Attachment G

1. TI-2 Contract Criteria Pollutant Dispersion Modeling

1.1 Stage I and Stage II Operations

Contract TI-2 consists of Stage I and Stage II. In both stages, the proposed pumping system would operate under emergency conditions or when three or more of the existing pump engines are inoperable. The capacity of the Stage I Pumping System would be 66 MGD and would be electrically powered by Con Ed through the existing transmission network. Therefore, here would be no new air emissions from the Stage I EMS Pumping System, and no detailed air quality impact analysis is warranted.

Under Contract TI-2 Stage II condition, another pumping system with increased capacity of 120 MGD would be installed. Two temporary generators (one standby) would be installed to provide power to handle the new Stage II EMS Pumping System. During the "pump-around", when both pump systems from Stage I and II would be operating to provide 160 MGD capacity, the pumping systems would be powered by the newly constructed 27 kV Con Ed substation.

A State Facility Permit is required to operate the two new temporary generators until the proposed 27 kV substation is online. The air quality analysis discussed herein was performed for a reasonable worst case condition to support the State Facility Permit. This reasonable worst case condition consists of the following operating assumptions:

1. All five existing pump engines fail.
2. The proposed Stage II Pumping System kicks in to provide 120 MGD flow.
3. All other existing combustion units operate at capacity.

As noted above, during the Stage II condition it is expected that the existing pump engines would be utilized all the time, except if they fail to operate at the same time and are required to be repaired. Therefore, the air quality conditions from TI-2 Stage II action remain essentially the same as existing conditions. However, potential operation of the new generator for a short period of time does exist when three or more existing pump engines would require repairs.

In order to provide power for 120 MGD capacity, the new diesel generator will only need to run at 70 percent of its nameplate rated load. Furthermore, based on the historical daily MGD data (i.e., an average of 60 MGD on an annual average basis), outside of rain events, the generator would likely run at the high end of the load range in the daytime and evening (when throughput is high) and at the low load in the nighttime period (e.g., 1 am - 5 am) when a throughput is low. Under the high load condition, the generator is expected to run at a range of 50 to 70 percent of the nameplate load. Under the very low throughput condition during the overnight period (typically 1 to 5 am duration), the generator is expected to run in a 30 to 40 load range with the resistor load bank being automatically turned on to maintain the minimal load for the generator to run. Therefore, given the time weight factor over an average daily condition, it is assumed that the generator would likely operate at an average of 50 percent of nameplate load on an annual average basis.

The modeling analysis addresses the following pollutant contributions conservatively from TI-2 Stage II operations. It assumes that one new generator will operate continuously to handle the facility for a maximum of 50 percent of the time over an entire year when the existing pump engines are not in service (the remainder of the year is assumed to be the same as the existing conditions):

- NO_2, SO_2, CO and PM_{10} ambient concentration contributions from on-site facility combustion sources plus the appropriate background levels. These are compared to the applicable NAAQS.

- $PM_{2.5}$ ambient concentration contributions from on-site facility combustion sources. Potential future increases associated with TI-2 Stage II of the proposed action will be discussed in subsequent analyses and compared to the incremental de minimis thresholds established by the New York City Department of Environmental Protection (NYCDEP) in its $PM_{2.5}$ analysis interim guidance (June 2004).

1.2 Emission Sources Modeled

The combustion sources emitting criteria pollutants in the facility for the operational scenario include:

- Five blower engines in the pump and blower building (3 of 5 operate concurrently running at a maximum of 90 percent load conditions).
- Five existing pump engines in the pump and blower building are not in service for 50 percent of time within a year when the new TI-2 generator is operating. For the remainder of the time (50 percent), existing pump engines will operate under the same condition.
- Three boilers (Boilers #3, #4 and #5) in the pump and blower building (one of the Boilers #3 and #4 is a standby).
- One hot water heater in the pump and blower building.
- Two boilers (Boilers #1 and #2) in the dewatering building (one of two is a standby).
- One emergency diesel generator in a trailer.
- Two new generators (#1 and #2; one is a standby).
- NYCDEP collection building heating and hot water heat boiler stacks.

These source locations are shown in Figure 1 and each one is modeled as a point source. Their respective physical parameters are summarized in Table 1-1.

Proposed TI-2 Source Location

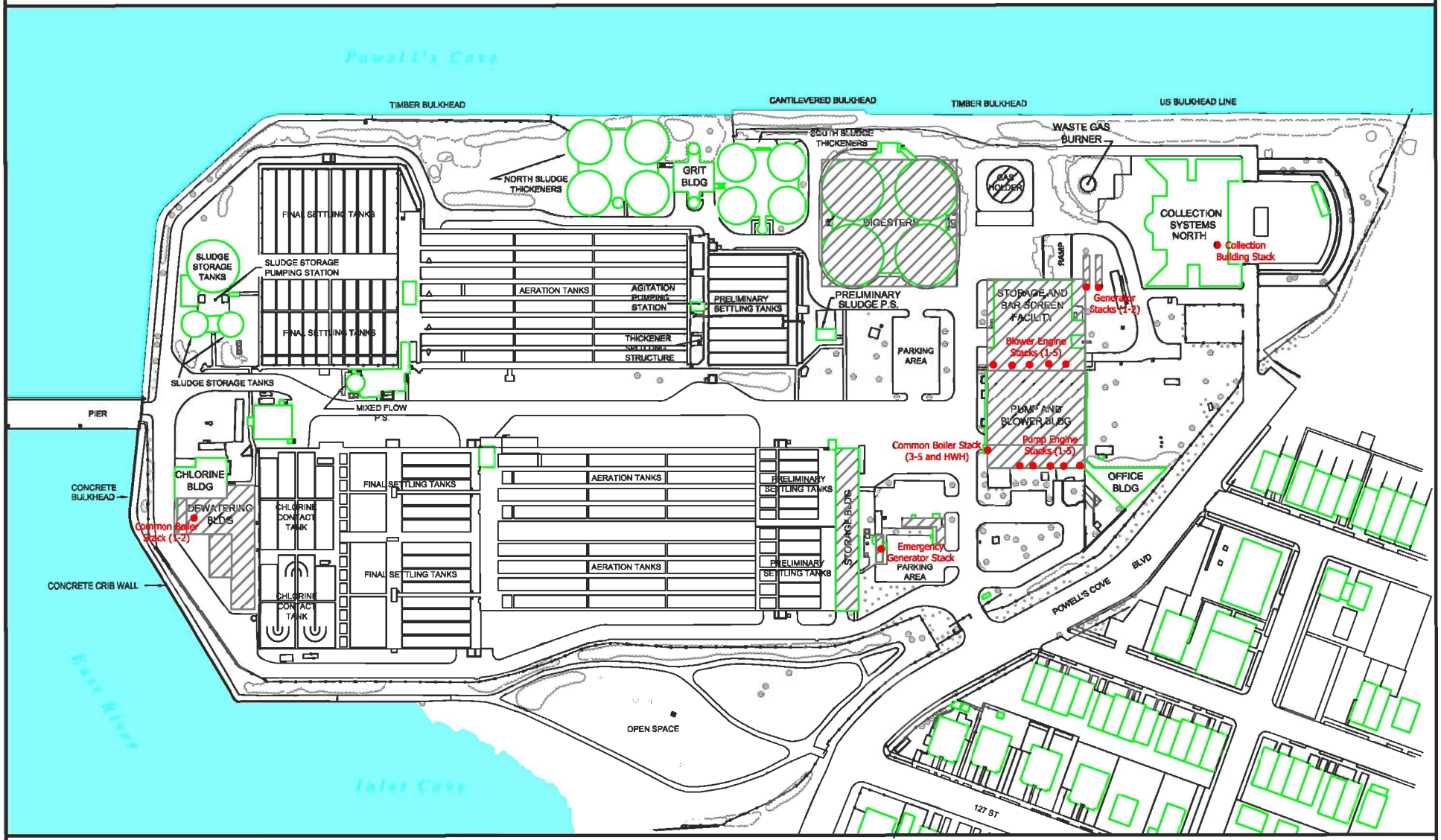


Figure 1

Table 1-1

Summary of TI-2 Stage II Source Parameters for Modeling

Source	Blower Engine[1] (#1-#5)	Pump Engine[1] (#1-#5)	New Generator (#1or #2)	Emergency Diesel Generator	Boiler (#1 or #2 with a common stack)	Boiler (#3 or #4, #5 and HWH with a common stack operating from October to March)	Boiler (#5 and HWH with a common stack operating from April to September)	Collection Building Heating Boiler (operating from October to March)	Collection Building Hot Water Heater Boiler
Source Base Elevation (m)	5.18	5.18	5.18	5.18	2.88	5.18	5.18	4.72	4.72
Source Height (m)	15.24	7.09	4.62	4.57	24.43	19.93	19.93	7.47	7.47
Source Temperature (degrees F)	400	400	835	650	250	250	250	330	330
Source Diameter (m)	0.36	0.25	0.61	0.20	0.38	1.22	1.22	0.46	0.46
Source Exit Velocity (m/s)	19.31	8.42	4.97 (PM short-term) 13.93 (CO and SO_2 short-term) 9.95 (long-term)	145.52	4.14	1.21	0.81	0.85	0.48

Note [1]: In the short-term, four of five engines run. On an annual average, only three out of five engines run at the same time at an average of 40 percent load condition; each engine has its own stack. Pump engines are assumed to run 50 percent of the year for annual impact estimates.

1.3 Emission Rate Estimates

Criteria pollutant emission rates for pump engines and blower engines were estimated based on the emission factors contained in the existing Title V facility permit. Emission rates of other combustion sources were estimated using EPA AP-42 emission factor report, except the new TI-2 generator, for which manufacturer-provided data were used.

The manufacturer-provided emission factors at 50 percent load condition were used in predicting annual average concentration levels for the TI-2 generator (Table 1-2). The short-term emission rates for the TI-2 generator were based on the worst-case condition that results in the maximum short-term emission rates at various load conditions (25, 50 and 75%). These load conditions correlate different emission factors as established by the manufacturer for each criteria pollutant (Table 1-2).

The proposed TI-2 generators would be more efficient than the existing pump engines, and a selective catalytic reduction (SCR) post-combustion treatment system would be installed with the proposed generators. Their emissions would meet the Part 227 RACT requirement for NOx emissions, and would be much lower than the existing pump engines. Consequently, there would be a net reduction in NOx emissions and an overall improvement on NO_2 impacts when the proposed generators are operated instead of the existing pump engines.

The fuel oil to be used for applicable combustion sources under the TI-2 Contract condition would be low sulfur fuel oil (<500 ppm sulfur).

The estimated short-term and annual average emission rates used in the dispersion modeling for each source are presented in detail in Appendix A to this attachment. Source fuel type and horsepower or fuel consumption rate are the main input parameters to determine short-term emission rates in the unit of grams per second (g/s). The annual emission rates are based on the annual throughput requirement established from the historical processing data for those sources, such as the TI-2 generator and existing pump engines. For the emergency diesel generator, the 192 annual operational hours are used in determining annual emission rates. Appendix A also provides backup worksheets used for deriving emission rates for each typical combustion source, including oil or gas-fired boilers and diesel engines.

Table 1-2

TI-2 Diesel Generator Worst-case Emission Rates

Pollutant	Emission Factor [1] (grams/hp-hr)	Average Load Condition (%)	Horsepower (hp)	Emission Rate (grams/second) [2]
NO_x (annual)	2.3	50	1072.8	**0.6854**
PM (PM_{10}/$PM_{2.5}$) Annual	0.09	50	1072.8	**0.02682**
Short-term	0.21	25	536.4	**0.03129**
	0.09	50	1072.8	0.02682
	0.05	75	1501.9	0.02086
CO (short-term)	0.7	25	536.4	0.1043
	0.7	50	1072.8	0.2086
	0.8	75	1501.9	**0.3338**
SO_2 Annual	0.61	50	1072.8	**0.1818**
Short-term	0.71	25	536.4	0.1058
	0.61	50	1072.8	0.1818
	0.58	75	1501.9	**0.2420**

Note [1]: Manufacturer-provided emission factors.
[2]: Bold numbers were used in the modeling. Annual rates are levels prior to applying the annual run time ratio.

1.4 Dispersion Modeling

Model

The USEPA-approved refined air quality dispersion model for simple terrain - Industrial Source Complex Model (ISC3, Version No. 02035) - was used to analyze the impacts of emissions from the facility. All combustion emissions emitted from each identified source were modeled as point sources in ISC3. The modeling parameters used are summarized in Table 1-3.

For each potential source (Figure 1), the USEPA Building Profile Input Program (BPIP) was used to perform the Good Engineering Practice (GEP) stack height analysis and determine the applicable directional control building dimensions. The BPIP program determines: 1) GEP stack height, 2) the area of influence for each nearby building, 3) the area of influence for directionally dependent building downwash, and 4) the specific building directional dimensions required for model input. Since some of source release heights are below the GEP height, impacts caused by building cavities must also be evaluated. Generally, building cavities are limited to within three times the building height or projected building width from the source (whichever is smaller) of any given building. Based on this definition, the applicable facility building cavities would not extend to the closest sensitive receptor location (approximately 60 meters from the nearest edge of the pump and blower building due southwest). Therefore, estimates of pollutant concentrations within building cavity re-circulation regions are not

considered.

Since Boilers #3 and #4 (one is standby) in the pump and blower building operate from October 1 through March 31 (a total of six months per year), the ambient annual contributions predicted by using ISC3 reflect only those six months of operations.

The DEP-provided city-wide 3-year maximum default conversion factor of 0.62 (Matic, September 20, 2005) was used to convert predicted NO_x concentration levels using the ISC3 model to NO_2 concentration levels.

Table 1-3

ISC3 (Version 02035) Model Options

Operation	Selected Parameter
Concentration Calculation	Short-term and Annual Average
Receptor	Fenceline receptors, neighborhood sensitive receptors and a 2-km by 2-km grid receptors in 25-m spacing of the facility including water surface
Dispersion Coefficient	Urban
Wind Speed Profile	Default
Temperature Gradient	Default
Plume Rise Calculation	Gradual Plume Rise
Stack Tip Downwash	Yes
Building Downwash	Yes
Buoyancy Dispersion	Yes
Calm Hours	Default - omitted from calculation
Meteorological Conditions	Year: 2000-2004 Surface Station: LaGuardia Airport, NY Upper Air Station: Brookhaven, NY

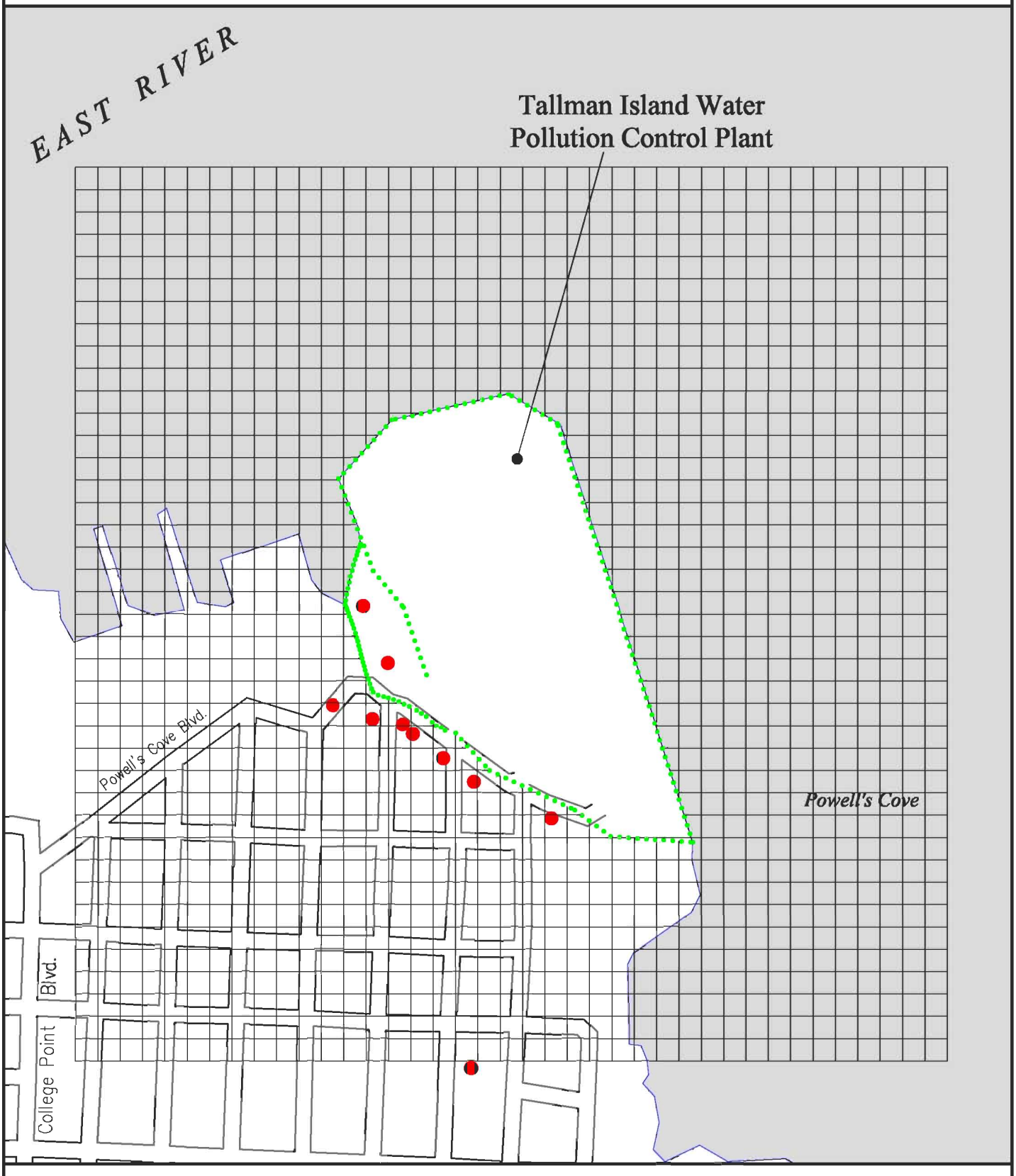
Meteorology

Five years (2000 - 2004) of the most recent available meteorological data consisting of (1) surface observations from the National Weather Service (NWS) station at LaGuardia Airport in New York and (2) the coincident mixing height data from the NWS station at Brookhaven, New York were used.

Receptors

The ISC3 modeling analysis utilized a total of 2,762 receptor points (Figure 2) including a 2 x 2 (km) inner Cartesian receptor grid with 25-meter spacing. According to CEQR guidance, the discrete sensitive receptors identified and located within 1-km radius of the facility include those residences immediately across the street where the facility is located, several schools, one library, one park and an open space area adjacent to the facility to which the public has access. Elevated receptors were also modeled at each school. Additionally, fenceline receptors were also modeled.

Partial Modeled Receptor Locations



Source: USGS

Figure 2

Background Air Quality Data

The average ambient background data used to determine the total concentration levels were obtained from NYCDEP (August 4, 2005) for NO_2, SO_2, and PM_{10} and from NYSDEC (June 2004) for CO. The SO_2 background levels were obtained from Queensboro Community College and NO_2 level was from College Point Post Office. The PM_{10} background levels were from data collected from IS 52 in Bronx. The CO background levels were obtained from Queens College.

The available background levels for existing conditions and their applicable NAAQS are summarized in Table 1-4.

Table 1-4

Background Levels

Averaging Time	Monitored Background	NAAQS
PM_{10}		
Annual (ug/m^3)	21	50
24-hour 2nd Highest (ug/m^3)	46	150
CO		
1-hour Highest (ug/m^3)	4,229	40,000
8-hour Highest (ug/m^3)	2,889	10,000
SO_2		
Annual (ug/m^3)	18	80
24-hour 2nd Highest (ug/m^3)	86	365
3-hour 2nd Highest (ug/m^3)	165	1,300
NO_2		
Annual (ug/m^3)	56	100

Impact Modeling Results

The results of the dispersion modeling TI-2 contract are presented in Table 1-5. The total concentrations are below the applicable NAAQS, except for the annual NO_2 concentration. As shown in the table, the proposed temporary generators would contribute a maximum of 5.7 ug/m^3 to the ambient concentrations of NO_2. The potential exceedance is not attributable to the proposed temporary generators. Therefore, the generators do not cause a significant impact and the TI-2 condition results in overall improved air quality because of the use of these generators.

In order to determine potential $PM_{2.5}$ impacts based on the NYCDEP-established incremental impact thresholds from the proposed action, ambient $PM_{2.5}$ concentration levels under existing/no action condition and the future with the proposed action conditions were predicted. The predicted incremental $PM_{2.5}$ concentration levels are summarized in Table 1-6. The $PM_{2.5}$ incremental changes from TI-2 contract

would not exceed the NYSDEC and NYCDEP significant microscale impact thresholds compared to the existing/ no action condition.

Table 1-6

Proposed Action (TI-2) Predicted Highest Ambient Concentrations for Criteria Pollutants

Averaging Time	Monitored Background	Highest from Proposed Generators	Highest from All Combustion Units	Highest Total	NAAQS
PM_{10}					
Annual (ug/m^3)	21	0.36	2.56	24	50
24-hour 2nd Highest (ug/m^3)	46	7.6	59.9	106	150
CO					
8-hour Highest (ug/m^3)	2,889	155	6,642	9,531	10,000
1-hour Highest (ug/m^3)	4,229	282	13,267	17,496	40,000
SO_2					
Annual (ug/m^3)	18	2.4	5.6	24	80
24-hour 2nd Highest (ug/m^3)	86	93.2	111.0	197	365
3-hour 2nd Highest (ug/m^3)	165	216.3	224.9	390	1,300
NO_2					
Annual (ug/m^3)	56	5.7	79.8	136	100

Table 1-7

Proposed Action (TI-2) Predicted Microscale Maximum $PM_{2.5}$ Concentrations and Increments

Averaging Time	Existing/No Action Level	Proposed Action	Proposed Action Increment	Interim Guidance Criteria
Annual (ug/m^3)	3.79	2.55	-1.24	0.3
24-hour 1st Highest (ug/m^3)	59.1	59.8	0.7	5

2. TI-3 Contract Criteria Pollutant Dispersion Modeling

2.1 Introduction

The modeling analysis for the criteria pollutant contributions from Tallman Island WPCP operations under the proposed TI-3 contract condition was conducted using the same approach for the TI-2 Contract conditions.

2.2 Emission Sources Modeled

The emission sources modeled are shown in Figure 3. Their respective physical parameters are summarized in Table 2-1. Under the TI-3 condition, the combustion sources emitting criteria pollutants at the facility include:

- Two new supplemental boilers in pump and blower building. These two boilers will run in full capacity from October to March (a six-month duration). One of these two boilers will run the rest of year at a 70 percent load condition.
- Two boilers (Boilers #3 and #4) in the pump and blower building as standby boilers for the two new supplemental boilers.
- One boiler (Boiler #5) in the pump and blower building running from October to March for a total of six months per year.
- One hot water heater in the pump and blower building.
- Two boilers (Boilers #1 and #2) in the dewatering building (one of two is a standby).
- Three new emergency diesel generators in the new substation and generator building (one of three is a standby generator) running a maximum of 500 hours per year at a maximum of 69 percent load condition.
- One new flare exhaust stack.
- NYCDEP collection building heating and hot water heat boiler stacks.

2.3 Emission Rate Estimates

The fuel oil to be used for applicable combustion sources under the TI-3 Contract condition would be low sulfur fuel oil (<500 ppm sulfur).

For the three new emergency diesel generators (one standby), 500 annual operational hours are used in determining annual emission rates. Given the maximum facility energy consumption level, the two new emergency generators would not operate together at full capacity at anytime. It was determined that the maximum power to be generated by these two generators would be approximately 69 percent of the total load capacity. Therefore both short- and long-term emission rates for both of the two operating generators were developed using a 69 percent load condition. It should be noted that the NOx emission factor used for the TI-3 emergency generators does not consider the SCR post-combustion treatment system that will be operated with the TI-2 generators. Therefore, the manufacturer-provided uncontrolled NOx emission factor was used in determining the NOx emission rate modeled (Table 2-2).

The two new supplemental boilers are designed to operate from October to March. From May through September, only one boiler will operate at a 70 percent load condition. These annual operational factors were considered in the annual average modeling.

Proposed TI-3 Source Location

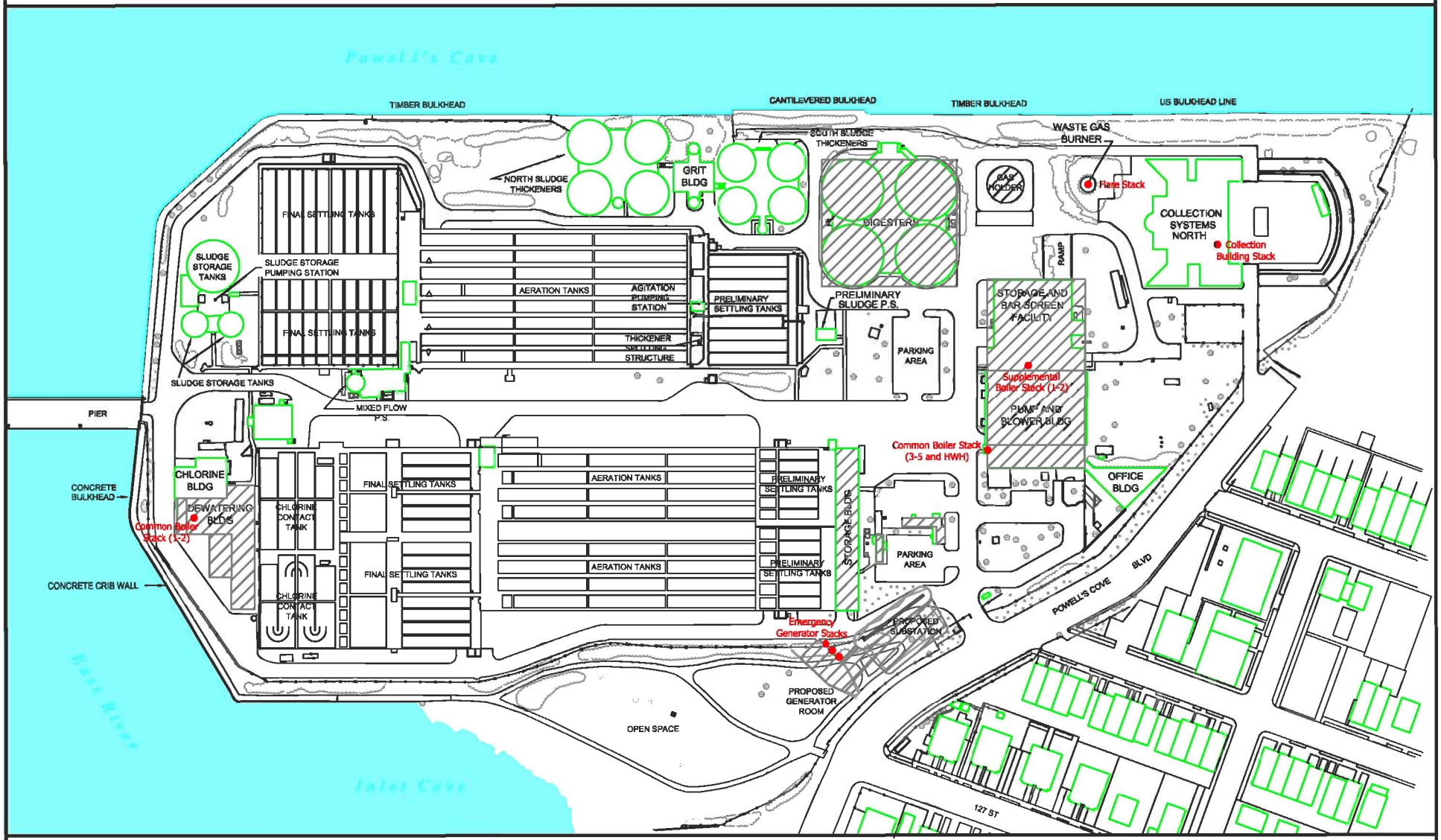


Figure 3

Table 2-1

Summary of TI-3 Source Parameters for Modeling

Source	Supplemental Boiler (#1 and #2 from October to March)[1]	Supplemental Boiler (#1 or #2 from April to September)[2]	Emergency Diesel Generator (1)	Emergency Diesel Generator (2)	Boiler (#1 or #2 with a common stack)	Boiler (#5 and HWH with a common stack)	Collection Building Heating Boiler (operating from October to March)	Collection Building Hot Water Heater Boiler	Digested Gas Burner (flare)
Source Base Elevation (m)	5.18	5.18	5.18	5.18	2.88	5.18	4.72	4.72	4.57
Source Height (m)	18.29	18.29	10.3	10.3	24.43	19.93	7.47	7.47	13.84
Source Temperature (degrees F)	320	320	835	835	250	250	330	330	1600
Source Diameter (m)	0.71	0.71	0.61	0.61	0.38	1.22	0.46	0.46	1.83
Source Exit Velocity (m/s)	5.14	3.60	13.68	13.68	4.14	0.81	0.85	0.48	1.00[3]

Note [1]: Two new boilers use a common stack and run concurrently.
[2]: Only one of two boilers will run at 70 percent load.
[3]: A conservative one-meter per second exit velocity was assumed.

Table 2-2

TI-3 Diesel Generator Emission Rates

Pollutant	Emission Factor [1] (grams/hp-hr)	Maximum Load Condition (%)	Horsepower (hp)	Emission Rate (grams/second) [2]
NO_x (annual)	6.4	69	1475.1	2.6224
PM (PM_{10}/$PM_{2.5}$) Short-term and Annual	0.09	69	1475.1	0.03688
CO (short-term)	0.8	69	1475.1	0.3278
SO_2 Short-term and Annual	0.61	69	1475.1	0.2499

Note [1] : Manufacturer-provided emission factors.
[2]: Annual rates are levels prior to applying the annual run time ratio of 500 hours/8760 hours.

The applicable nonsmoking flare emission rates were estimated based on AP-42 Section 13.5 and the heating value of the flare gases from the stack. Only the pollutants CO, NO_x and VOC are emitted from this source according to AP-42.

Appendix A provides a worksheet used to derive emission rates for each typical combustion source, including oil or gas-fired boilers and diesel engines.

2.4 Microscale Dispersion Modeling

The same modeling methodologies used for the TI-2 condition were used for the TI-3 condition including dispersion model and model options, meteorological conditions, receptor locations and background levels.

The ambient criteria pollutant concentration levels were modeled for all the stationary combustion sources under the TI-3 condition of the proposed action. The modeling results are summarized in Table 2-3.

The modeling results show that no exceedances of the NAAQS are predicted for any criteria pollutant (Table 2-3). To determine potential $PM_{2.5}$ impacts based on the NYCDEP-established incremental impact thresholds from the proposed action, ambient $PM_{2.5}$ concentration levels under both existing/no action and the proposed action conditions were predicted. The predicted incremental $PM_{2.5}$ concentration levels are summarized in Table 2-4. The proposed action modeling results shown in Tables 2-3 and 2-4 conclude:

- No exceedances of the NAAQS were predicted for any of the criteria pollutants.

- $PM_{2.5}$ impacts from the Tallman Island WPCP would be substantially reduced under the proposed action. $PM_{2.5}$ incremental changes would not exceed the NYSDEC and NYCDEP significant microscale impact thresholds compared to the existing/no action condition. Therefore, no significant microscale $PM_{2.5}$ impacts would result from the proposed action.

Moreover, a more conservative analysis was performed using ISC model assuming:

- Two new emergency diesel generators run at full capacity for 500 hours.

- Two new supplemental boilers run at full capacity for the entire year.

The modeling results indicate that the maximum annual average increases of NO_x, PM_{10} and $PM_{2.5}$ facility contributions would be below 40 percent as compared to the results (Tables 2-3 and 2-4) reflecting actual operational TI-3 Contract conditions. Therefore, no exceedances of NAAQS of any criteria pollutants would occur under TI-3 Contract condition even if using the emission rates based on potential to emit from the proposed new combustion sources.

Table 2-3

Proposed Action (TI-3) Predicted Total Ambient Concentrations for Criteria Pollutants

Averaging Time	Monitored Background	Facility Contributions	Total	NAAQS
PM_{10}				
Annual (ug/m^3)	21	0.31	21	50
24-hour 2nd Highest (ug/m^3)	46	12.7	59	150
CO				
8-hour Highest (ug/m^3)	2,889	195.1	3,084	10,000
1-hour Highest (ug/m^3)	4,229	340.4	4,569	40,000
SO_2				
Annual (ug/m^3)	18	0.56	19	80
24-hour 2nd Highest (ug/m^3)	86	85.9	172	365
3-hour 2nd Highest (ug/m^3)	165	189.1	354	1,300
NO_2				
Annual (ug/m^3)	56	4.7	61	100

Table 2-4

Proposed Action (TI-3) Predicted Microscale Maximum $PM_{2.5}$ Concentrations and Increments

Averaging Time	Existing/No Build Level	Proposed Action	Proposed Action Increment	Interim Guidance Criteria
Annual (ug/m^3)	3.79	0.31	-3.5	0.3
24-hour 1st Highest (ug/m^3)	59.1	12.7	-46.4	5

Appendix A (of Attachment G)

Emission Rate Worksheets

Air Dispersion Modeling Input Data
Tallman Island Water Pollution Control Plant
Queens, New York

General Combustion Source Data

Existing Conditions and TI2 Generator Short-term Emissions Rates Worksheet

	EG 1	EG 2	EG 2 at 25%	EG 2 at 70%	Sm. Blr.1	Sm. Blr.2	Sm. Blr.3	Sm. Blr.4	Sm. Blr. 5	HWH 1	DG Burn	Pump Eng. 1-3	Pump Eng. 1-3	Pump Eng. 4-5	Blower Eng. 1-5	Heat Boiler	HW Boiler
Type	Point, Existing	Point, New	Point, New	Point, New	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing
Load (%)		100%	25%	70%								100%	40%	-	90%		
		1600	-	-													
Capacity (HP)	2168	2145.6	536.4	1501.9	125	125	250	250	-	-	-	546	218.4	520	911.7		
Capacity (MMBTU/hr)	-	-	-	-	-	-	-	-	-	-	15.264	-	-	-	-	1.5	0.42
Fuel Types	#2 FO	#2 FO	#2 FO	#2 FO	NG	NG	#2 FO	#2 FO	DG	NG	NG/DG	NG/DG	NG/DG	NG/DG	NG/DG	NG	NG
In/Nearest Bldg	S of Storage	S of Storage	S of Storage	S of Storage	Dewater	Dewater	Pump & Blower	Pump & Blower	Pump & Blower	Pump & Blower	E of Pump & Blower	Pump & Blower	Pump & Blower	Pump & Blower	Pump & Blower	Col Fac N Crew Qtrs	Col Fac N Crew Qtrs
Stack Base El (ft)	17	17	17	17	9.45	9.45	17	17	17	17	15	17	17	17	17		
Stack Elevation (ft)	32	32.1476	32.1476	32.1476	89.6	89.6	82.4	82.4	82.4	82.4	60.42	40.25	40.25	40.25	70		
Stack Height (ft)	15	15.1476	15.1476	15.1476	80.15	80.15	65.4	65.4	65.4	65.4	45.42	23.25	23.25	23.25	53		
Stack Diameter (in)	8	24	24	24	15	15	48	48	48	48	72	10	10	10	14	18	18
Exhaust Temp (^{o} F)	650	835	835	835	250	250	250	250	250	250	1600	400	400	400	400		
Exhaust Velocity (ft/s)	-	65.28	16.32	45.70	-	-	-	-	-	-	3.28	-	-	-	-		
Exhaust Flow (cfm)	10000	12305	3076.25	8613.5	1000	1000	1000	1000	1000	1000	-	1734	693.6	1734	4789.8		
Alt. Capacity (MMBTU/hr)	14.46	-	-	-	5.23	5.23	10.46	10.46	2	0.54	-	3.9312	1.57248	3.744	6.56424		
Alt. Capacity (Gal/hr)	104	108	27	75.6	-	-	-	-	-	-	-	-	-	-	-		
Comments	Removed in Future Conditions	New for TI2, short term	New for TI2, long term	New for TI2, long term	Common stack with Sm. Blr. 2	Common stack with Sm. Blr. 1	Common stack with Sm. Blr. 4	Common stack with Sm. Blr. 3	Common stack with Sm. Blr. 3/4	Common stack with Sm. Blr. 3/4	Removed in Future Conditions	Removed in Future Conditions	Removed in Future Conditions	Removed in Future Conditions	Removed in Future Conditions		

Existing Conditions
(Revised 01/04/2006)

Air Dispersion Modeling Input Data
Existing Short-term Emission Rate (CO, SO2, PM10, and PM2.5)

Tallman Island Water Pollution Control Plant

Queens, New York

			EG 1 (emergency generator)				Sm. Blr.1 & 2		Sm. Blr.3 & 4				Sm. Blr. 5		HWH 1		Pump Eng. 1-3					Pump Eng. 4-5					Blower Eng. 1-5					Collection Facilities			
			Emission Rate	New SO2 Emission Rate		Notes	Emission Rate	Notes	Emission Rate	New SO2 Emission Rate		Notes	Emission Rate	Notes	Emission Rate	Notes	Emission Rate	Title V Permit Emission Factor			Notes	Emission Rate	Title V Permit Emission Factor			Notes	Emission Rate	Title V Permit Emission Factor			Notes	Heat Boiler		HW Boiler	
Pollutant		Units	Fuel Oil	Low Sulfur	Ultra Low Sulfur		Natural Gas		Fuel Oil	Low Sulfur	Ultra Low Sulfur		Natural Gas		Natural Gas			Dual Fuel	Fuel Oil	Ultra Low Sulfur Diesel			Dual Fuel	Fuel Oil	a Low Sulfur Diesel			Dual Fuel	Fuel Oil	Ultra Low Sulfur		Natural Gas		Natural Gas	
				500 ppm	15 ppm					500 ppm	15 ppm									15 ppm					15 ppm					15 ppm					
CO		lb/MMCF	-	-	-	Emergency Generator	84	Dewatering Building	-	-	-	Pump Building	84	Pump Building	84	Pump Building	-	-	-	-	Pump Engines 1 through 3	-	-	-	Pump Engines 4 and 5	-	-	-	Blower Engine 1 through 5	84	Heat Boiler	84	Hot Water Boiler
		lb/MMBTU	-	-	-		0.08235294	Small Boilers 1 and 2-	-	-	-	Small Boilers 3 and 4	0.08235294	Small Boiler 5	0.08235941	Hot Water Heater	-	Highest emission factor of two fuel				-	Highest emission factor of two fuel				-	Highest emission factor of two fuel				0.08235941	-	0.08235941	-
		lb/1000 gal	-	-	-		-	One boiler running	5	-	-	both running from the	-		-	-	-	types will be used for short-term			all three engines running	-	types will be used for short-term			One engine running	-	types will be used for short-term			Three (3) engines running at 90%	-	-	-	-
	Capacity	MMBTU/hr	-	-	-		5.23	-	10.46	-	-	same stack October	2	-	0.54	-	-	impact modeling			-	-	impact modeling			-	-	impact modeling			-	1.5	-	0.42	-
	Capacity	Gal/hr	-	-	-		-	-	-	-	-	through March (6 months)	-	-	-	-	-				-	-				-	-				-	-	-	-
		HP	2168	-	-		-		-	-	-		-		-		-	546	546		Emission Rate Source is from the	-	520	520		Emission Rate Source is from the	-	911.7	911.7			-	-	-	-
		lb/HP-hr	0.0055	-	-		-		-	-	-		-		-		-	0.03257	0.00214		NYS DEP Title V Air Quality Permit	-	0.03257	0.00214		NYS DEP Title V Air Quality Permit	-	0.00516	0.00066			-	-	-	-
		lb/hr	11.924	-	-		0.43070588	-	0.37357143	-	-	-	0.16470588	-	0.044470588	-	1.78E+01	17.78322	1.16844		-	1.69E+01	16.9364	1.1128		-	4.70E+00	4.704372	0.601722			0.123529412	-	0.034588235	-
		Hourly Emission Rate	**g/s**	**1.50239088**	-	-	**0.05438206**	-	**0.04716811**	-	-	-	**0.0207962**	-	**0.005614973**	-	**2.25E+00**	-	-		-	**2.14E+00**	-	-		-	**5.94E-01**	-	-		-	**0.015597148**	-	**0.004367201**	-
SO_2		lb/MMCF	-	-	-	Sulfur percentages of	0.6	Natural Gas Sulfur	-	-	-	Low and Ultra Low Sulfur	0.6	Natural Gas	0.6	Natural Gas Sulfur	-	-	-	-		-	-	-		-	-	-		Title V Permit is assumed to include	0.6	Natural Gas	0.6	Natural Gas
		lb/MMBTU	-	-	-	500 and 15 ppm are	0.00058824	content data not	-	-	-	Emission Factors are	0.00058824	Sulfur content	0.00058235	content data not	-	Highest emission factor of two fuel				-	Highest emission factor of two fuel				-	Highest emission factor of two fuel			low sulfur emissions. Ultra low sulfur	0.00058235	Sulfur content	0.00058235	Sulfur content
		lb/1000 gal	-	-	-	EPA Fuel Sulfur	-	available	26.6	7.1	0.213	based on AP-42 Table 1.3-	-	data not available	-	available	-	types will be used for short-term			Title V Permit is assumed to include	-	types will be used for short-term			low sulfur emissions. Ultra low sulfur	-	types will be used for short-term			sulfur emission rate is based on low	-	data not available	-	data not available
	Capacity	MMBTU/hr	-	-	-	Standards.	5.23	-	10.46	10.46	10.46	1 for Distillate oil	2	-	0.54	-	-	impact modeling			emission rate is based on low (500	-	impact modeling			emission rate is based on low (500	-	impact modeling			(500 ppm) to ultra low (15 ppm)	1.5	-	0.42	-
	Capacity	Gal/hr	-	-	-		-	-	-	-	-		-	-	-	-	-				ppm) to ultra low (15 ppm) sulfur ratio.	-				ppm) to ultra low (15 ppm) sulfur ratio.	-				sulfur ratio.	-	-	-	-
		HP	2168	2168	2168		-		-	-	-		-		-		-	546	546			-	520	520			-	911.7	911.7			-	-	-	-
		lb/HP-hr	0.0004045	0.0004045	0.000012135		-		-	-	-	Sulfur percentages of 500	-		-		-	0.00084	0.00087		-	-	0.00084	0.00087		-	-	0.00042	0.00042			-	-	-	-
		lb/hr	0.876956	0.876956	0.02630868		0.00307647	-	1.9874	0.53047143	0.015914143	and 15 ppm are EPA Fuel	0.00117647	-	0.000317647	-	4.75E-01	0.45864	0.47502		-	4.52E-01	0.4368	0.4524		-	3.83E-01	0.382914	0.382914			0.000882353	-	0.000247059	-
		Hourly Emission Rate	**g/s**	**0.11049402**	**0.11049402**	**0.003314821**	**0.00038844**	-	**0.25093434**	**0.06697872**	**0.002009361**	Sulfur Standards.	**0.0001485**	-	**4.0107E-05**	-	**6.00E-02**	-	-	**0.001799318**	-	**5.71E-02**	-	-	**0.001713636**	-	**4.83E-02**	-	**0.001450432**	-	-	**0.000111408**	-	**3.11943E-05**	-
PM10		lb/MMCF	-	-	-		7.6	-	-	-	-		7.6	-	7.6	-	-	-	-	-		-	-	-		-	-	-	-			7.6	-	7.6	-
		lb/MMBTU	-	-	-		0.00745098	-	-	-	-		0.00745098	-	0.00745098	-	-	Highest emission factor of two fuel				-	Highest emission factor of two fuel				-	Highest emission factor of two fuel				0.00745098	-	0.00745098	-
		lb/1000 gal	-	-	-		-	-	2.38	-	-	lb/10^3 gal for PM include	-	-	-	-	-	types will be used for short-term				-	types will be used for short-term				-	types will be used for short-term				-	-	-	-
	Capacity	MMBTU/hr	-	-	-		5.23	-	10.46	-	-	condensable and filterable	2	-	0.54	-	-	impact modeling				-	impact modeling				-	impact modeling				1.5	-	0.42	-
	Capacity	Gal/hr	-	-	-		-	-	-	-	-	PM from AP-42 tables 1.3-	-	-	-	-	-					-					-					-	-	-	-
		HP	2168	-	-		-		-	-	-	2 and 1.3-7, respectively.	-		-		-	546	546			-	520	520			-	911.7	911.7			-	-	-	-
		lb/HP-hr	0.0007	-	-		-		-	-	-		-		-		-	0.00049	0.00052			-	0.00049	0.00052			-	0.00014	0.00024			-	-	-	-
		lb/hr	1.5176	-	-		0.03896863	-	0.17782	-	-	-	0.01490196	-	0.004023529	-	2.84E-01	0.26754	0.28392		-	2.70E-01	0.2548	0.2704		-	2.19E-01	0.127638	0.218808			0.011176471	-	0.003129412	-
		Hourly Emission Rate	**g/s**	**0.19121338**	-	-	**0.00492028**	-	**0.02245202**	-	-	-	**0.00188156**	-	**0.000508021**	-	**3.58E-02**	-	-		-	**3.41E-02**	-	-		-	**2.76E-02**	-	-		-	**0.001411171**	-	**0.000395128**	-
PM2.5		lb/MMCF	-	-	-		7.6	-	-	-	-		7.6	-	7.6	-	-	-	-	-		-	-	-		-	-	-	-			7.6	-	7.6	-
		lb/MMBTU	-	-	-		0.00745098	-	-	-	-		0.00745098	-	0.00745098	-	-	Highest emission factor of two fuel				-	Highest emission factor of two fuel				-	Highest emission factor of two fuel				0.00745098	-	0.00745098	-
		lb/1000 gal	-	-	-		-	-	2.13	-	-	-	-	-	-	-	-	types will be used for short-term				-	types will be used for short-term				-	types will be used for short-term				-	-	-	-
	Capacity	MMBTU/hr	-	-	-		5.23	-	10.46	-	-	-	2	-	0.54	-	-	impact modeling				-	impact modeling				-	impact modeling				1.5	-	0.42	-
	Capacity	Gal/hr	-	-	-		-	-	-	-	-	-	-	-	-	-	-					-					-					-	-	-	-
		HP	2168	-	-		-		-	-	-		-		-		-	546	546			-	520	520			-	911.7	911.7			-	-	-	-
		lb/HP-hr	0.0007	-	-		-		-	-	-		-		-		-	0.00049	0.00052			-	0.00049	0.00052			-	0.00014	0.00024			-	-	-	-
		lb/hr	1.5176	-	-		0.03896863	-	0.15914143	-	-	-	0.01490196	-	0.004023529	-	2.84E-01	0.26754	0.28392		-	2.70E-01	0.2548	0.2704		-	2.19E-01	0.127638	0.218808			0.011176471	-	0.003129412	-
		Hourly Emission Rate	**g/s**	**0.19121338**	-	-	**0.00492028**	-	**0.02009361**	-	-	-	**0.00188156**	-	**0.000508021**	-	**3.58E-02**	-	-		-	**3.41E-02**	-	-		-	**2.76E-02**	-	-		-	**0.001411171**	-	**0.000395128**	-

TI_2 Diesel Generators

Short-term Rates

Pollutant		Units	EG 2 Emission Rate Fuel Oil Short term	New SO2 Emission Rate Low Sulfur 500 ppm	New SO2 Emission Rate Ultra Low Sulfur 15 ppm	Notes
CO		lb/MMCF	-	-	-	New TI-2 Emergency Generator
		lb/MMBTU	-	-	-	-
		lb/1000 gal	-	-	-	One EG2 running at 70% load for
	Capacity	MMBTU/hr	-	-	-	CO & SO_2
	Capacity	Gal/hr	-	-	-	-
		HP	1501.92	-	-	-
		g/bHP-hr	0.8	-	-	-
		lb/hr	-	-	-	-
	Hourly Emission Rate	**g/s**	**0.33376**	-	-	-
SO_2		lb/MMCF	-	-	-	Low and Ultra Low Sulfur Emission
		lb/MMBTU	-	0.0505	0.001515	Factors are based on AP-42 Table
		lb/1000 gal	-	7.07	0.2121	3.4-1 for Distillate oil
	Capacity	MMBTU/hr	-	-	-	
	Capacity	Gal/hr	-	75.6	75.6	ppm are EPA Fuel Sulfur
		HP	1501.92	-	-	Standards.
		g/bHP-hr	0.71	-	-	
		lb/hr	-	0.534492	0.01603476	
	Hourly Emission Rate	**g/s**	**0.296212**	**0.0674864**	**0.002024591**	
PM10		lb/MMCF	-	-	-	-
		lb/MMBTU	-	-	-	One EG2 running at 25% load for
		lb/1000 gal	-	-	-	PM10 & PM2.5
	Capacity	MMBTU/hr	-	-	-	-
	Capacity	Gal/hr	-	-	-	-
		HP	536.4	-	-	-
		g/bHP-hr	0.21	-	-	-
		lb/hr	-	-	-	-
	Hourly Emission Rate	**g/s**	**0.03129**	-	-	-
PM2.5		lb/MMCF	-	-	-	-
		lb/MMBTU	-	-	-	-
		lb/1000 gal	-	-	-	-
	Capacity	MMBTU/hr	-	-	-	-
	Capacity	Gal/hr	-	-	-	-
		HP	536.4	-	-	-
		g/bHP-hr	0.21	-	-	-
		lb/hr	-	-	-	-
	Hourly Emission Rate	**g/s**	**0.03129**	-	-	-

Air Dispersion Modeling Input Data
Tallman Island Water Pollution Control Plant
Queens, New York

General Combustion Source Data
Existing Long-term Emission Rate Worksheet

	EG 1	EG 2	EG 2 at 50%	Sm. Blr.1	Sm. Blr.2	Sm. Blr.3	Sm. Blr.4	Sm. Blr. 5	HWH 1	DG Burn	Pump Eng. 1 3	Pump Eng. 1-3	Pump Eng. 4-5	Blower Eng. 1-5	Heat Boiler	HW Boiler
Type	Point, Existing	Point, New	Point, New	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing
Load (%)		100%	50%								100%	40%	-	90%		
		1600	-													
Capacity (HP)	2168	2145.6	1072.8	125	125	250	250	-	-	-	546	218.4	520	911.7		
Capacity (MMBTU/hr)	-	-	-	-	-	-	-	-	-	15.264	-	-	-	-	1.5	0.42
Fuel Types	#2 FO	#2 FO	#2 FO	NG	NG	#2 FO	#2 FO	DG	NG	NG/DG	NG/DG	NG/DG	NG/DG	NG/DG	NG	NG
In/Nearest Bldg	S of Storage	S of Storage	S of Storage	Dewater	Dewater	Pump & Blower	Pump & Blower	Pump & Blower	Pump & Blower	E of Pump & Blower	Pump & Blower	Pump & Blower	Pump & Blower	Pump & Blower	Col Fac N Crew Qtrs	Col Fac N Crew Qtrs
Stack Base El (ft)	17	17	17	9.45	9.45	17	17	17	17	15	17	17	17	17		
Stack Elevation (ft)	32	32.1476	32.1476	89.6	89.6	82.4	82.4	82.4	82.4	60.42	40.25	40.25	40.25	70		
Stack Height (ft)	15	15.1476	15.1476	80.15	80.15	65.4	65.4	65.4	65.4	45.42	23.25	23.25	23.25	53		
Stack Diameter (in)	8	24	24	15	15	48	48	48	48	72	10	10	10	14	18	18
Exhaust Temp (^{o} F)	650	835	835	250	250	250	250	250	250	1600	400	400	400	400		
Exhaust Velocity (ft/s)	-	65.28	32.64	-	-	-	-	-	-	3.28	-	-	-	-		
Exhaust Flow (cfm)	10000	12305	6152.5	1000	1000	1000	1000	1000	1000	-	1734	693.6	1734	4789.8		
Alt. Capacity (MMBTU/hr)	14.46	-	-	5.23	5.23	10.46	10.46	2	0.54	-	3.9312	1.57248	3.744	6.56424		
Alt. Capacity (Gal/hr)	104	108	54	-	-	-	-	-	-	-	-	-	-	-		
Comments	Removed in Future Conditions	New for TI2, short term	New for TI2, long term	Common stack with Sm. Blr. 2	Common stack with Sm. Blr. 1	Common stack with Sm. Blr. 4	Common stack with Sm. Blr. 3	stack with Sm. Blr. 3/4	Common stack with Sm. Blr. 3/4	Removed in Future Conditions	Removed in Future Conditions	Removed in Future Conditions	Removed in Future Conditions	Removed in Future Conditions		

Existing Condition
(Revised 01/05/2006)

Air Dispersion Modeling Input Data
Existing Condition Long-term Emission Rate (NOx, SO2, PM10, and PM2.5)

Tallman Island Water Pollution Control Plant

Queens, New York

			EG 1 (existing emergency generator)				Pump Eng. 1-3					Sm. Blr.1 & 2		Sm. Blr.3 & 4				Sm. Blr. 5		HWH 1		Blower Eng. 1-5					Collection Building			
			Emission Rate	New SO2 Emission Rate		Notes	Emission Rate	Title V Permit Emission Factor			Notes	Emission Rate	Notes	Emission Rate	New SO2 Emission Rate		Notes	Emission Rate	Notes	Emission Rate	Notes	Emission Rate	Title V Permit Emission Factor			Notes	Heat Boiler Emission Rate	Heat Boiler Notes	HW Boiler Emission Rate	HW Boiler Notes
Pollutant		Units	Fuel Oil	Low Sulfur	Ultra Low Sulfur		40% Load	Dual Fuel	Fuel Oil	Ultra Low Sulfur		Natural Gas		Fuel Oil	Low Sulfur	Ultra Low Sulfur		Natural Gas		Natural Gas		90% Load	Dual Fuel	Fuel Oil	Ultra Low Sulfur		Natural Gas		Natural Gas	
				500 ppm	15 ppm				30%	70%	15 ppm				500 ppm	15 ppm								30%	70%	15 ppm					
NOx		lb/MMCF	-	-	-	Emergency	-	-	-	-		100	Small Boilers 1	-	-	-	Small Boilers 3 and 4	100	Small Boiler 5	100	Hot Water Heater	-	-	-	-	Blower Engine 1 through 5	100	Heat Boiler	100	Hot water boiler
		lb/MMBTU	-	-	-	Generator	-	-	-	-		0.09803922	and 2	-	-	-		0.09803922	-	0.098039216	-	-	-	-	-		0.09803922	-	0.09803922	-
		lb/1000 gal	-	-	-		-	-	-	-	All three engines running under	-		20	-	-	One boiler running from	-	Boiler runs	-	Heater runs all	-	-	-	-	Assume three blower engines	-	Boiler runs	-	Boiler runs all
	Capacity	MMBTU/hr	-	-	-		-	-	-	-	40% load condition for the whole	5.23	One boiler	10.46	-	-	the same stack October	2	October through	0.54	year	-	-	-	-	running under 90% load for the	1.5	October through	0.42	year
	Capacity	Gal/hr	-	-	-		-	-	-	-	year	-	running all year	-	-	-	through March	-	March	-	-	-	-	-	-	whole year.	-	March (6 months)	-	-
		HP	2168	-	-		-	218.4	218.4	-		-		-	-	-		-		-	-	-	911.7	911.7	-		-	-	-	-
		lb/HP-hr	0.024	-	-		-	0.01246	0.01788	-	Emission Rate Source is from the	-	-	-	-	-	-	-	-	-	-	-	0.012	0.01951	-	Emission Rate Source is from the	-	-	-	-
		lb/hr	52.032	-	-		3.5498736	2.721264	3.904992	-	NYS DEP Title V Air Quality	0.5127451	-	1.49428571	-	-	-	0.19607843	-	0.052941176	-	15.7332069	10.9404	17.787267	-	NYS DEP Title V Air Quality	0.14705882	-	0.04117647	-
		g/s (hourly)	6.55588747	-	-		4.48E-01	-	-	-	Permit	0.06474054	-	0.18867244	-	-	-	0.02475738	-	0.006684492	-	1.99E+00	-	-	-	Permit	0.01856803	-	0.00519905	-
	Annual Operating Time	hours	197	-	-		8760	-	-	-	-	8760	-	8760	-	-	-	8760	-	8760	-	8760	-	-	-		8760	-	8760	-
	Annual Avg Emission Rate	**g/s**	**0.14743263**	-	-		**0.4482164**	-	-	-	-	**0.06474054**	-	**0.18867244**	-	-	-	**0.02475738**	-	**0.006684492**	-	**1.986516023**	-	-	-		**0.01856803**	-	**0.00519905**	-
SO_2		lb/MMCF	-	-	-		-	-	-	-		0.6	Natural Gas	-	-	-	Low and Ultra Low Sulfur	0.6	Natural Gas	0.6	Natural Gas	-	-	-	-		0.6	Natural Gas	0.6	Natural Gas
		lb/MMBTU	-	-	-	Sulfur percentages	-	-	-	-	Title V Permit is assumed to	0.00058824	Sulfur content	-	-	-	Emission Factors are	0.00058824	Sulfur content	0.000583235	Sulfur content	-	-	-	-	Title V Permit is assumed to	0.00058824	Sulfur content	0.00058824	Sulfur content
		lb/1000 gal	-	-	-	of 500 and 15 ppm	-	-	-	-	include low sulfur emissions.	-	data not	26.6	7.1	0.213	based on AP-42 Table	-	data not	-	data not	-	-	-	-	include low sulfur emissions.	-	data not available	-	data not available
	Capacity	MMBTU/hr	-	-	-	are EPA Fuel	-	-	-	-	Ultra low sulfur emission rate is	5.23		10.46	10.46	10.46	1.3-1 for Distillate oil	2		0.54		-	-	-	-	Ultra low sulfur emission rate is	1.5		0.42	
	Capacity	Gal/hr	-	-	-	Sulfur Standards.	-	-	-	-	based on low (500 ppm) to ultra	-		-	-	-		-		-		-	-	-	-	based on low (500 ppm) to ultra	-		-	
		HP	2168	2168	2168		-	218.4	218.4	-	low (15 ppm) sulfur ratio.	-		-	-	-		-		-		-	911.7	911.7	-	low (15 ppm) sulfur ratio.	-		-	
		lb/HP-hr	0.0004045	0.0004045	0.000012135		-	0.00084	0.00087	-		-		-	-	-		-		-		-	0.00042	0.00042	-		-		-	
		lb/hr	0.876956	0.876956	0.02630868		0.1880424	0.183456	0.190008	-		0.00307647	-	1.9874	0.53047143	0.015914143	Sulfur percentages of	0.00117647	-	0.000317647	-	0.382914	0.382914	0.382914	-		0.00088235	-	0.00024706	-
	Hourly Emission Rate	g/s	0.11049402	0.11049402	0.003314821		2.37E-02	-	-	-		0.00038844	-	0.25093434	0.06697872	0.002009361	500 and 15 ppm are EPA	0.00014854	-	4.0107E-05	-	4.83E-02	-	-	-		0.00011141	-	3.1194E-05	-
	Annual Operating Time	hours	197	197	197		8670	-	-	-		8760	-	8760	8760	8760	Fuel Sulfur Standards.	8760	-	8760	-	8670	-	-	-		8760	-	9760	-
	Annual Avg Emission Rate	**g/s**	**0.00248485**	**0.00248485**	**7.45456E-05**		**0.0234988**	-	-	**0.000704964**	-	**0.00038844**	-	**0.25093434**	**0.06697872**	**0.002009361**	-	**0.00014854**	-	**4.0107E-05**	-	**0.047851004**	-	-	**0.00143553**	-	**0.00011141**	-	**3.1194E-05**	-
PM10		lb/MMCF	-	-	-		-	-	-	-		7.6	-	-	-	-	$lb/10^7$ gal for PM include	7.6	-	7.6	-	-	-	-	-		7.6	-	7.6	-
		lb/MMBTU	-	-	-		-	-	-	-		0.00745098	-	-	-	-	condensable and	0.00745098	-	0.00745098	-	-	-	-	-		0.00745098	-	0.00745098	-
		lb/1000 gal	-	-	-		-	-	-	-		-	-	2.38	-	-	filterable PM from AP-42	-	-	-	-	-	-	-	-		-	-	-	-
	Capacity	MMBTU/hr	-	-	-		-	-	-	-		5.23	-	10.46	-	-	tables 1.3-2 and 1.3-7,	2	-	0.54	-	-	-	-	-		1.5	-	0.42	-
	Capacity	Gal/hr	-	-	-		-	-	-	-		-	-	-	-	-	respectively.	-	-	-	-	-	-	-	-		-	-	-	-
		HP	2168	-	-		-	218.4	218.4	-		-	-	-	-	-		-	-	-	-	-	911.7	911.7	-		-	-	-	-
		lb/HP-hr	0.0007	-	-		-	0.00049	0.00052	-		-	-	-	-	-		-	-	-	-	-	0.00014	0.00024	-		-	-	-	-
		lb/hr	1.5176	-	-		0.1116024	0.107016	0.113568	-		0.03896863	-	0.17782	-	-	-	0.01490196	-	0.004023529	-	0.191457	0.127638	0.218808	-		0.01117647	-	0.00312941	-
	Hourly Emission Rate	g/s	0.19121338	-	-		1.41E-02	-	-	-		0.00492028	-	0.02245202	-	-	-	0.00188156	-	0.000508021	-	2.42E-02	-	-	-		0.00141117	-	0.00039513	-
	Annual Operating Time	hours	197	-	-		8760	-	-	-		8760	-	8760	-	-	-	8760	-	8760	-	8760	-	-	-		8760	-	8760	-
	Annual Avg Emission Rate	**g/s**	**0.00430012**	-	-		**0.0140912**	-	-	-	-	**0.00492028**	-	**0.02245202**	-	-	-	**0.00188156**	-	**0.000508021**	-	**0.024173864**	-	-	-		**0.00141117**	-	**0.00039513**	-
PM2.5		lb/MMCF	-	-	-		-	-	-	-		7.6	-	-	-	-		7.6	-	7.6	-	-	-	-	-		7.6	-	7.6	-
		lb/MMBTU	-	-	-		-	-	-	-		0.00745098	-	-	-	-		0.00745098	-	0.00745098	-	-	-	-	-		0.00745098	-	0.00745098	-
		lb/1000 gal	-	-	-		-	-	-	-		-	-	2.13	-	-		-	-	-	-	-	-	-	-		-	-	-	-
	Capacity	MMBTU/hr	-	-	-		-	-	-	-		5.23	-	10.46	-	-		2	-	0.54	-	-	-	-	-		1.5	-	0.42	-
	Capacity	Gal/hr	-	-	-		-	-	-	-		-	-	-	-	-		-	-	-	-	-	-	-	-		-	-	-	-
		HP	2168	-	-		-	218.4	218.4	-		-	-	-	-	-		-	-	-	-	-	911.7	911.7	-		-	-	-	-
		lb/HP-hr	0.0007	-	-		-	0.00049	0.00052	-		-	-	-	-	-		-	-	-	-	-	0.00014	0.00024	-		-	-	-	-
		lb/hr	1.5176	-	-		0.1116024	0.107016	0.113568	-		0.03896863	-	0.15914143	-	-	-	0.01490196	-	0.004023529	-	0.191457	0.127638	0.218808	-		0.01117647	-	0.00312941	-
	Hourly Emission Rate	g/s	0.19121338	-	-		1.41E-02	-	-	-		0.00492028	-	0.02009361	-	-	-	0.00188156	-	0.000508021	-	2.42E-02	-	-	-		0.00141117	-	0.00039513	-
	Annual Operating Time	hours	197	-	-		8760	-	-	-		8760	-	8760	-	-	-	8760	-	8760	-	8760	-	-	-		8760	-	8760	-
	Annual Avg Emission Rate	**g/s**	**0.00430012**	-	-		**0.0140912**	-	-	-	-	**0.00492028**	-	**0.02009361**	-	-	-	**0.00188156**	-	**0.000508021**	-	**0.024173864**	-	-	-		**0.00141117**	-	**0.00039513**	-

Air Dispersion Modeling Input Data
Tallman Island Water Pollution Control Plant
Queens, New York

General Combustion Source Data
TI2 Long-term Emission Rate Worksheet

	EG 1	EG 2	EG 2 at 50%	Sm. Blr.1	Sm. Blr.2	Sm. Blr.3	Sm. Blr.4	Sm. Blr. 5	HWH 1	DG Burn	Pump Eng. 1 3	Pump Eng. 1-3	Pump Eng. 4-5	Blower Eng. 1-5	Heat Boiler	HW Boiler
Type	Point, Existing	Point, New	Point, New	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing
Load (%)		100%	50%								100%	40%	-	90%		
		1600	-													
Capacity (HP)	2168	2145.6	1072.8	125	125	250	250	-	-	-	546	218.4	520	911.7		
Capacity (MMBTU/hr)	-	-	-	-	-	-	-	-	-	15.264	-	-	-	-	1.5	0.42
Fuel Types	#2 FO	#2 FO	#2 FO	NG	NG	#2 FO	#2 FO	DG	NG	NG/DG	NG/DG	NG/DG	NG/DG	NG/DG	NG	NG
In/Nearest Bldg	S of Storage	S of Storage	S of Storage	Dewater	Dewater	Pump & Blower	Pump & Blower	Pump & Blower	Pump & Blower	E of Pump & Blower	Pump & Blower	Pump & Blower	Pump & Blower	Pump & Blower	Col Fac N Crew Qtrs	Col Fac N Crew Qtrs
Stack Base El (ft)	17	17	17	9.45	9.45	17	17	17	17	15	17	17	17	17		
Stack Elevation (ft)	32	32.1476	32.1476	89.6	89.6	82.4	82.4	82.4	82.4	60.42	40.25	40.25	40.25	70		
Stack Height (ft)	15	15.1476	15.1476	80.15	80.15	65.4	65.4	65.4	65.4	45.42	23.25	23.25	23.25	53		
Stack Diameter (in)	8	24	24	15	15	48	48	48	48	72	10	10	10	14	18	18
Exhaust Temp (^{o} F)	650	835	835	250	250	250	250	250	250	1600	400	400	400	400		
Exhaust Velocity (ft/s)	-	65.28	32.64	-	-	-	-	-	-	3.28	-	-	-	-		
Exhaust Flow (cfm)	10000	12305	6152.5	1000	1000	1000	1000	1000	1000	-	1734	693.6	1734	4789.8		
Alt. Capacity (MMBTU/hr)	14.46	-	-	5.23	5.23	10.46	10.46	2	0.54	-	3.9312	1.57248	3.744	6.56424		
Alt. Capacity (Gal/hr)	104	108	54	-	-	-	-	-	-	-	-	-	-	-		
Comments	Removed in Future Conditions	New for TI2, short term	New for TI2, long term	Common stack with Sm. Blr. 2	Common stack with Sm. Blr. 1	Common stack with Sm. Blr. 4	Common stack with Sm. Blr. 3	stack with Sm. Blr. 3/4	Common stack with Sm. Blr. 3/4	Removed in Future Conditions	Removed in Future Conditions	Removed in Future Conditions	Removed in Future Conditions	Removed in Future Conditions		

TI-2 Conditions
(Revised 01/05/2006)

Air Dispersion Modeling Input Data
TI2 Emission Rate (NOx, SO2, PM10, and PM2.5)

Annual Usage
50%

Annual Usage
50%

Tallman Island Water Pollution Control Plant

Queens, New York

			EG 1 (existing emergency generator)				EG 2 (TI2 Diesel Generators - one will operate)				Pump Eng. 1-3					Sm. Blr.1 & 2		Sm. Blr.3 & 4			Sm. Blr. 5		HWH 1		Blower Eng. 1-5					Collection Building			
			Emission Rate	New SO2 Emission Rate		Notes	Emission Rate	New SO2 Emission Rate		Notes	Emission Rate	Title V Permit Emission Rate			Notes	Emission Rate	Notes	Emission Rate	New SO2 Emission Rate	Notes	Emission Rate	Notes	Emission Rate	Notes	Emission Rate	Title V Permit Emission Rate			Notes	Heat Boiler Emission Rate	Notes	HW Boiler Emission Rate	Notes
Pollutant		Units	Fuel Oil	Low Sulfur	Ultra Low Sulfur		Fuel Oil	Low Sulfur	Ultra Low Sulfur		40% Load	Dual Fuel		Fuel Oil		Natural Gas		Fuel Oil	Low Sulfur	Ultra Low Sulfur		Natural Gas		Natural Gas		90% Load	Dual Fuel		Fuel Oil		Natural Gas		Natural Gas	
				500 ppm	15 ppm			500 ppm	15 ppm				30%	70%	15 ppm				500 ppm	15 ppm								30%	70%	15 ppm					
NOx		lb/MMCF	-	-	-	Emergency	-	-	-	New TI-2 Emergency Generator	-	-	-	-	-	100	Small Boilers 1	-	-	-	Small Boilers 3 and 4	100	Small Boiler 5	100	Hot Water Heater	-	-	-	-	Blower Engine 1 through 5	100	Heat Boiler	100	Hot water boiler
		lb/MMBTU	-	-	-	Generator	-	-	-		-	-	-	-	-	0.09803922	and 2	-	-	-	-	0.09803922	-	0.098039216	-	-	-	-	-	-	0.09803922	-	0.09803922	-
		lb/1000 gal	-	-	-	-	-	-	-	EG2 running at 50% load	-	-	-	-	-	-	-	20	-	-	One boiler running from	-	Boiler runs	-	Heater runs all	-	-	-	-	Assume three blower engines	-	Boiler runs	-	Boiler runs all
	Capacity	MMBTU/hr	-	-	-	-	-	-	-	for half year	-	-	-	-	All three engines running under	5.23	One boiler	10.46	-	-	the same stack October	2	October through	0.54	year	-	-	-	-	running under 90% load for the	1.5	October through	0.42	year
	Capacity	Gal/hr	-	-	-	-	-	-	-	-	-	-	-	-	40% load condition for half a year	-	running all year	-	-	-	through March	-	March	-	-	-	-	-	-	whole year.	-	March (6 months)	-	-
		HP	2168	-	-	-	1072.8	-	-	-	-	218.4		218.4	-	-	-	-	-	-	-	-	-	-	-	-	911.7		911.7	-	-	-	-	-
		lb/HP-hr	0.024	-	-	-	2.3	-	-	EG2 EF unit is g/HP-hr	-	0.01246		0.01788	-	-	-	-	-	-	-	-	-	-	-	-	0.012		0.01951	-	Emission Rate Source is from the	-	-	-	-
		lb/hr	52.032	-	-	-	-	-	-	-	3.5498736	2.721264		3.904992	-	-	-	1.4942857	-	-	-	-	-	0.052941176	-	15.7332069	10.9404		17.787267	-	NYS DEP Title V Air Quality	0.14705882	-	0.04117647	-
		g/s (hourly)	6.55588747	-	-	-	0.6854	-	-	-	4.48E-01	-		-	-	0.06474054	-	0.18867244	-	-	-	0.02475738	-	0.006684492	-	1.99E+00	-		-	-	Permit	0.01856803	-	0.00519905	-
	Annual Operating Time	hours	197	-	-	-	4380	-	-	-	4380	-		-	-	8760	-	8760	-	-	-	8760	-	8760	-	8760	-		-	-	-	8760	-	8760	-
	Annual Avg Emission Rate	**g/s**	**0.14743263**	-	-	-	**0.3427**	-	-	-	**0.224108182**	-		-	-	**0.06474054**	-	**0.18867244**	-	-	-	**0.02475738**	-	**0.006684492**	-	**1.986516023**	-		-	-	-	**0.01856803**	-	**0.00519905**	-
SO_2		lb/MMCF	-	-	-	Sulfur percentages	-	-	-	Low and Ultra Low Sulfur	-	-	-	-	Title V Permit is assumed to	0.6	Natural Gas	-	-	-	Low and Ultra Low Sulfur	0.6	Natural Gas	0.6	Natural Gas	-	-	-	-	Title V Permit is assumed to	0.6	Natural Gas	0.6	Natural Gas
		lb/MMBTU	-	-	-	of 500 and 15 ppm	-	0.0505	0.001515	Emission Factors are based on	-	-	-	-	include low sulfur emissions.	0.00058824	Sulfur content	-	-	-	Emission Factors are	0.00058824	Sulfur content	0.000588235	Sulfur content	-	-	-	-	include low sulfur emissions.	0.00058824	Sulfur content	0.00058824	Sulfur content
		lb/1000 gal	-	-	-	are EPA Fuel	-	7.07	0.2121	AP-42 Table 3.4-1 for Distillate oil	-	-	-	-	Ultra low sulfur emission rate is	-	data not	26.6	7.1	0.213	based on AP-42 Table	-	data not	-	data not	-	-	-	-	Ultra low sulfur emission rate is	-	data not available	-	data not available
	Capacity	MMBTU/hr	-	-	-	Sulfur Standards.	-	-	-		-	-	-	-	based on low (500 ppm) to ultra	5.23	-	10.46	10.46	10.46	1.3-1 for Distillate oil	2	-	0.54	-	-	-	-	-	based on low (500 ppm) to ultra	1.5	-	0.42	-
	Capacity	Gal/hr	-	-	-	-	-	54	54	Sulfur percentages of 500 and 15	-	-	-	-	low (15 ppm) sulfur ratio.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	low (15 ppm) sulfur ratio.	-	-	-	-
		HP	2168	2168	2168	-	1072.8	-	-	ppm are EPA Fuel Sulfur	-	218.4		218.4	-	-	-	-	-	-	-	-	-	-	-	-	911.7		911.7	-	-	-	-	-
		lb/HP-hr	0.0004045	0.0004045	0.000012135	-	0.61	-	-	EG2 EF unit is g/HP-hr	-	0.00084		0.00087	-	-	-	-	-	-	-	-	-	-	-	-	0.00042		0.00042	-	-	-	-	-
		lb/hr	0.876956	0.876956	0.02630868	-	-	0.38178	0.0114534	-	0.1880424	0.183456		0.190008	-	0.00307647	-	1.9874	0.53047143	0.015914143	Sulfur percentages of	0.00117647	-	0.000317647	-	-	0.382914	0.382914	0.382914	-	-	0.00088235	-	0.00024706	-
	Hourly Emission Rate	g/s	0.11049402	0.11049402	0.003314821	-	0.18178	**0.0482045**	**0.001446136**	-	2.37E-02	-		-	-	0.00038844	-	0.25093434	0.06697872	0.002009361	500 and 15 ppm are EPA	0.00014854	-	4.0107E-05	-	-	4.83E-02	-	-	-	-	0.00011141	-	3.1194E-05	-
	Annual Operating Time	hours	197	197	197	-	4380	4380	4380	-	4380	-		-	-	8760	-	8760	8760	8760	Fuel Sulfur Standards.	8760	-	8760	-	-	8670	-	-	-	-	8760	-	8760	-
	Annual Avg Emission Rate	**g/s**	**0.00248485**	**0.00248485**	**7.45456E-05**	-	**0.09089**	**0.0241023**	**0.000723068**	-	**0.011871364**	-		-	**0.000356141**	**0.00038844**	-	**0.25093434**	**0.06697872**	**0.002009361**	-	**0.00014854**	-	**4.0107E-05**	-	-	**0.047851004**	-	-	**0.00143553**	-	**0.00011141**	-	**3.1194E-05**	-
PM10		lb/MMCF	-	-	-	-	-	-	-	-	-	-	-	-	-	7.6	-	-	-	-	lb/10^3 gal for PM include	7.6	-	7.6	-	-	-	-	-	-	-	7.6	-	7.6	-
		lb/MMBTU	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00745098	-	-	-	-	condensable and	0.00745098	-	0.00745098	-	-	-	-	-	-	-	0.00745098	-	0.00745098	-
		lb/1000 gal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.38	-	-	filterable PM from AP-42	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Capacity	MMBTU/hr	-	-	-	-	-	-	-	-	-	-	-	-	-	5.23	-	10.46	-	-	tables 1.3-2 and 1.3-7,	2	-	0.54	-	-	-	-	-	-	1.5	-	0.42	-
	Capacity	Gal/hr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	respectively.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		HP	2168	-	-	-	1072.8	-	-	-	-	218.4		218.4	-	-	-	-	-	-	-	-	-	-	-	-	911.7		911.7	-	-	-	-	-
		lb/HP-hr	0.0007	-	-	-	0.09	-	-	EG2 EF unit is g/HP-hr	-	0.00049		0.00052	-	-	-	-	-	-	-	-	-	-	-	-	0.00014		0.00024	-	-	-	-	-
		lb/hr	1.5176	-	-	-	-	-	-	-	0.1116024	0.107016		0.113568	-	0.03896863	-	0.17782	-	-	-	0.01490196	-	0.004023529	-	-	0.191457	0.127638	0.218808	-	-	0.01117647	-	0.00312941	-
	Hourly Emission Rate	g/s	0.19121338	-	-	-	0.02682	-	-	-	1.41E-02	-		-	-	0.00492028	-	0.02245202	-	-	-	0.00188156	-	0.000508021	-	-	2.42E-02	-	-	-	-	0.00141117	-	0.00039513	-
	Annual Operating Time	hours	197	-	-	-	4380	-	-	-	4380	-		-	-	8760	-	8760	-	-	-	8760	-	8760	-	-	8760	-	-	-	-	8760	-	8760	-
	Annual Avg Emission Rate	**g/s**	**0.00430012**	-	-	-	**0.01341**	-	-	-	**0.007045606**	-		-	-	**0.00492028**	-	**0.02245202**	-	-	-	**0.00188156**	-	**0.000508021**	-	-	**0.024173864**	-	-	-	-	**0.00141117**	-	**0.00039513**	-
PM2.5		lb/MMCF	-	-	-	-	-	-	-	-	-	-	-	-	-	7.6	-	-	-	-	-	7.6	-	7.6	-	-	-	-	-	-	-	7.6	-	7.6	-
		lb/MMBTU	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00745098	-	-	-	-	-	0.00745098	-	0.00745098	-	-	-	-	-	-	-	0.00745098	-	0.00745098	-
		lb/1000 gal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Capacity	MMBTU/hr	-	-	-	-	-	-	-	-	-	-	-	-	-	5.23	-	10.46	-	-	-	2	-	0.54	-	-	-	-	-	-	-	1.5	-	0.42	-
	Capacity	Gal/hr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		HP	2168	-	-	-	1072.8	-	-	-	-	218.4		218.4	-	-	-	-	-	-	-	-	-	-	-	-	911.7		911.7	-	-	-	-	-
		lb/HP-hr	0.0007	-	-	-	0.09	-	-	EG2 EF unit is g/HP-hr	-	0.00049		0.00052	-	-	-	-	-	-	-	-	-	-	-	-	0.00014		0.00024	-	-	-	-	-
		lb/hr	1.5176	-	-	-	-	-	-	-	0.1116024	0.107016		0.113568	-	0.03896863	-	0.15914143	-	-	-	0.01490196	-	0.004023529	-	-	0.191457	0.127638	0.218808	-	-	0.01117647	-	0.00312941	-
	Hourly Emission Rate	g/s	0.19121338	-	-	-	0.02682	-	-	-	1.41E-02	-		-	-	0.00492028	-	0.02009361	-	-	-	0.00188156	-	0.000508021	-	-	2.42E-02	-	-	-	-	0.00141117	-	0.00039513	-
	Annual Operating Time	hours	197	-	-	-	4380	-	-	-	4380	-		-	-	8760	-	8760	-	-	-	8760	-	8760	-	-	8760	-	-	-	-	8760	-	8760	-
	Annual Avg Emission Rate	**g/s**	**0.00430012**	-	-	-	**0.01341**	-	-	-	**0.007045606**	-		-	-	**0.00492028**	-	**0.02009361**	-	-	-	**0.00188156**	-	**0.000508021**	-	-	**0.024173864**	-	-	-	-	**0.00141117**	-	**0.00039513**	-

TABLE GEN-1
Air Dispersion Modeling Input Data
Tallman Island Water Pollution Control Plant
Queens, New York

TI 3 General Combustion Source Data

TI_3 Conditions

	Supp. Blr.1	Supp. Blr. at 70% Load	Supp. Blr.2	EG1, 2 & 3	[illegible] at 69% load *	DG Burn New	Sm. Blr.1	Sm. Blr.2	Sm. Blr.3	Sm. Blr.4	Sm. Blr. 5	HWH 1	Heat Boiler	HW Boiler
Type	Point, New	Point, New	Point, New	Point, New	Point, New	Point, New	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing	Point, Existing
Load (%)				100%	69%									
				1600	-									
Capacity (HP)				2145.6	1475.1									
Capacity (MMBTU/hr)	14.65	10.255	14.65			15.264	5.23	5.23	10.46	10.46	2	0.54	1.5	0.42
Capacity (Gal/hr)				108	74.25									
Fuels	NG/DG	NG/DG	NG/DG	#2 FO	#2 FO	NG/DG	NG	NG	#2 FO	#2 FO	DG	NG	NG	NG
In/Nearest Bldg	Pump & Blower	Pump & Blower	Pump & Blower	W of Main Gate	W of Main Gate	E of Pump & Blower	Dewater	Dewater	Pump & Blower	Pump & Blower	Pump & Blower	Pump & Blower	Col Fac N Crew Qtrs	Col Fac N Crew Qtrs
Stack Base El (ft)	17	17	17	15.67	15.67	15	9.45	9.45	17	17	17	17	15.5	15.5
Stack Elevation (ft)	77	77	77	49.46	49.46	60.42	89.6	89.6	82.4	82.4	82.4	82.4	40	40
Stack Height (ft)	60	60	60	33.79	33.79	45.42	80.15	80.15	65.4	65.4	65.4	65.4	24.5	24.5
Stack Diameter (in)	28	28	28	24	24	72	15	15	48	48	48	48	18	18
Exhaust Temp (^{o} F)	320	320	320	835	835	1600	250	250	250	250	250	250	330	350
Exhaust Velocity (ft/s)	16.86	11.80	16.86	65.28	44.88	3.28	13.58	13.58	1.33	1.33	1.33	1.33	2.78	1.57
Exhaust Flow (cfm)	4326	3028	4326	12305.00	8459.69	5565.8	1000	1000	1000	1000	1000	1000		
Comments	Common stack with Supp. Blr. 2	One Supp. Blr.running at 70% Load	Common stack with Supp. Blr. 1	Replaces exisiting EG1	Replaces exisiting EG1	Replaces exisiting DG Burner	Common stack with Sm. Blr. 2	Common stack with Sm. Blr. 1	Common stack with Sm. Blr. 4	Common stack with Sm. Blr. 3	Common stack with Sm. Blr. 3/4	Common stack with Sm. Blr. 3/4		

TI_3 Conditions (Revised 2/2/06)

Air Dispersion Modeling Input Data
TI 3 Emission Rate (NOx, CO, SO2, PM10, and PM2.5)

Tallman Island Water Pollution Control Plant

Queens, New York

			Supp. Blr. 1 & 2			Sm. Blr.3 & 4				EG1, 2 & 3				DG Burn		Sm. Blr.1 & 2		Sm. Blr. 5		HWH 1		Collection Building: Heat Boiler		Collection Building: HW Boiler	
			Emission Rate		Notes	Emission Rate	New SO2 Emission Rate		Notes	Emission Rate	New SO2 Emission Rate		Notes	Emission Rate	Notes		Notes		Notes		Notes	Emission Rate	Notes	Emission Rate	Notes
Pollutant		Units	Natural Gas	Natural Gas		Fuel Oil	Low Sulfur	Ultra Low Sulfur		Fuel Oil	Low Sulfur	Ultra Low Sulfur		Natural Gas		Natural Gas		Natural Gas		Natural Gas		Natural Gas		Natural Gas	
			100%	70%			500 ppm	15 ppm			500 ppm	15 ppm													
NOx		lb/MMCF	100	100	Supplemental Boilers	-	-	-	Small Boilers 3 and 4	-	-	-	Emergency	-	Flare	100	Small Boilers	100	Small Boiler 5	100	Hot Water Heater	100	Heat Boiler	100	Hot water boiler
		lb/MMBTU	0.09803922	0.09803922	1 &2	-	-	-	are standby boilers	-	-	-	Generator	0.068	Removed	0.09803922	1 and 2	0.09803922	-	0.09803922	-	0.09803922	-	0.09803922	-
		lb/1000 gal	-	-	-	20	-	-	for two new	-	-	-	-	-	-	-	-	-	-	-	Heater runs all	-	-	-	Boiler runs all
	Capacity	MMBTU/hr	14.65	10.26	Two boilers running	10.46	-	-	Supplemental Boilers	-	-	-	Two Generators	15.264	-	5.23	One boiler	2	-	0.54	year	1.5	-	0.42	year
	Capacity	Gal/hr	-	-	October through	-	-	-	1&2. Therefore they	-	-	-	running a	-	-	-	running all	-	Boiler runs	-	-	-	Boiler runs	-	-
		HP	-	-	March at 100% load;	-	-	-	will be used for short-	1475.1	-	-	maximum of 500	-	-	-	year	-	October	-	-	-	October	-	-
		g/HP-hr	-	-	One boiler running	-	-	-	term impact modeling	6.4	-	-	hrs per year at	-	-	-	-	-	through	-	-	-	through March	-	-
		lb/hr	1.43627451	1.00539216	April through	1.49428571	-	-	if their emission rates	-	-	-	69% load. NOx	1.037952	-	0.5127451	-	0.19607843	March	0.05294118	-	0.14705882	(6 months)	0.04117647	-
		g/s (hourly)	0.18134779	0.12694345	September at 70%.	0.18867244	-	-	are greater than two	2.6224	-	-	EF is baesed on	0.13105455	-	0.06474054	-	0.02475738	-	0.00668449	-	0.01856803	-	0.00519905	-
	Annual Operating Time	hours	8760	8760		8760	-	-	new boilers (i.e., for	500	-	-	manufacturer's	8760	-	8760	-	8760	-	8760	-	8760	-	8760	-
	Annual Avg Emission Rate	**g/s**	**0.18134779**	**0.12694345**	These are new sources	0.18867244	-	-	SO2).	**0.14968037**	-	-	uncontrolled data.	**0.13105455**	-	**0.06474054**	-	**0.02475738**	-	**0.00668449**	-	**0.01856803**	-	**0.00519905**	-
CO		lb/MMCF	84	-	-	-	-	-	-	-	-	-		-	-	84	-	84	-	84	-	84		84	
		lb/MMBTU	0.08235294	-	-	-	-	-	-	-	-	-	g/HP-hr rates for	0.37	-	0.08235294	-	0.08235294	-	0.08235294	-	0.08235294	-	0.08235294	-
		lb/1000 gal	-	-	-	5	-	-	-	-	-	-	CO and SO2 are	-	-	-	-	-	-	-	-	-	-	-	-
	Capacity	MMBTU/hr	14.65	-	-	10.46	-	-	-	-	-	-	based on	15.264	-	5.23	-	2	-	0.54	-	1.5	-	0.42	-
	Capacity	Gal/hr	-	-	-	-	-	-	-	-	-	-	manufacturer data	-	-	-	-	-	-	-	-	-	-	-	-
		HP	-	-	-	-	-	-	-	1475.1	-	-	under 75% load	-	-	-	-	-	-	-	-	-	-	-	-
		g/HP-hr	-	-	-	-	-	-	-	0.8	-	-	condition.	-	-	-	-	-	-	-	-	-	-	-	-
		lb/hr	1.20647059	-	-	0.37357143	-	-	-	-	-	-	-	5.64768	-	0.43070588	-	0.16470588	-	0.04447059	-	0.12352941	-	0.03458824	-
	Hourly Emission Rate	**g/s**	**0.15233214**	-	-	0.04716811	-	-	-	**0.3278**	-	-	-	**0.71309091**	-	**0.05438206**	-	**0.0207962**	-	**0.00561497**	-	**0.01559715**	-	**0.0043672**	-
SO_2		lb/MMCF	0.6	0.6	-	-	-	-	Low and Ultra Low	-	-	-	Sulfur	-	-	0.6	Natural Gas	0.6	Natural Gas	0.6	Natural Gas	0.6	Natural Gas	0.6	Natural Gas
		lb/MMBTU	0.00058824	0.00058824	-	-	-	-	Sulfur Emission	-	0.0505	0.001515	percentages of	-	-	0.00058824	Sulfur	0.00058824	Sulfur content	0.00058824	Sulfur content	0.00058824	Sulfur content	0.00058824	Sulfur content
		lb/1000 gal	-	-	-	26.6	7.1	0.213	Factors are based on	-	7.07	0.2121	500 and 15 ppm	-	-	-	content data	-	data not	-	data not available	-	data not	-	data not
	Capacity	MMBTU/hr	14.65	10.26	-	10.46	10.46	10.46	AP-42 Table 1.3-1 for	-	-	-	are EPA Fuel	-	-	5.23	not available	2	available	0.54		1.5	available	0.42	available
	Capacity	Gal/hr	-	-	-	-	-	-	Distillate oil	-	74.25	74.25	Sulfur Standards.	-	-	-	-	-	-	-	-	-	-	-	-
		HP	-	-	-	-	-	-	-	1475.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		g/HP-hr	-	-	-	-	-	-	-	0.61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		lb/hr	0.00861765	0.00603235	-	1.9874	0.53047143	0.01591414	Sulfur percentages of	-	0.5249475	0.015748425	-	-	-	0.00307647	-	0.00117647	-	0.00031765	-	0.00088235	-	0.00024706	-
	Hourly Emission Rate	**g/s**	**0.00108809**	0.00076166	-	**0.25093434**	0.06697872	0.00200936	500 and 15 ppm are	**0.2499475**	0.06628125	0.001988438	-	-	-	**0.00038844**	-	**0.00014854**	-	**4.0107E-05**	-	**0.00011141**	-	**3.1194E-05**	-
	Annual Operating Time	hours	8760	8760	-	8760	8760	8760	EPA Fuel Sulfur	500	500	500	-	-	-	8760	-	8760	-	8760	-	8760	-	8760	-
	Annual Avg Emission Rate	**g/s**	**0.00108809**	**0.00076166**	-	0.25093434	0.06697872	0.00200936	-	**0.01426641**	0.00378318	0.000113495	-	-	-	**0.00038844**	-	**0.00014854**	-	**4.0107E-05**	-	**0.00011141**	-	**3.1194E-05**	-
PM10		lb/MMCF	7.6	7.6	-	-	-	-	-	-	-	-	-	-	-	7.6	-	7.6	-	7.6	-	7.6	-	7.6	-
		lb/MMBTU	0.00745098	0.00745098	-	-	-	-	-	-	-	-	g/HP-hr rates for	-	-	0.00745098	-	0.00745098	-	0.00745098	-	0.00745098	-	0.00745098	-
		lb/1000 gal	-	-	-	1.08	-	-	-	-	-	-	PM10/PM2.5 are	-	-	-	-	-	-	-	-	-	-	-	-
	Capacity	MMBTU/hr	14.65	10.26	-	10.46	-	-	-	-	-	-	based on	-	-	5.23	-	2	-	0.54	-	1.5	-	0.42	-
	Capacity	Gal/hr	-	-	-	-	-	-	-	-	-	-	conservative	-	-	-	-	-	-	-	-	-	-	-	-
		HP	-	-	-	-	-	-	-	1475.1	-	-	manufacturer data	-	-	-	-	-	-	-	-	-	-	-	-
		g/HP-hr	-	-	-	-	-	-	-	0.09	-	-	for 50% load	-	-	-	-	-	-	-	-	-	-	-	-
		lb/hr	0.10915686	0.0764098	-	0.08069143	-	-	-	-	-	-	condition.	-	-	0.03896863	-	0.01490196	-	0.00402353	-	0.01117647	-	0.00312941	-
	Hourly Emission Rate	**g/s**	**0.01378243**	0.0096477	-	0.01018831	-	-	-	**0.0368775**	-	-	-	-	-	**0.00492028**	-	**0.00188156**	-	**0.00050802**	-	**0.00141117**	-	**0.00039513**	-
	Annual Operating Time	hours	8760	8760	-	8760	-	-	-	500	-	-	-	-	-	8760	-	8760	-	8760	-	8760	-	8760	-
	Annual Avg Emission Rate	**g/s**	**0.01378243**	**0.0096477**	-	0.01018831	-	-	-	**0.00210488**	-	-	-	-	-	**0.00492028**	-	**0.00188156**	-	**0.00050802**	-	**0.00141117**	-	**0.00039513**	-
PM2.5		lb/MMCF	7.6	7.6	-	-	-	-	-	-	-	-	-	-	-	7.6	-	7.6	-	7.6	-	7.6	-	7.6	-
		lb/MMBTU	0.00745098	0.00745098	-	-	-	-	-	-	-	-	-	-	-	0.00745098	-	0.00745098	-	0.00745098	-	0.00745098	-	0.00745098	-
		lb/1000 gal	-	-	-	0.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Capacity	MMBTU/hr	14.65	10.26	-	10.46	-	-	-	-	-	-	-	-	-	5.23	-	2	-	0.54	-	1.5	-	0.42	-
	Capacity	Gal/hr	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		HP	-	-	-	-	-	-	-	1475.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		g/HP-hr	-	-	-	-	-	-	-	0.09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		lb/hr	0.10915686	0.0764098	-	0.06201286	-	-	-	-	-	-	-	-	-	0.03896863	-	0.01490196	-	0.00402353	-	0.01117647	-	0.00312941	-
	Hourly Emission Rate	**g/s**	**0.01378243**	0.0096477	-	0.00782991	-	-	-	**0.0368775**	-	-	-	-	-	**0.00492028**	-	**0.00188156**	-	**0.00050802**	-	**0.00141117**	-	**0.00039513**	-
	Annual Operating Time	hours	8760	8760	-	8760	-	-	-	500	-	-	-	-	-	8760	-	8760	-	8760	-	8760	-	8760	-
	Annual Avg Emission Rate	**g/s**	**0.01378243**	**0.0096477**	-	0.00782991	-	-	-	**0.00210488**	-	-	-	-	-	**0.00492028**	-	**0.00188156**	-	**0.00050802**	-	**0.00141117**	-	**0.00039513**	-