041	A	1-02-005-02/03	EP-BO	150	16	7	52	-	-	Diesel		0.03	0.03	0.03	0.03	0.04	68839	62301	60071	80773	95543	1.08	1.08	1.08	1.08	1.08	0.0372	0.034	0.032	0.044	0.052
Grain Receiving (Marine Tower)	Final, San Juan/			3-02-005-57	EP-RE	-	16	7	52	Baghouse	99.5	-	-	-	-	-	-	-	267.8	267.8	267.8	267.8	267.8	0.038	0.038	0.038	0.038	0.038	0.1482	0.148	0.148	0.148	0.148
Pellets Cooler	PO Box 364948 San Juan,			3-02-008-16	EP-FC	-	16	7	52	Baghouse	99.5	-	-	-	-	-	-	-	7.4	7.4	7.4	7.4	7.4	0.18	0.18	0.18	0.18	0.18	0.0194	0.019	0.019	0.019	0.019
Wheat Cleaning	PR. 00936			3-02-007-33	EP-WC	-	16	7	52	Dust Collector	99.5	-	-	-	-	-	-	-	35	35	35	35	35	6E-04	0.0006	0.0006	6E-04	0.0006	0.0003	3E-04	3E-04	3E-04	3E-04
Pellet Mill loading						-	16	7	52	Dust Collector	99.5	-	-	-	-	-	-	-	27.9	27.9	27.9	27.9	27.9	0.034	0.034	0.034	0.034	0.034	0.0138	0.014	0.014	0.014	0.014
Wheat Flour Bin				3-02-005-40	EP-WBN	-	16	7	52	Dust Collector	99.5	-	-	-	-	-	-	-	35	35	35	35	35	0.034	0.034	0.034	0.034	0.034	0.0173	0.017	0.017	0.017	0.017
Wheat Mill Pneumatic				3-02-007-34	EP-WP	-	16	7	52	Dust Collector	99.5	-	-	-	-	-	-	-	35	35	35	35	35	35	35	35	35	35	17.836	17.84	17.84	17.84	17.84
Wheat Flour Mill				3-02-007-34	EP-PL	-	16	7	52	Dust Collector	99.5	-	-	-	-	-	-	-	35	35	35	35	35	35	35	35	35	35	17.836	17.84	17.84	17.84	17.84
Corn Cleaning				3-02-007-44	EP-CC	-	16	7	52	Dust Collector	99.5	-	-	-	-	-	-	-	5.7	5.7	5.7	5.7	5.7	0.019	0.019	0.019	0.019	0.019	0.0016	0.002	0.002	0.002	0.002
[2]Corn Mill				3-02-007-41	EP-CN	-	16	7	52	Dust Collector	99.5	-	-	-	-	-	-	-	5.7	5.7	5.7	5.7	5.7	0.059	0.059	0.059	0.059	0.059	0.0049	0.005	0.005	0.005	0.005
Grain Handling						-	16	7	52	Dust Collector	99.5	-	-	-	-	-	-	-	216.3	216.3	216.3	216.3	216.3	0.034	0.034	0.034	0.034	0.034	0.1071	0.107	0.107	0.107	0.107
Corn Grits Bin				3-02-005-40	EP-CG		16	7	52																								
Corn Meal Bin				3-02-005-40	EP-CBN	-	16	7	52	Dust Collector	99.5	-	-	-	-	-	-	-	33	33	33	33	33	0.006	0.0063	0.0063	0.006	0.0063	0.003	0.003	0.003	0.003	0.003
Gluten Bin				3-02-005-40	EP-GB		16	7	52																								
Corn Flour Bin				3-02-005-40	EP-CF		16	7	52																								
Midds Bin				3-02-005-40	EP-BB		16	7	52																								
Bin 14				3-02-005-40	EP-B14	-	16	7	52	Dust Collector	99.5	-	-	-	-	-	-	-	33	33	33	33	33	0.006	0.0063	0.0063	0.006	0.0063	0.003	0.003	0.003	0.003	0.003
Grain Shipping Truck				3-02-005-60	EP-SH	-	16	7	52	Dust Collector	99.5	-	-	-	-	-	-	-	67.8	67.8	67.8	67.8	67.8	0.029	0.029	0.029	0.029	0.029	0.0286	0.029	0.029	0.029	0.029

[1]Emission factor for PM10 are from Section 1.3 and 9.9.1 of AP-42, 5th Edition of Air Chief 12.

[2]Emission factor from Fire Retrieval Data System 6.25.

[3]Fuel usage is 187,200 gal/yr. Air Emission Permit. Actual emissions for this unit are based on five years of fuel No.2 usage, (2002-2006).

[4]Allowable and actual emissions for all units except the boiler are based on permit maximum annual production.

Petroleum Emulsion (Formerly Petroleum Chemical)

[1,2]Emission Unit	Address Physical/ Postal	SIC	Municipality	SCC	Point Id	Capacity MMBTU/ hr	Operation Rate Hrs/ day	Days/ Wk	Wks/ yr	Control Equipment	Efficiency %	Fuel Oil	Heat Content Btu/gal	%S 2002	%S 2003	%S 2004	%S 2005	%S 2006	[6]Fuel Usage gal/hr 2002	2003	2004	2005	2006	[1]Emission Factor lb/1000gal 2002	2003	2004	2005	2006	Emissions tons/yr 2002	2003	2004	2005	2006
[3]Afterburner	Street C, Lot 36, Luchetti	2951	C			3.5	10.4	5	52	-	-	Kerosene	135,000	0.09	0.09	0.09	0.09	0.09	31.3	31.3	31.3	31.3	31.3	1.08	1.08	1.08	1.08	1.08	0.0457	0.046	0.046	0.046	0.046
[4]Oxidator Burner	Industrial Park, Bayamon/ PO Box					1.43	10.4	5	52	Scrubber	90	Kerosene	135,000	0.09	0.09	0.09	0.09	0.09	10.5	10.5	10.5	10.5	10.5	1.08	1.08	1.08	1.08	1.08	0.0015	0.002	0.002	0.002	0.002
[5]Oxidator Burner	1128, Cataño PR 00963					0.685	10.4	5	52	Scrubber	90	Kerosene	135,000	0.09	0.09	0.09	0.09	0.09	5	5	5	5	5	1.08	1.08	1.08	1.08	1.08	0.0007	7E-04	7E-04	7E-04	7E-04

[1]Maximum operation rate for all units is 2,704 hrs/yr.

[2]Emission factors are from Section 1.3 of AP-42, 5th Edition, Air Chief 12.

[3]Maximum fuel oil usage is 84,643gals/yr. Air emission permit.

[4]Maximum fuel oil usage is 28,392gals/yr. Air emission permit.

[5]Maximum fuel oil usage is 13,520gals/yr. Air emission permit.

[6]Actual emissions based on permit maximum fuel usage.

Nutrimix Feed (Formerly Agro Ochoa)

Emission Unit	Address Physical/ Postal	SIC	Municipality	SCC	Point Id	Capacity MMBTU/ hr	Operation Rate Hrs/ day	Days/ Wk	Wks/ yr	Control Equipment	Efficiency %	Fuel Oil	Heat Content Btu/gal	%S 2002	%S 2003	%S 2004	%S 2005	%S 2006	Fuel Usage/Raw Material gal/hr, ton/hr 2002	2003	2004	2005	2006	[1]Emission Factor lb/1000gal, lb/ton 2002	2003	2004	2005	2006	Emissions tons/yr 2002	2003	2004	2005	2006
Steam Boiler	Road A, Sabana Industrial,	2041	A			8.375	24	6	52	-	-	Diesel	135,000	0.03	0.03	0.03	0.04	0.07	128001	126928	82438	111913	81974	1.08	1.08	1.08	1.08	1.08	0.0691	0.069	0.045	0.06	0.044
Marine Tower	Guaynabo/					-	24	6	52	Baghouse	99.5	-	-	-	-	-	-	-	20.8	20.8	20.8	20.8	20.8	0.038	0.038	0.038	0.038	0.038	0.0148	0.015	0.015	0.015	0.015
Corn Cleaning	PO Box 11433, San Juan, PR 00922			3-02-007-44		-	24	6	52	Baghouse	99.5	-	-	-	-	-	-	-	5.47	5.47	5.47	5.47	5.47	0.019	0.019	0.019	0.019	0.019	0.3891	0.389	0.389	0.389	0.389
[2]Corn Grinding						-	24	6	52	Baghouse	99.5	-	-	-	-	-	-	-	8.68	8.68	8.68	8.68	8.68	0.06	0.06	0.06	0.06	0.06	0.0097	0.01	0.01	0.01	0.01
Belt Conveyor 2						-	24	6	52	Baghouse	99.5	-	-	-	-	-	-	-	11.6	11.6	11.6	11.6	11.6	0.034	0.034	0.034	0.034	0.034	0.0074	0.007	0.007	0.007	0.007
Belt Conveyor 1						-	24	6	52	Baghouse	99.5	-	-	-	-	-	-	-	20.8	20.8	20.8	20.8	20.8	0.034	0.034	0.034	0.034	0.034	0.0132	0.013	0.013	0.013	0.013
Flat Storage Warehouse						-	24	6	52	Baghouse	99.5	-	-	-	-	-	-	-	11.6	11.6	11.6	11.6	11.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

PM-10 EMISSION SOURCE INVENTORY FOR GUAYNABO NON-ATTAINMENT AREA

Edelcar Inc.

[2]Emission Unit	Address Physical/ Postal	SIC	Municipality	SCC	Point Id	Capacity Hp	Operation Rate Hrs/ day	Days/ Wk	Wks/ yr	Control Equipment	Efficiency %	Fuel Oil	Heat Content Btu/gal	%S 2002	2003	2004	2005	2006	[5]Fuel Usage (gal/hr) 2002	2003	2004	2005	2006	[1]Emission Factor lb/1000gal 2002	2003	2004	2005	2006	Emissions tons/yr 2002	2003	2004	2005	2006
[4]Eclipse Boiler	Central Ave San Pablo, Industrial	2079	A	1-03-004-04		30	8	6	52	-	-	Diesel	135,000	0.5	0.5	0.5	0.5	0.5	10	10	10	10	10	1.08	1.08	1.08	1.08	1.08	0.0049	0.005	0.005	0.005	0.005
[3]Holman Steam Boiler	Water Front, Amelia Ward, Guaynabo/ PO Box 366817, Guaynabo, PR					200	8	6	52	-	-	Diesel	135,000	0.5	0.5	0.5	0.5	0.5	28	28	28	28	28	1.08	1.08	1.08	1.08	1.08	0.0138	0.014	0.014	0.014	0.014
[3]Cleaver Brooks Boiler	00936-6817					100	8	6	52	-	-	Diesel	135,000	0.5	0.5	0.5	0.5	0.5	28	28	28	28	28	1.08	1.08	1.08	1.08	1.08	0.0138	0.014	0.014	0.014	0.014

[1]Emission factor is from Table 1.3 of AP-42, Chief 12.
[2]Maximum operation rate for each unit is 910 hrs/yr. Air Emission Permit.
[3]Fuel usage for these units is 50,960 gals/yr. Air Emission permit.
[4]Fuel usage for this unit is 9,100 gals/yr. Air emission permit.
[5]Actual emissions are based on permit maximum annual fuel usage for each unit.

Smurfit Stone PR, INC. (Formerly Cartonera Nacional)

Emission Unit	Address Physical/ Postal	SIC	Municipality	SCC	Point Id	Capacity MMBTU/ hr	Operation Rate Hrs/ day	Days/ Wk	Wks/ yr	Control Equipment	Efficiency %	Fuel Oil	Heat Content Btu/gal	%S 2002	2003	2004	2005	2006	[2,3]Fuel Usage (gal/hr) 2002	2003	2004	2005	2006	[1]Emission Factor lb/1000gal 2002	2003	2004	2005	2006	Emissions tons/yr 2002	2003	2004	2005	2006
	Road 165, KM 2.6, Amelia	2653	A									No. 6	150,000	1.12	1.25	1.08	0.69	0.45	213456	204775	215342	208872	215562	11.65	12.6909	11.326	8.194	6.26658	1.2431	1.299	1.219	0.856	0.675
	Guaynabo/ PO Box 9066556																																
Boiler Cleaver Brooks	San Juan, PR 00906-6556			1-02-004-01		12.553	24	7	52	-	-	Used oil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

[1]Emission factor is from of Section 1.3, AP-42, Chief 12.
[2]Actual emissions are based on five years of fuel No. 6 usage, (2002-2006).
[3]Maximum fuel No. 6 usage is 315,000 gals/yr and maximum used oil is 660 gals/yr.

Betteroads Asphalt Plant 3

Emission Unit	Address Physical/ Postal	SIC	Municipality	SCC	Point Id	Capacity MMBTU/ hr	Operation Rate Hrs/ day	Days/ Wk	Wks/ yr	Control Equipment	Efficiency %	Fuel Oil	Heat Content Btu/gal	%S 2002	2003	2004	2005	2006	[4]Fuel Usage/Raw Material ton/hr, gal/hr 2002	2003	2004	2005	2006	[1]Emission Factor lb/ton, lb/1000 gal 2002	2003	2004	2005	2006	Emissions tons/yr 2002	2003	2004	2005	2006
[2]Drum Mixer AF-100	Street Lot 39, Luchetti Industrial	2951	C	3-05-002-05		77	8	5	52	Baghouse	95	-	-	-	-	-	-	-	168	168	168	168	168	6.4	6.4	6.4	6.4	6.4	55.91	55.91	55.91	55.91	55.91
	Park, Bayamon, PR/ PO Box																																
[3]Asphalt Heater	21420, San Juan, PR 00928-1420			3-05-002-07		1.4	8	5	52	-	-	No. 2	140,000	0.22	0.27	0.19	0.2	0.2	435633	573409	618169	563692	509530	1.08	1.08	1.08	1.08	1.08	0.2352	0.31	0.334	0.304	0.275

[1]Emission factors are from of Sections 1.3 and 11.1 of AP-42, Chief 12.
[2]Maximum annual production is 350,000 tons/yr and maximum operation rate of this plant is 2080 hrs/yr. Air emission permit.
[3]Maximum fuel usage is 5,950 gals/yr and maximum operation is 1700 hrs/yr. Air emission permit.
[4]Drum Mixer actual emissions are based on permit maximum annual production. The Asphalt Heater actual emissions are based on five years of fuel No. 2 usage, (2002-2006).

CEMEX Concretos, INC. (Formerly, Ready Mix, Plant 20)

Emission Unit	Address Physical/ Postal	SIC	Municipality	SCC	Point Id	Capacity MMBTU/ hr	Operation Rate Hrs/ day	Days/ Wk	Wks/ yr	Control Equipment	Efficiency %	Fuel Oil	Heat Content Btu/gal	%S 2002	2003	2004	2005	2006	Raw Material yd³/hr, VMT/hr, acre 2002	2003	2004	2005	2006	[1]Emission Factor lb/yd3, lb/VMT, lb/acre/hr 2002	2003	2004	2005	2006	Emissions tons/yr 2002	2003	2004	2005	2006
Aggregate Delivery to Ground Storage	Road 28, Pueblo Viejo	3273	A	3-05-011-21		-	8	5	52	-	-	-	-					-	96.1	96.1	96.1	96.1	96.1	0.003	0.0031	0.0031	0.003	0.0031	0.3098	0.31	0.31	0.31	0.31
Sand Delivery to Ground Storage	Guaynabo/			3-05-011-22		-	8	5	52	-	-	-	-					-	96.1	96.1	96.1	96.1	96.1	7E-04	0.0007	0.0007	7E-04	0.0007	0.07	0.07	0.07	0.07	0.07
Aggregate Transfer to Conveyor	PO Box 331349 Ponce,			3-05-011-23		-	8	5	52	-	-	-	-					-	96.1	96.1	96.1	96.1	96.1	0.003	0.0031	0.0031	0.003	0.0031	0.3098	0.31	0.31	0.31	0.31
Sand Transfer to Conveyor	PR 00733-1349			3-05-011-24		-	8	5	52	-	-	-	-					-	96.1	96.1	96.1	96.1	96.1	0.0007	0.0007	0.0007	0.0007	0.0007	0.07	0.07	0.07	0.07	0.07
Vehicle Traffic (paved road)				-		-	8	5	52	Sprinklers	70	-	-					-	0.1925	0.1925	0.1925	0.1925	0.1925	1.7850	1.7850	1.7850	1.7850	1.7850	0.1072	0.107	0.107	0.107	0.107
Wind Erosion in Aggregates Storage				-		-	8	5	52	-	-	-	-					-	0.08	0.08	0.08	0.08	0.08	0.6141	0.6141	0.6141	0.6141	0.6141	0.0511	0.051	0.051	0.051	0.051
Loading of Transit Mix Truck				3-05-011-10		-	8	5	52	Dust Collector	99	-	-					-	96.1	96.1	96.1	96.1	96.1	0.0140	0.0140	0.0140	0.0140	0.0140	0.014	0.014	0.014	0.014	0.014
Cement Supplement Delivered to Silo				3-05-011-17		-	8	5	52	Dust Collector	99	-	-					-	96.1	96.1	96.1	96.1	96.1	2E-04	0.0002	0.0002	2E-04	0.0002	0.0002	2E-04	2E-04	2E-04	2E-04
Cement Delivery to Silo				3-05-011-07		-	8	5	52	Dust Collector	99	-	-					-	96.1	96.1	96.1	96.1	96.1	0.0001	0.0001	0.0001	0.0001	0.0001	1E-04	1E-04	1E-04	1E-04	1E-04
Sand Transfer to Elevated Bins				3-05-011-05		-	8	5	52	-	-	-	-					-	96.1	96.1	96.1	96.1	96.1	0.0007	0.0007	0.0007	0.0007	0.0007	0.07	0.07	0.07	0.07	0.07
Aggregate Transfer to Elevated Bins				3-05-011-04		-	8	5	52	-	-	-	-					-	96.1	96.1	96.1	96.1	96.1	0.0031	0.0031	0.0031	0.0031	0.0031	0.3098	0.31	0.31	0.31	0.31
Weight Hopper				3-05-011-08		-	8	5	52	-	-	-	-					-	96.1	96.1	96.1	96.1	96.1	0.0038	0.0038	0.0038	0.0038	0.0038	0.3798	0.38	0.38	0.38	0.38

[1]Emission calculations based on air emission permit.
[2]Actual emissions based on permit maximum annual production.

PM-10 EMISSION SOURCE INVENTORY FOR GUAYNABO NON-ATTAINMENT AREA

Puerto Rico Electric Power Authority, San Juan

Emission Unit	Address Physical/ Postal	SIC	Municipality	SCC	Point Id	Capacity MMBTU/hr	Operation Rate Hrs/day	Days/Wk	Wks/yr	Control Equipment	Efficiency %	Fuel Oil	Heat Content Btu/gal	%S 2002	2003	2004	2005	2006	[3]Fuel Usage (gal/yr) 2002	2003	2004	2005	2006	[1]Emission Factor lb/MMBtu 2002	2003	2004	2005	2006	Emissions tons/yr 2002	2003	2004	2005	2006
Boiler 7	Mercado Central Ave, Zona Central	4911	B	1-01-004-04	SJ7-1, 7-2	1040.1	24	7	52	-	-	No. 6	150,000	1.36	0.53	0.48	0.48	0.46	4.3E+07	3.4E+07	3.8E+07	3.7E+07	4E+07	0.075	0.0753	0.0753	0.075	0.0753	242.69	189.4	214.1	211.1	211.8
Boiler 8	Ave, PR-28, San Juan, PR/			1-01-004-04	SJ8-1, 8-2	1040.1	24	7	52	-	-	No. 6	150,000	1.34	0.53	0.48	0.48	0.46	3.3E+07	4.2E+07	2.4E+07	4.1E+07	4E+07	0.075	0.0753	0.0753	0.075	0.0753	185.74	239.8	134.1	230.6	238.5
Boiler 9	PO Box 364267 San Juan, PR			1-01-004-04	SJ9-1, 9-2	1040.1	24	7	52	-	-	No. 6	150,000	1.25	0.48	0.48	0.48	0.47	4.1E+07	1.5E+07	3.7E+07	4.3E+07	4E+07	0.075	0.0753	0.0753	0.075	0.0753	230.81	85.83	209.9	241.1	216.2
Boiler 10	00936-4267			1-01-004-04	SJ10-1, 10-2	1040.1	24	7	52	-	-	No. 6	150,000	1.36	0.56	0.48	0.48	0.46	4.6E+07	2.1E+07	4E+07	4E+07	4E+07	0.075	0.0753	0.0753	0.075	0.0753	257.8	119.1	223.4	226.1	229.7

[1]Emission factor is from PSD permit.
[2]Maximum fuel usage is 173,095,400 gal/yr for the 4 units. Title V permit.
[3]Actual emissions are based on five years of fuel No. 6 usage, (2002-2006).

Puerto Rico Electric Power Authority, Palo Seco

Emission Unit	Address Physical/ Postal	SIC	Municipality	SCC	Point Id	Capacity MMBTU/hr	Operation Rate Hrs/day	Days/Wk	Wks/yr	Control Equipment	Efficiency %	Fuel Oil	Heat Content Btu/gal	%S 2002	2003	2004	2005	2006	[2]Fuel Usage (gal/yr) 2002	2003	2004	2005	2006	[1]Emission Factor lb/1000gal, lb/MMBtu (PB) 2002	2003	2004	2005	2006	Emissions tons/yr 2002	2003	2004	2005	2006
Palo Seco 1	Road 165, Km 3.8, Toa Baja/	4911	D	1-01-004-04	PS1	897.8	24	7	52	-	-	No. 6	150,000	1.35	0.54	0.46	0.48	0.45	3.5E+07	4E+07	1.4E+07	4.1E+07	4E+07	11.1	5.75132	5.2227	5.355	5.1566	192.09	113.8	37.05	109.5	103.2
Palo Seco 2	PO Box 364267 San Juan, PR			1-01-004-04	PS2	897.8	24	7	52	-	-	No. 6	150,000	1.35	0.54	0.48	0.48	0.45	2.5E+07	3.8E+07	3.8E+07	3.8E+07	4E+07	11.1	5.75132	5.3548	5.355	5.1566	137.93	109.8	101.4	102.3	95.35
Palo Seco 3	00936-4267			1-01-004-04	PS3-1, 3-2	2171.6	24	7	52	-	-	No. 6	150,000	1.35	0.54	0.48	0.48	0.45	9.2E+07	9.6E+07	7.6E+07	7.4E+07	9E+07	11.1	5.75132	5.3548	5.355	5.1566	509.21	276.6	204.2	197.9	230.8
Palo Seco 4				1-01-004-04	PS4-1, 4-2	2171.6	24	7	52	-	-	No. 6	150,000	1.35	0.55	0.48	0.48	0.45	8.8E+07	8.3E+07	8.6E+07	7.6E+07	8E+07	11.1	5.8174	5.3548	5.355	5.1566	487.45	242.1	228.9	202.8	209.3
Power Block 1				2-01-001-01	PSGT1-1, 1-2	631.8	24	7	52	-	-	No. 2	135,000	0.25	0.22	0.23	0.19	0.24	1593887	7058859	3096418	9998359	2E+06	0.012	0.012	0.012	0.012	0.012	1.291	5.718	2.508	8.099	1.826
Power Block 2				2-01-001-01	PSGT2-1, 2-2	631.8	24	7	52	-	-	No. 2	135,000	0.27	0.22	0.26	0.19	0.22	4824126	7736434	3291068	5330244	2E+06	0.012	0.012	0.012	0.012	0.012	3.9075	6.267	2.666	4.317	1.691
Power Block 3				2-01-001-01	PSGT3-1, 3-2	631.8	24	7	52	-	-	No. 2	135,000	0.34	0.32	0.24	0.19	0.23	1029706	233492	3303340	1.1E+07	2E+06	0.012	0.012	0.012	0.012	0.012	0.8341	0.189	2.676	8.56	2.001

[1]Emission factors are from Sections 1.3 and 3.1 of the AP-42, Chief 12.
[2]Actual emissions are based on five years of fuel No. 6 usage, (2002-2006).

Bacardí

[1]Emission Unit	Address Physical/ Postal	SIC	Municipality	SCC	Point Id	Capacity MMBTU/hr	Operation Rate Hrs/day	Days/Wk	Wks/yr	Control Equipment	Efficiency %	Fuel Oil	Heat Content Btu/gal	%S 2002	2003	2004	2005	2006	[4]Fuel Usage (gal/hr) 2002	2003	2004	2005	2006	[1]Emission Factor lb/1000gal 2002	2003	2004	2005	2006	Emissions tons/yr 2002	2003	2004	2005	2006
Boiler 1	Road 165, Km 2.6, Intersection 88,	2085	E	1-02-004-01	EU 1&2	135	24	7	52	-	-	No. 6	150,000	0.96	1.27	1.08	0.63	-	1715296	164653	884818	701513	-	8.527	10.5752	9.3196	6.346	-	7.3129	0.871	4.123	2.226	-
Boiler 2	Cataño/ PO Box 363549, San Juan, PR 00936-3549			1-02-004-01	EU 1&2	108	24	7	52	-	-	No. 6	150,000	0.74	1.12	1.14	0.52	0.44	2186076	2207260	1590819	1880306	2E+06	7.073	9.58396	9.7161	5.619	5.09052	7.731	10.58	7.728	5.283	6.315

[1]Emission factor is from Section 1.3 of AP-42, Chief 12.
[2]Fuel usage limit is 7,740,000 gal/yr for both units. Title V permit.
[3]Maximum operation rate is 8,600 hrs/yr for both units. Title V permit.
[4]Actual emissions based on five years of fuel No. 6 usage, (2002-2006).

Tradewind Foods, INC. (Formerly Goya de Puerto Rico)

Emission Unit	Address Physical/ Postal	SIC	Municipality	SCC	Point Id	Capacity Hp	Operation Rate Hrs/day	Days/Wk	Wks/yr	Control Equipment	Efficiency %	Fuel Oil	Heat Content Btu/gal	%S 2002	2003	2004	2005	2006	[4]Fuel Usage (gal/hr) 2002	2003	2004	2005	2006	[1]Emission Factor lb/1000gal 2002	2003	2004	2005	2006	Emissions tons/yr 2002	2003	2004	2005	2006
[2]Boiler (GPR-ES-01)	Road 28, Luchetti Industrial Park,	2035, 3411	C	1-02-004-01	GPR-EP-01	300	8	5	50	-	-	No. 5	148,800	0.98	0.96	1.05	1.2		488044	565899	597138	560713	545398	8.604	8.604	8.604	8.604	8.604	2.0996	2.434	2.569	2.412	2.346
[2]Boiler (GPR-ES-02)	Bayamon/ Call Box 60-1467 Bayamon			1-02-004-01	GPR-EP-01	600	8	5	50	-	-	No. 5	148,800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boiler (GPR-ES-03)	PR 00960-6067			1-02-004-01	GPR-EP-01	1200	8	5	50	-	-	No. 5	148,800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

[1]Emission factor is from Section 1.3, AP-42, Chief 12.
[2]Boilers 1 and 2 are used as stand-by boilers.
[3]Fuel usage limit is 3,048,480 gal/yr for all units. Title V permit.
[4]Actual emissions are based on five years of fuel No. 5 usage, (2002-2006).

APPENDIX C
MOBILE 6.2 MODEL INPUTS AND ANALYSIS RESULTS

APPENDIX D: MOBILE 6.2 Model Inputs and Analysis Results

```
MOBILE6 INPUT FILE
DATABASE OUTPUT
AGGREGATED OUTPUT
WITH FIELDNAMES
PARTICULATES

RUN DATA

SCENARIO REC        : San Juan - Year 2000 (2.5 mph)
CALENDAR YEAR       : 2000
AVERAGE SPEED       : 2.5 AREAWIDE
MIN/MAX TEMP        : 71. 88.
FUEL RVP            : 9.0
PARTICLE SIZE       : 10.0
PARTICULATE EF      : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV  PMDDR1.CSV  PMDDR2.CSV
DIESEL SULFUR       : 300.0

END OF RUN

SCENARIO REC        : San Juan - Year 2000 (20 mph)
CALENDAR YEAR       : 2000
AVERAGE SPEED       : 20 AREAWIDE
MIN/MAX TEMP        : 71. 88.
FUEL RVP            : 9.0
PARTICLE SIZE       : 10.0
PARTICULATE EF      : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV  PMDDR1.CSV  PMDDR2.CSV
DIESEL SULFUR       : 300.0

END OF RUN

SCENARIO REC        : San Juan - Year 2005 (2.5 mph)
CALENDAR YEAR       : 2005
AVERAGE SPEED       : 2.5 AREAWIDE
MIN/MAX TEMP        : 71. 88.
FUEL RVP            : 9.0
PARTICLE SIZE       : 10.0
PARTICULATE EF      : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV  PMDDR1.CSV  PMDDR2.CSV
DIESEL SULFUR       : 300.0

END OF RUN

SCENARIO REC        : San Juan - Year 2005 (20 mph)
CALENDAR YEAR       : 2005
AVERAGE SPEED       : 20 AREAWIDE
MIN/MAX TEMP        : 71. 88.
FUEL RVP            : 9.0
PARTICLE SIZE       : 10.0
PARTICULATE EF      : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV  PMDDR1.CSV  PMDDR2.CSV
DIESEL SULFUR       : 300.0

END OF RUN

SCENARIO REC        : San Juan - Year 2010 (2.5 mph)
CALENDAR YEAR       : 2010
AVERAGE SPEED       : 2.5 AREAWIDE
MIN/MAX TEMP        : 71. 88.
FUEL RVP            : 9.0
PARTICLE SIZE       : 10.0
PARTICULATE EF      : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV  PMDDR1.CSV  PMDDR2.CSV
DIESEL SULFUR       : 15.0

END OF RUN

SCENARIO REC        : San Juan - Year 2010 (20 mph)
CALENDAR YEAR       : 2010
AVERAGE SPEED       : 20 AREAWIDE
MIN/MAX TEMP        : 71. 88.
FUEL RVP            : 9.0
PARTICLE SIZE       : 10.0
PARTICULATE EF      : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV  PMDDR1.CSV  PMDDR2.CSV
DIESEL SULFUR       : 15.0

END OF RUN

SCENARIO REC        : San Juan - Year 2020 (2.5 mph)
CALENDAR YEAR       : 2020
AVERAGE SPEED       : 2.5 AREAWIDE
MIN/MAX TEMP        : 71. 88.
FUEL RVP            : 9.0
PARTICLE SIZE       : 10.0
PARTICULATE EF      : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV  PMDDR1.CSV  PMDDR2.CSV
DIESEL SULFUR       : 15.0

END OF RUN

SCENARIO REC        : San Juan - Year 2020 (20 mph)
CALENDAR YEAR       : 2020
AVERAGE SPEED       : 20 AREAWIDE
MIN/MAX TEMP        : 71. 88.
FUEL RVP            : 9.0
PARTICLE SIZE       : 10.0
PARTICULATE EF      : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV  PMDDR1.CSV  PMDDR2.CSV
DIESEL SULFUR       : 15.0

END OF RUN

SCENARIO REC        : San Juan - 2030 Plan (2.5 mph)
CALENDAR YEAR       : 2030
AVERAGE SPEED       : 2.5 AREAWIDE
MIN/MAX TEMP        : 71. 88.
FUEL RVP            : 9.0
PARTICLE SIZE       : 10.0
PARTICULATE EF      : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV  PMDDR1.CSV  PMDDR2.CSV
DIESEL SULFUR       : 15.0

END OF RUN
```

```
SCENARIO REC        : San Juan - 2030 Plan (20 mph)
CALENDAR YEAR       : 2030
AVERAGE SPEED       : 20 AREAWIDE
MIN/MAX TEMP        : 71. 82.
FUEL RVP              9.0
PARTICLE SIZE       : 10.0
PARTICULATE EF      : PMGZML.CSV  PMGDR1.CSV  PMGDR2.CSV  PMDZML.CSV  PMDDR1.CSV  PMDDR2.CSV
DIESEL SULFUR       : 15.0

END OF RUN
```

```
*********************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                        *
* Input file: SANJUAN.IN (file 1, run 1).                           *
*********************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # # #
* San Juan - Year 2000 (2.5 mph)
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # #

                    Calendar Year:  2000
                             Month:  Jan.
        Gasoline Fuel Sulfur Content:  300. ppm
          Diesel Fuel Sulfur Content:  300. ppm
               Particle Size Cutoff: 10.00 Microns
                  Reformulated Gas:  No
```

Vehicle Type: GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.4941	0.2831	0.0967		0.0357	0.0012	0.0016	0.0814	0.0062	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0045	0.0056	0.0151	0.0081	0.0848	------	------	------	0.0205	0.0084
ECARBON:	------	------	------	------	------	0.2132	0.0924	0.3445	------	0.0284
OCARBON:	------	------	------	------	------	0.0601	0.1330	0.1700	------	0.0141
SO4:	0.0029	0.0033	0.0034	0.0033	0.0035	0.0036	0.0055	0.0190	0.0009	0.0044
Total Exhaust PM:	0.0074	0.0090	0.0185	0.0114	0.0883	0.2769	0.2309	0.5335	0.0213	0.0554
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0088	0.0080	0.0080	0.0261	0.0040	0.0095
Total PM:	0.0279	0.0295	0.0390	0.0319	0.1097	0.2975	0.2514	0.5722	0.0379	0.0774
SO2:	0.0342	0.0432	0.0573	0.0468	0.0889	0.0685	0.1060	0.2717	0.0164	0.0603
NH3:	0.1002	0.0972	0.0910	0.0956	0.0451	0.0068	0.0068	0.0270	0.0113	0.0897

```
*****************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                                *
* Input file: SANJUAN.IN (file 1, run 2).                                   *
*****************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # # # #
* San Juan - Year 2000 (20 mph)
* File 1, Run 2, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # # #

                        Calendar Year:  2000
                                Month:  Jan.
             Gasoline Fuel Sulfur Content:  300. ppm
               Diesel Fuel Sulfur Content:  300. ppm
                    Particle Size Cutoff: 10.00 Microns
                       Reformulated Gas:  No
```

Vehicle Type: GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.4941	0.2831	0.0957		0.0357	0.0012	0.0016	0.0814	0.0062	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0045	0.0056	0.0151	0.0081	0.0848	------	------	------	0.0205	0.0084
ECARBON:	------	------	------	------	------	0.2132	0.0924	0.3445	------	0.0284
OCARBON:	------	------	------	------	------	0.0601	0.1330	0.1700	------	0.0141
SO4:	0.0055	0.0065	0.0067	0.0065	0.0072	0.0036	0.0055	0.0190	0.0016	0.0071
Total Exhaust PM:	0.0100	0.0122	0.0218	0.0146	0.0919	0.2769	0.2309	0.5335	0.0221	0.0581
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0088	0.0080	0.0080	0.0261	0.0040	0.0095
Total PM:	0.0306	0.0327	0.0423	0.0352	0.1133	0.2975	0.2514	0.5722	0.0387	0.0801
SO2:	0.0682	0.0861	0.1142	0.0933	0.1770	0.0685	0.1060	0.2717	0.0327	0.0980
NH3:	0.1002	0.0972	0.0910	0.0956	0.0451	0.0068	0.0068	0.0270	0.0113	0.0897

```
*************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                            *
* Input file: SANJUAN.IN (file 1, run 3).                               *
*************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # # #
* San Juan - Year 2005 (2.5 mph)
* File 1, Run 3, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # #

                    Calendar Year:  2005
                             Month:  Jan.
        Gasoline Fuel Sulfur Content:   92. ppm
          Diesel Fuel Sulfur Content:  300. ppm
               Particle Size Cutoff: 10.00 Microns
                  Reformulated Gas:  No
```

Vehicle Type: GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.4225	0.3349	0.1143		0.0358	0.0006	0.0018	0.0844	0.0057	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0042	0.0047	0.0058	0.0050	0.0657	------	------	------	0.0205	0.0065
ECARBON:	------	------	------	------	------	0.1227	0.0588	0.2142	------	0.0183
OCARBON:	------	------	------	------	------	0.0346	0.0846	0.1075	------	0.0093
SO4:	0.0008	0.0009	0.0010	0.0010	0.0014	0.0034	0.0056	0.0187	0.0003	0.0024
Total Exhaust PM:	0.0050	0.0056	0.0068	0.0059	0.0671	0.1607	0.1491	0.3404	0.0207	0.0364
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0087	0.0080	0.0080	0.0260	0.0040	0.0095
Total PM:	0.0256	0.0262	0.0273	0.0265	0.0883	0.1813	0.1696	0.3789	0.0373	0.0585
SO2:	0.0104	0.0134	0.0175	0.0144	0.0263	0.0645	0.1069	0.2666	0.0050	0.0346
NH3:	0.1016	0.1003	0.0971	0.0995	0.0451	0.0068	0.0068	0.0270	0.0113	0.0916

```
*****************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                                *
* Input file: SANJUAN.IN (file 1, run 4).                                   *
*****************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # # # #
* San Juan - Year 2005 (20 mph)
* File 1, Run 4, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # # #

                        Calendar Year:  2005
                                Month:  Jan.
             Gasoline Fuel Sulfur Content:  92. ppm
               Diesel Fuel Sulfur Content:  300. ppm
                    Particle Size Cutoff: 10.00 Microns
                        Reformulated Gas:  No
```

Vehicle Type: GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.4225	0.3349	0.1143		0.0358	0.0006	0.0018	0.0844	0.0057	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0042	0.0046	0.0057	0.0049	0.0657	------	------	------	0.0205	0.0064
ECARBON:	------	------	------	------	------	0.1227	0.0568	0.2142	------	0.0183
OCARBON:	------	------	------	------	------	0.0346	0.0846	0.1075	------	0.0093
SO4:	0.0015	0.0018	0.0020	0.0019	0.0028	0.0034	0.0056	0.0187	0.0005	0.0032
Total Exhaust PM:	0.0057	0.0065	0.0077	0.0068	0.0685	0.1607	0.1491	0.3404	0.0210	0.0371
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0087	0.0080	0.0080	0.0260	0.0040	0.0095
Total PM:	0.0262	0.0270	0.0283	0.0273	0.0898	0.1813	0.1696	0.3789	0.0375	0.0592
SO2:	0.0207	0.0267	0.0348	0.0287	0.0524	0.0645	0.1069	0.2666	0.0100	0.0463
NH3:	0.1016	0.1003	0.0971	0.0995	0.0451	0.0068	0.0068	0.0270	0.0113	0.0916

```
*********************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                        *
* Input file: SANJUAN.IN (file 1, run 5).                           *
*********************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # # #
* San Juan - Year 2010 (2.5 mph)
* File 1, Run 5, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # #

                    Calendar Year:  2010
                             Month:  Jan.
        Gasoline Fuel Sulfur Content:   30. ppm
          Diesel Fuel Sulfur Content:   15. ppm
               Particle Size Cutoff: 10.00 Microns
                  Reformulated Gas:  No
```

Vehicle Type: GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.3540	0.3855	0.1315		0.0357	0.0003	0.0019	0.0856	0.0054	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0041	0.0041	0.0045	0.0042	0.0404	------	------	------	0.0205	0.0052
ECARBON:	------	------	------	------	------	0.0416	0.0256	0.1171	------	0.0101
OCARBON:	------	------	------	------	------	0.0117	0.0368	0.0594	------	0.0052
SO4:	0.0002	0.0003	0.0003	0.0003	0.0006	0.0002	0.0003	0.0009	0.0001	0.0003
Total Exhaust PM:	0.0043	0.0045	0.0049	0.0046	0.0411	0.0535	0.0627	0.1774	0.0206	0.0208
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0087	0.0080	0.0080	0.0259	0.0040	0.0095
Total PM:	0.0249	0.0250	0.0254	0.0251	0.0623	0.0740	0.0832	0.2158	0.0371	0.0429
SO2:	0.0034	0.0044	0.0057	0.0047	0.0084	0.0029	0.0056	0.0132	0.0016	0.0051
NH3:	0.1017	0.1013	0.1005	0.1011	0.0451	0.0068	0.0068	0.0270	0.0113	0.0923

```
*****************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                                *
* Input file: SANJUAN.IN (file 1, run 6).                                   *
*****************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # #
* San Juan - Year 2010 (20 mph)
* File 1, Run 6, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # #

                        Calendar Year:  2010
                                Month:  Jan.
          Gasoline Fuel Sulfur Content:   30. ppm
            Diesel Fuel Sulfur Content:   15. ppm
                 Particle Size Cutoff: 10.00 Microns
                   Reformulated Gas:  No
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.3540	0.3855	0.1315		0.0357	0.0003	0.0019	0.0856	0.0054	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0039	0.0040	0.0044	0.0041	0.0402	------	------	------	0.0205	0.0051
ECARBON:	------	------	------	------	------	0.0416	0.0256	0.1171	------	0.0101
OCARBON:	------	------	------	------	------	0.0117	0.0368	0.0594	------	0.0052
SO4:	0.0005	0.0006	0.0006	0.0006	0.0012	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0044	0.0046	0.0050	0.0047	0.0414	0.0535	0.0627	0.1774	0.0206	0.0209
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0087	0.0080	0.0080	0.0259	0.0040	0.0095
Total PM:	0.0250	0.0251	0.0255	0.0252	0.0626	0.0740	0.0832	0.2158	0.0372	0.0430
SO2:	0.0067	0.0088	0.0114	0.0094	0.0167	0.0029	0.0056	0.0132	0.0033	0.0090
NH3:	0.1017	0.1013	0.1005	0.1011	0.0451	0.0068	0.0068	0.0270	0.0113	0.0923

```
*************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                            *
* Input file: SANJUAN.IN (file 1, run 7).                               *
*************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # # # # #
* San Juan - Year 2020 (2.5 mph)
* File 1, Run 7, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2020
                                   Month:  Jan.
            Gasoline Fuel Sulfur Content:   30. ppm
              Diesel Fuel Sulfur Content:   15. ppm
                   Particle Size Cutoff: 10.00 Microns
                      Reformulated Gas:  No
```

Vehicle Type: GVWR:	LDGV	LDGT12 <6000	LDGT34 >6000	LDGT (All)	HDGV	LDDV	LDDT	HDDV	MC	All Veh
VMT Distribution:	0.2790	0.4400	0.1500		0.0363	0.0003	0.0022	0.0872	0.0050	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0039	0.0039	0.0039	0.0039	0.0147	------	------	------	0.0205	0.0040
ECARBON:	------	------	------	------	------	0.0099	0.0070	0.0264	------	0.0023
OCARBON:	------	------	------	------	------	0.0028	0.0100	0.0134	------	0.0012
SO4:	0.0002	0.0003	0.0003	0.0003	0.0007	0.0002	0.0003	0.0009	0.0001	0.0003
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0154	0.0129	0.0173	0.0406	0.0206	0.0079
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0259	0.0040	0.0096
Total PM:	0.0247	0.0247	0.0248	0.0247	0.0365	0.0334	0.0379	0.0790	0.0371	0.0300
SO2:	0.0034	0.0044	0.0058	0.0048	0.0083	0.0029	0.0056	0.0131	0.0016	0.0052
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0925

```
*****************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                                *
* Input file: SANJUAN.IN (file 1, run 8).                                   *
*****************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # # #
* San Juan - Year 2020 (20 mph)
* File 1, Run 8, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # #
```

Calendar Year: 2020
Month: Jan.
Gasoline Fuel Sulfur Content: 30. ppm
Diesel Fuel Sulfur Content: 15. ppm
Particle Size Cutoff: 10.00 Microns
Reformulated Gas: No

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2790	0.4400	0.1500		0.0363	0.0003	0.0022	0.0872	0.0050	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0036	0.0037	0.0036	0.0140	------	------	------	0.0205	0.0038
ECARBON:	------	------	------	------	------	0.0099	0.0070	0.0264	------	0.0023
OCARBON:	------	------	------	------	------	0.0028	0.0100	0.0134	------	0.0012
SO4:	0.0005	0.0006	0.0006	0.0006	0.0014	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0155	0.0129	0.0173	0.0406	0.0206	0.0079
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0259	0.0040	0.0096
Total PM:	0.0248	0.0248	0.0248	0.0248	0.0366	0.0334	0.0379	0.0790	0.0372	0.0300
SO2:	0.0067	0.0088	0.0115	0.0095	0.0165	0.0029	0.0056	0.0131	0.0033	0.0093
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0925

```
*********************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                        *
* Input file: SANJUAN.IN (file 1, run 9).                           *
*********************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # #
* San Juan - 2030 Plan (2.5 mph)
* File 1, Run 9, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # # #

                          Calendar Year:  2030
                                   Month:  Jan.
              Gasoline Fuel Sulfur Content:   30. ppm
                Diesel Fuel Sulfur Content:   15. ppm
                     Particle Size Cutoff: 10.00 Microns
                         Reformulated Gas:  No
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2790	0.4400	0.1500		0.0363	0.0003	0.0022	0.0872	0.0050	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0039	0.0039	0.0039	0.0039	0.0102	------	------	------	0.0205	0.0039
ECARBON:	------	------	------	------	------	0.0071	0.0037	0.0168	------	0.0015
OCARBON:	------	------	------	------	------	0.0020	0.0053	0.0085	------	0.0007
SO4:	0.0002	0.0003	0.0003	0.0003	0.0007	0.0002	0.0003	0.0009	0.0001	0.0003
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0109	0.0093	0.0093	0.0262	0.0206	0.0064
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0259	0.0040	0.0096
Total PM:	0.0247	0.0247	0.0247	0.0247	0.0321	0.0298	0.0299	0.0646	0.0371	0.0285
SO2:	0.0034	0.0044	0.0058	0.0048	0.0083	0.0029	0.0056	0.0131	0.0016	0.0052
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0925

```
*****************************************************************************
* MOBILE5.2.03 (24-Sep-2003)                                                *
* Input file: SANJUAN.IN (file 1, run 10).                                  *
*****************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # # # # # #
* San Juan - 2030 Plan (20 mph)
* File 1, Run 10, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # #

                    Calendar Year:  2030
                             Month:  Jan.
        Gasoline Fuel Sulfur Content:   30. ppm
          Diesel Fuel Sulfur Content:   15. ppm
               Particle Size Cutoff: 10.00 Microns
                  Reformulated Gas:  No
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.2790	0.4400	0.1500		0.0363	0.0003	0.0022	0.0872	0.0050	1.0000
Composite Emission Factors (g/mi):										
Lead:	0.0000	0.0000	0.0000	0.0000	0.0000	------	------	------	0.0000	0.0000
GASPM:	0.0037	0.0036	0.0036	0.0036	0.0095	------	------	------	0.0205	0.0036
ECARBON:	------	------	------	------	------	0.0071	0.0037	0.0168	------	0.0015
OCARBON:	------	------	------	------	------	0.0020	0.0053	0.0085	------	0.0007
SO4:	0.0005	0.0006	0.0006	0.0006	0.0014	0.0002	0.0003	0.0009	0.0002	0.0006
Total Exhaust PM:	0.0042	0.0042	0.0042	0.0042	0.0109	0.0093	0.0093	0.0262	0.0206	0.0065
Brake:	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125	0.0125
Tire:	0.0080	0.0080	0.0080	0.0080	0.0086	0.0080	0.0080	0.0259	0.0040	0.0096
Total PM:	0.0247	0.0247	0.0247	0.0247	0.0321	0.0298	0.0299	0.0646	0.0372	0.0286
SO2:	0.0067	0.0088	0.0115	0.0095	0.0165	0.0029	0.0056	0.0131	0.0033	0.0093
NH3:	0.1017	0.1017	0.1017	0.1017	0.0451	0.0068	0.0068	0.0270	0.0113	0.0925