CITY OF TAMPA

Department of Sanitary Sewers

Howard F. Curren
Advanced Wastewater Treatment Plant

April 20, 2000

RECEIVED
APR 20 2000
BUREAU OF AIR REGULATION

RECEIVED
APR 20 2000
BUREAU OF AIR REGULATION

Mr. Alvaro Linero
Florida Department of Environmental Protection
2600 Blair Stone Road
Twin Towers Office Building
Tallahassee, Florida 32399-2400

Re: City of Tampa Howard F. Curren Advanced Wastewater Treatment Plant
PSD Permit Application Submittal

0570373-009-AC
PSD-FL-291

Mr. Linero:

W/FEE

Please find enclosed four PSD permit applications for the installation and operation of two 2.9 MW natural gas fired internal combustion engine generators at the Howard F. Curren Advanced Wastewater Treatment (AWT) Plant. The interactive modeling results as well as a check in the amount of $7,500 will be mailed to you under separate cover. This proposed project is a joint venture between the City of Tampa and Tampa Electric Company in which the exhaust heat from the internal combustion engines will be used to provide most of the heat necessary for the sludge drying process. The power generated will be exported to the Tampa Electric Company grid, and when necessary, used for on site emergency generation at the Howard F. Curren AWT Plant.

If you have any questions, please feel free to telephone John Drapp with the Howard F. Curren AWTP at (813) 247-3451 or Shannon Todd with Tampa Electric Company at (813) 641-5125.

Sincerely,

DEPARTMENT OF SANITARY SEWERS

Ralph L. Metcalf II, P.E., Director

c: Jerry Kissel - FDEP SW
Steve Pak - EPCHC
Dave Pickard – Plant Administrator
Shannon Todd - TEC

2700 Maritime Boulevard • Tampa, Florida 33605 • 813/247-3451 • Fax: 813/248-5269

Tampa Electric Company FLORIDA DEPARTMENT OF ENVIRONMENTAL **0905469**

Invoice Date	Invoice Number	G/L Account	Description	Invoice Amount
4/5/00	PSD PERMIT	M07914		7,500.00
			Check Total	7,500.00

FOR SECURITY PURPOSES, THE BORDER OF THIS DOCUMENT CONTAINS MICROPRINTING

TECO TAMPA ELECTRIC

Tampa Electric Company
Post Office Box 3285
702 North Franklin Street
Tampa, Florida 33601

NationsBank
NationsBank of Georgia NA

Check Number: 0905469

64-1278-8
611

Check Date: 4/6/00

Check Amount: ******$7,500.00

PAY Seven Thousand Five Hundred Dollars and 00/100 Cents

TO THE ORDER OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
TAMPA, FL 33601

THE REVERSE SIDE OF THIS DOCUMENT INCLUDES AN ARTIFICIAL WATERMARK - HOLD AT AN ANGLE TO VIEW

⑈0905469⑈ ⑆061112788⑆010 116 3492⑈

HOWARD F. CURREN ADVANCED WASTEWATER TREATMENT FACILITY

AIR CONSTRUCTION PERMIT APPLICATION

Prepared for:

CITY OF TAMPA
and

TAMPA ELECTRIC
Tampa, Florida

Prepared by:

ECT
Environmental Consulting & Technology, Inc.
3701 Northwest 98th Street
Gainesville, Florida 32606

ECT No. 000191-0100

April 2000

TABLE OF CONTENTS

TABLE OF CONTENTS
(Continued, Page 2 of 3)

TABLE OF CONTENTS
(Continued, Page 3 of 3)

Section Page

APPENDICES

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION AND SUMMARY

1.1 INTRODUCTION

The City of Tampa is partnering with Tampa Electric Company (TEC) to construct and operate two internal combustion (IC) engine/generator sets at its existing Howard F. Curren Advanced Wastewater Treatment Facility (HFCAWTF). The HFCAWTF is located within the City of Tampa at 2700 Maritime Boulevard, Hillsborough County, Florida.

The new IC engine/generator sets will each have a nominal generation capacity of 2.9 megawatts (MW) and will be fired exclusively with natural gas. The IC engine/generator sets will serve as a source of standby power for the HFCAWTF, as well as generating supplemental grid power for TEC. Heat contained in the exhausts of the new IC engines will also be used to provide most of the energy necessary for the HFCAWTF's existing sludge drying process. Following installation and operation of the new IC engine/generator sets, the existing sludge drying combustion chambers, which presently provide all the heat needed for sludge drying, will only be used to furnish supplemental heat as needed.

Operation of the proposed project will result in airborne emissions. Therefore, a permit is required prior to the beginning of facility construction, per Rule 62-212.300(1)(a), Florida Administrative Code (F.A.C.). This report, including the required permit application forms and supporting documentation included in the attachments, constitutes the City of Tampa's application for authorization to commence construction in accordance with the Florida Department of Environmental Protection (FDEP) permitting rules contained in Chapter 62-212, *et. seq.*, F.A.C.

The existing HFCAWTF is located in an attainment area and has potential emissions of a regulated pollutant in excess of 250 tons per year (tpy). Potential emissions from the new IC engine/generator sets exceed the prevention of significant deterioration (PSD) significant emission rates specified in Chapter 62-212, Table 212.400-2, F.A.C., for several regulated pollutants. Accordingly, the proposed IC engine/generator sets qualify as a major modification to an existing major facility and are subject to the PSD new source

review (NSR) requirements of Section 62-212.400, F.A.C. Therefore, this report and application are also submitted to satisfy the permitting requirements contained in the FDEP PSD rules and regulations.

This report is organized as follows:

- Section 1.2 provides an overview and summary of the key regulatory determinations.
- Section 2.0 describes the proposed facility and associated air emissions.
- Section 3.0 describes national and state air quality standards and discusses applicability of NSR procedures to the proposed project.
- Section 4.0 describes the PSD NSR review procedures.
- Section 5.0 provides an analysis of best available control technology (BACT).
- Sections 6.0 (Dispersion Modeling Methodology) and 7.0 (Dispersion Modeling Results) address ambient air quality impacts.
- Section 8.0 discusses current ambient air quality in the vicinity of the HFCAWTF and preconstruction ambient air quality monitoring.
- Section 9.0 addresses other potential air quality impact analyses.
- Section 10.0 lists the references used in preparing the report.

Attachments A through C provide the FDEP Application for Air Permit—Long Form, IC engine/generator set technical specifications and emissions data, and emission rate calculations, respectively. Section 7.0, Dispersion Modeling Results, is currently being prepared and will be submitted as a supplement to this application. All dispersion modeling input and output files for the ambient impact analysis will be provided in diskette format in Attachment D.

1.2 SUMMARY

The IC engine/generator sets planned for the HFCAWTF are Waukesha Engine Model 16V-AT27GL Gas Enginator® Generating Systems. The IC engines will be fired exclu-

sively with pipeline-quality natural gas containing no more than 2.0 grains of total sulfur per one hundred standard cubic feet (gr S/100 scf).

The City of Tampa plans to commence construction upon receipt of department authorization. Completion of construction and initial operation is planned to occur within 30 days following commencement of construction.

Based on continuous operation (i.e., 8,760 hours per year [hr/yr]) at rated capacity, the two new IC engine/generator sets will have the potential to emit 122.8 tpy of nitrogen oxides (NO_x), 130.6 tpy of carbon monoxide (CO), 7.8 tpy of particulate matter/particulate matter less than or equal to 10 micrometers (PM/PM_{10}), 0.2 tpy of sulfur dioxide (SO_2), and 43.2 tpy of volatile organic compounds (VOCs). Based on these annual emission rate potentials, NO_x, CO, and VOC emissions are subject to PSD review.

As presented in this report, the analyses required for this permit application resulted in the following conclusions:

- The use of good combustion practices and clean fuel is considered to be BACT for PM/PM_{10}. The IC engines will use lean burn, low-emission combustion technology and will be fired exclusively with pipeline-quality natural gas.
- Lean burn, low-emission combustion technology and good operating practices to minimize incomplete combustion are proposed as CO and VOC BACT for the IC engines. IC engine CO and VOC emissions are projected to be 1.66 and 0.55 grams per horsepower hour (g/hp-hr), respectively. These emission rates are consistent with recent national BACT determinations for natural gas-fired IC engines.
- Lean burn, low-emission combustion technology is proposed as BACT for NO_x for the IC engines. The IC engine NO_x emission rate is projected to be 1.56 g/hp-hr. This emission rate is consistent with recent national BACT determinations for natural gas-fired IC engines.

- The new IC engine/generator sets are projected to emit NO_x, CO, and VOC in greater than significant amounts. The ambient impact analysis demonstrates that project impacts will be below the PSD *de minimis* monitoring significance levels for these pollutants. Accordingly, the IC engine modification project qualifies for the Section 62-212.400, Table 212.400-3, F.A.C., exemption from PSD preconstruction ambient air quality monitoring requirements for all PSD pollutants.
- The ambient impact analysis demonstrates that project impacts for all pollutants emitted in significant amounts will be below the PSD significant impact levels defined in Rule 62-210.200(260), F.A.C., with the exception of nitrogen dioxide (NO_2). Accordingly, a multisource interactive assessment of national ambient air quality standards (NAAQS) attainment and PSD Class II increment consumption is required for NO_2. The assessment of NO_2 ambient air impacts is currently underway and will be submitted as a supplement to this permit application.
- The nearest PSD Class I area (Chassahowitzka National Wildlife Refuge [NWR]) is located approximately 80 kilometers (km) north-northwest of the project site. Due to the exclusive use of natural gas and relatively minor project emissions, air quality and visibility impacts on this Class I area will be negligible.

2.0 DESCRIPTION OF THE PROPOSED FACILITY

2.1 PROJECT DESCRIPTION, AREA MAP, AND PLOT PLAN

The HFCAWTF is located at 2700 Maritime Boulevard within the City of Tampa in Hillsborough County, Florida. Figure 2-1 provides portions of a U.S. Geological Survey (USGS) topographical map showing the HFCAWTF site location and nearby prominent geographical features.

The proposed modification project consists of two IC engine/generator sets, each capable of generating a net nominal 2.9 MW of electricity. The IC engines will be fired exclusively with pipeline-quality natural gas. The IC engine/generator sets may operate at rated capacity for up to 8,760 hr/yr.

Combustion of natural gas in the IC engines will result in emissions of PM/PM_{10}, SO_2, NO_x, CO, and VOCs. Emission control systems proposed for the IC engines include the use of lean burn, low-emission combustion technology for the control of NO_x, CO, and VOCs, and exclusive use of clean, low-sulfur, low-ash natural gas to minimize PM/PM_{10} and SO_2 emissions.

A site plan showing the existing HFCAWTF, major process equipment and structures, and the new IC engine/generator emission points is provided as Figure 2-2. Primary access to the HFCAWTF is from Maritime Boulevard on the west side of the site. The HFCAWTF entrance has security to control site access.

2.2 PROCESS DESCRIPTION AND PROCESS FLOW DIAGRAM

The proposed modification project consists of two, four-cycle, turbocharged, lean burn, low-emission Waukesha Engine Model 16V-AT27GL Gas Enginator® Generating Systems. Each 4,073-brake horsepower (bhp) IC engine will burn natural gas to produce mechanical, rotary shaft power. This shaft power is used to drive a coupled electric generator capable of generating a nominal 2.9 MW of electricity. Electricity generated by the IC engine/generator sets will be used as standby power for the HFCAWTF, as well as being dispatched to the grid for distribution by TEC.

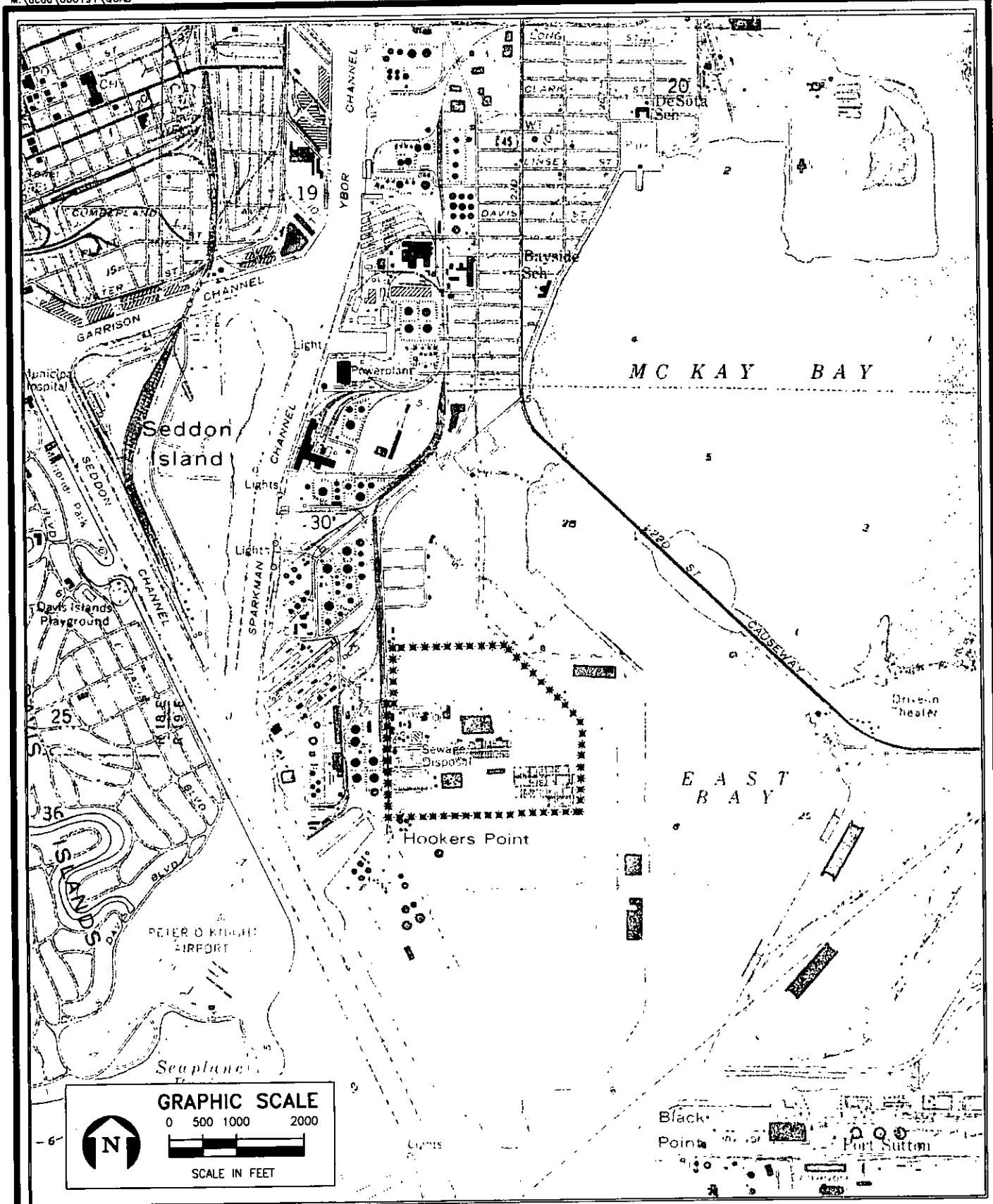


FIGURE 2-1.

HOWARD F. CURREN ADVANCED WASTEWATER TREATMENT PLANT

Source: USGS Quad: Tampa, FL, 1981.

ECT
Environmental Consulting & Technology, Inc.

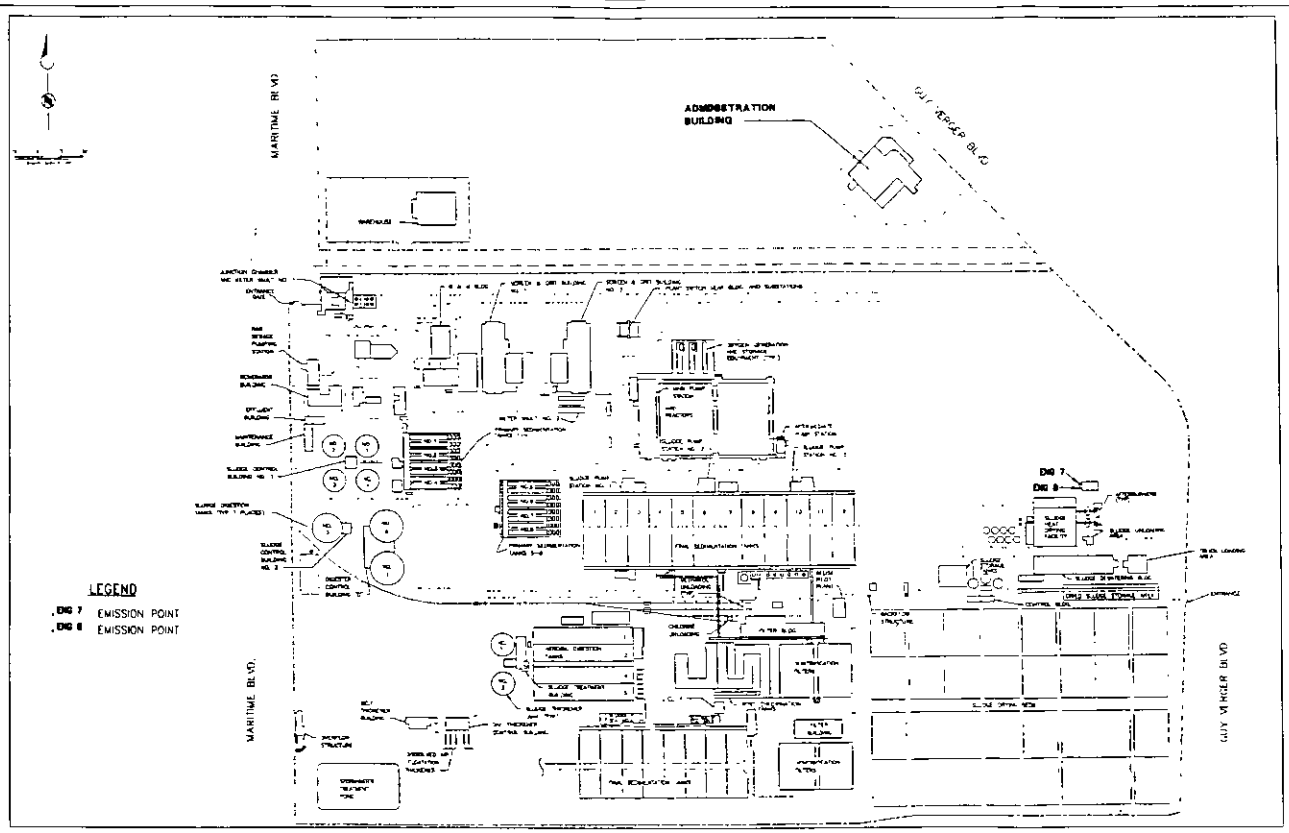


FIGURE 2-2.
HOWARD F. CURREN ADVANCED WASTEWATER TREATMENT PLANT SITE PLAN

SOURCE: BROWN AND CALDWELL, 2000; ECT, 2000

ECT
Environmental Consulting & Technology, Inc.

When needed, the hot exhaust gases from the IC engines will be used to provide heat for the HFCAWTF's existing sludge drying process. In this mode of operation, the IC engine exhaust gases will be routed through the existing sludge dryer afterburners for reduction of VOC and PM/PM_{10} emissions. When the existing sludge drying trains are not in operation, the IC engines will exhaust directly to the atmosphere. Figure 2-3 presents a process flow diagram of the modification project.

The IC engines will use lean burn, low-emission combustion technology to control NO_x, CO, and VOC emissions. The exclusive use of low-sulfur natural gas in the IC engines will minimize PM/PM_{10} and SO_2 emissions.

2.3 EMISSION AND STACK PARAMETERS

Tables 2-1 and 2-2 provide maximum hourly and annual criteria pollutant IC engine emission rates, respectively. These emission rates are based on engine vendor data (for NO_x, CO, VOC, and PM/PM_{10}) and U.S. Environmental Protection Agency (EPA) AP-42 emission factors (for SO_2). The maximum emission rates shown in Tables 2-1 and 2-2 are based on continuous operation at rated capacity and reflect the direct discharge of the IC engine exhausts to the atmosphere.

Stack parameters for the IC engine/generator sets are provided in Table 2-3.

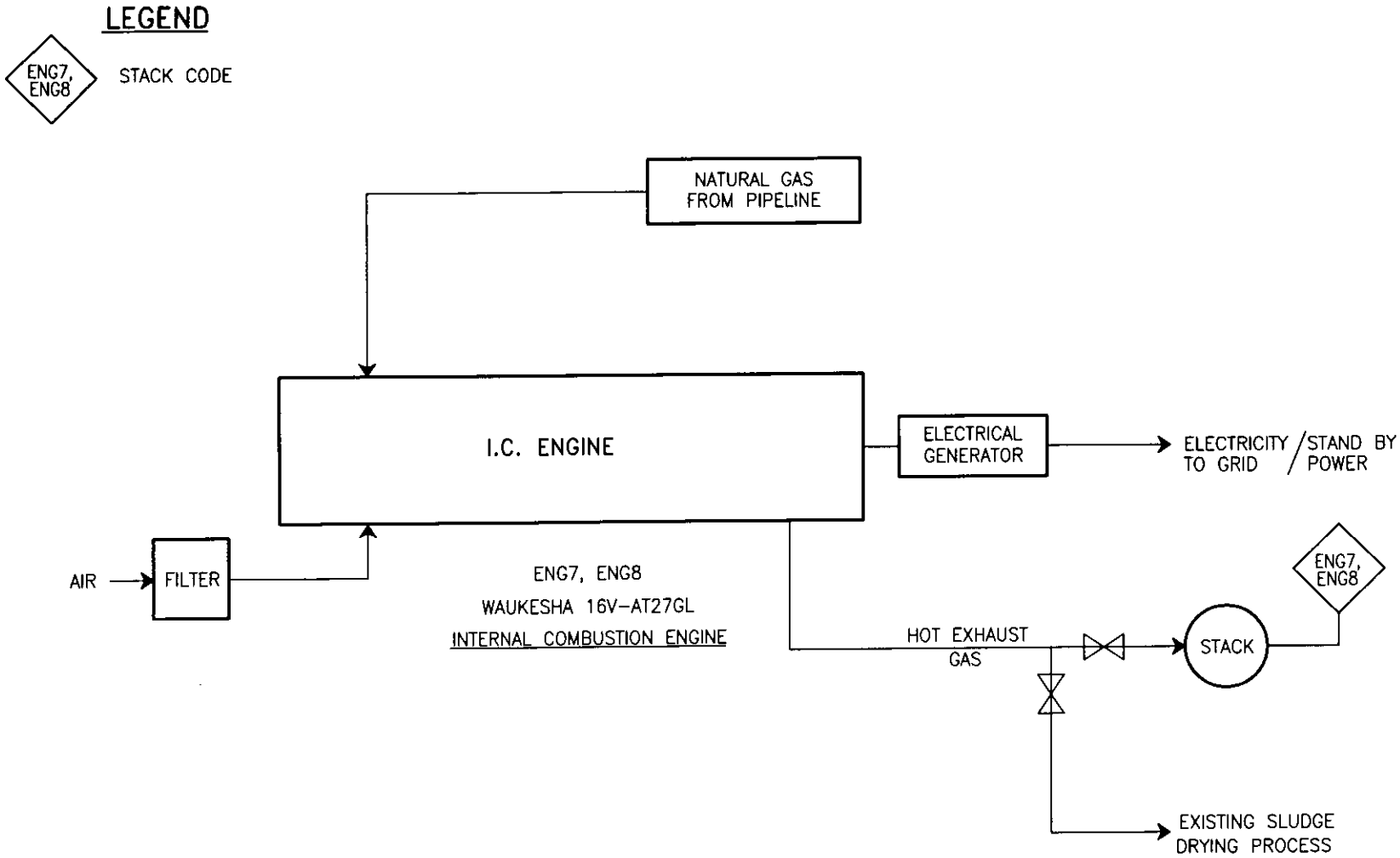


FIGURE 2-3.
INTERNAL COMBUSTION ENGINE - PROCESS FLOW DIAGRAM

Source: ECT, 2000.

ECT
Environmental Consulting & Technology, Inc.

Table 2-1. Maximum Criteria Pollutant Emission Rates—Natural Gas Fired IC Engine/Generator Sets (per IC Engine/Generator Set)

Unit Load (%)	PM/PM_{10}*		SO_2		NO_x		CO		VOC		Lead	
	lb/hr	g/s	lb/hr	g/s	lb/hr	g/s	lb/hr	g/s	lb/hr	g/s	lb/hr	g/s
100	0.9	0.113	0.03	0.004	14.0	1.76	14.9	1.88	4.9	0.617	Neg.	Neg.

Note: g/s = gram per second.
lb/hr = pound per hour.
Neg. = negligible

*As measured by EPA Reference Method 5B or 17.

Sources: ECT, 2000.
Waukesha, 1999.

Table 2-2. Maximum Annual Emission Rates (tpy)

Pollutant	Two IC Engine/Generator Sets
NO_x	122.8
CO	130.6
PM/PM_{10}	7.8
SO_2	0.2
VOC	43.2

Sources: Waukesha, 1999.
ECT, 2000.

Table 2-3. Stack Parameters—Natural Gas-Fired IC Engine/Generator Sets (Per IC Engine/Generator Set)

Stack Height		Stack Exit Temperature		Stack Exit Velocity		Stack Diameter	
ft	meters	°F	K	ft/sec	m/sec	ft	meters
35	10.7	731	662	88.0	26.8	2.3	0.71

Note: K = Kelvin.
ft/sec = feet per second.
m/sec = meters per second.

Sources: TEC, 2000.
ECT, 2000.

3.0 AIR QUALITY STANDARDS AND NEW SOURCE REVIEW APPLICABILITY

3.1 NATIONAL AND STATE AAQS

As a result of the 1977 Clean Air Act (CAA) Amendments, EPA enacted primary and secondary NAAQS for six air pollutants (Chapter 40, Part 50, Code of Federal Regulations [CFR]). Primary NAAQS are intended to protect the public health, and secondary NAAQS are intended to protect the public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air. Florida has also adopted AAQS (reference Section 62-204.240, F.A.C.). Table 3-1 presents the current national and Florida AAQS.

Areas of the country in violation of NAAQS are designated as nonattainment areas, and new sources to be located in or near these areas may be subject to more stringent air permitting requirements. The HFCAWTF is located within the City of Tampa in Hillsborough County, Florida. Hillsborough County is presently designated in 40 CFR 81.310 as unclassifiable (for total suspended particulates [TSPs]; that portion of Hillsborough County which falls within the area of a circle having a centerpoint at the intersection of U.S. Highway 41 (U.S. 41) South an State Road (SR) 60 and a radius of 12 km, for SO_2 and for lead; the area encompassed within a radius of 5 km centered on Universal Transverse Mercatur (UTM) coordinates: 364.0 km East, 3093.5 km North, zone 17, in the City of Tampa), unclassifiable/attainment (for CO), and unclassifiable or better than national standards (for NO_2). 40 CFR 81.310 also indicates the 1-hour ozone standard is not applicable Statewide.

Hillsborough County is designated attainment (for ozone, CO, and NO_2) and unclassifiable (for SO_2, PM_{10}, and lead) by Section 62-204.340, F.A.C. Hillsborough County is also classified as an Air Quality Maintenance Area for ozone (entire county), PM (that portion of Hillsborough County which falls within the area of a circle having a centerpoint at the intersection of U.S. 41 South and SR 60 and a radius of 12 km), and lead (the area encompassed within a radius of 5 km centered on UTM coordinates 364.0 km East, 3093.5 km North, zone 17) by Section 62-204.340, F.A.C.

Table 3-1. National and Florida Air Quality Standards (micrograms per cubic meter [$\mu g/m^3$] unless otherwise stated)

Pollutant (units)	Averaging Periods	National Standards		Florida Standards
		Primary	Secondary	
SO_2 (ppmv)	3-hour[1]		0.5	0.5
	24-hour[1]	0.14		0.1
	Annual[2]	0.030		0.02
SO_2	3-hour[1]			1,300
	24-hour[1]			260
	Annual[2]			60
PM_{10}[13]	24-hour[3]	150	150	
	Annual[4]	50	50	
PM_{10}	24-hour[5]			150
	Annual[6]			50
$PM_{2.5}$[11,12]	24-hour[7]	65	65	
	Annual[8]	15	15	
CO (ppmv)	1-hour[1]	35		35
	8-hour[1]	9		9
CO	1-hour[1]			40,000
	8-hour[1]			10,000
Ozone (ppmv)	1-hour[9]			0.12
	8-hour[10,11]	0.08	0.08	
NO_2 (ppmv)	Annual[2]	0.053	0.053	0.05
NO_2	Annual[2]			100
Lead	Calendar Quarter Arithmetic Mean	1.5	1.5	1.5

Note: ppmv = parts per million by volume.

[1]Not to be exceeded more than once per calendar year.
[2]Arithmetic mean.
[3]Standard attained when the 99th percentile is less than or equal to the standard, as determined by 40 CFR 50, Appendix N.
[4]Arithmetic mean, as determined by 40 CFR 50, Appendix N.
[5]Not to be exceeded more than once per year, as determined by 40 CFR 50, Appendix K.
[6]Standard attained when the expected annual arithmetic mean is less than or equal to the standard, as determined by 40 CFR 50, Appendix K.
[7]Standard attained when the 98th percentile is less than or equal to the standard, as determined by 40 CFR 50, Appendix N.
[8]Arithmetic mean, as determined by 40 CFR 50, Appendix N.
[9]Standard attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than 1, as determined by 40 CFR 50, Appendix H.
[10]Standard attained when the average of the annual 4th highest daily maximum 8-hour average concentration is less than or equal to the standard, as determined by 40 CFR 50, Appendix I.
[11]The U.S. Court of Appeals for the District of Columbia Circuit (Circuit Court) held that these standards are not enforceable. American Trucking Association v. U.S.E.P.A., 1999 WL300618 (Circuit Court).
[12]The Circuit Court may vacate standards following briefing. Id.
[13]The Circuit Court held PM_{10} standards vacated upon promulgation of effective $PM_{2.5}$ standards.

Sources: 40 CFR 50.
Section 62-204.240, F.A.C.

3.2 NONATTAINMENT NSR APPLICABILITY

The HFCAWTF modification project will be located in Hillsborough County. As previously noted, Hillsborough County is presently designated as having air quality that is either better than the national standards or unclassifiable/attainment for all criteria pollutants. Accordingly, the modification project is not subject to the nonattainment NSR requirements of Section 62-212.500, F.A.C.

3.3 PSD NSR APPLICABILITY

The proposed new IC engine/generator sets will have potential emissions in excess of the significant emission rate thresholds. Therefore, the modification project is subject to the PSD NSR requirements of Section 62-212.400, F.A.C., for those pollutants that are emitted at or above the specified PSD significant emission rate levels. Comparisons of estimated potential annual emission rates for the IC engine/generator sets and the PSD significant emission rate thresholds are provided in Table 3-2. As shown in this table, potential emissions of NO_x, CO, and VOCs are each projected to exceed the applicable PSD significant emission rate level. These pollutants are, therefore, subject to the PSD NSR requirements of Section 62-212.400, F.A.C. Appendix C provides detailed emission rate estimates for the IC engine/generator sets.

Table 3-2. Projected Emissions Compared to PSD Significant Emission Rates

Pollutant	IC Engine Maximum Annual Emissions (tpy)	PSD Significant Emission Rate (tpy)	PSD Applicability
NO_x	122.8	40	Yes
CO	130.6	100	Yes
PM	7.8	25	No
PM_{10}	7.8	15	No
SO_2	0.2	40	No
Ozone/VOC	43.2	40	Yes
Lead	Negligible	0.6	No
Mercury	Negligible	0.1	No
Total fluorides	Not Present	3	No
Sulfuric acid mist	Negligible	7	No
Total reduced sulfur (including hydrogen sulfide)	Not Present	10	No
Reduced sulfur compounds (including hydrogen sulfide)	Not Present	10	No
Municipal waste combustor acid gases (measured as SO_2 and hydrogen chloride)	Not Present	40	No
Municipal waste combustor metals (measured as PM)	Not Present	15	No
Municipal waste combustor organics (measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans)	Not Present	3.5×10^{-6}	No

Sources: Section 62-212.400, Table 212.400-2, F.A.C.
ECT, 2000.

4.0 PSD NSR REQUIREMENTS

4.1 CONTROL TECHNOLOGY REVIEW

Pursuant to Rule 62-212.400(5)(c), F.A.C., an analysis of BACT is required for each pollutant emitted by the proposed modification project in amounts equal to or greater than the PSD significant emission rate levels. As defined by Rule 62-210.200(42), F.A.C., BACT is:

> "an emission limitation, including a visible emission standard, based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account energy, environmental, and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems and techniques (including fuel cleaning or treatment or innovative fuel combustion techniques) for control of each such pollutant. If the Department determines that technological or economic limitations on the application of measurement methodology to a particular part of an emissions unit or facility would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emissions reductions achievable by implementation of such design, equipment, work practice or operation. Each BACT determination shall include applicable test methods or shall provide for determining compliance with the standard(s) by means which achieve equivalent results."

BACT determinations are made on a case-by-case basis as part of the FDEP NSR process and apply to each pollutant that exceeds the PSD significant emission rate thresholds shown in Table 3-2. All emission units involved in a major modification or a new major source that emit or increase emissions of the applicable pollutants must undergo BACT analysis. Because each applicable pollutant must be analyzed, particular emission units may undergo BACT analysis for more than one pollutant.

BACT is defined in terms of a numerical emissions limit unless determined to be infeasible. This numerical emissions limit can be based on the application of air pollution control equipment; specific production processes, methods, systems, or techniques; fuel cleaning; or combustion techniques. BACT limitations may not exceed any applicable federal new source performance standard (NSPS) or national emission standard for haz-

ardous air pollutants (NESHAP), or any other emission limitation established by state regulations.

BACT analyses are conducted using the *top-down* analysis approach, which was outlined in a December 1, 1987, memorandum from Craig Potter, EPA Assistant Administrator, to EPA Regional Administrators on the subject of "Improving NSR Implementation." Using the top-down methodology, available control technology alternatives are identified based on knowledge of the particular industry of the applicant and previous control technology permitting decisions for other identical or similar sources. These alternatives are rank ordered by stringency into a control technology hierarchy. The hierarchy is evaluated starting with the *top*, or most stringent alternative, to determine economic, environmental, and energy impacts, and to assess the feasibility or appropriateness of each alternative as BACT based on site-specific factors. If the top control alternative is not applicable or is technically or economically infeasible, it is rejected as BACT, and the next most stringent alternative is then considered. This evaluation process continues until an applicable control alternative is determined to be both technologically and economically feasible, thereby defining the emission level corresponding to BACT for the pollutant in question emitted from the particular facility under consideration.

4.2 AMBIENT AIR QUALITY MONITORING

In accordance with the PSD requirements of Rule 62-212.400(5)(f), F.A.C., any application for a PSD permit must contain, for each pollutant subject to review, an analysis of ambient air quality data in the area affected by the proposed major stationary source or major modification. The affected pollutants are those that the source would potentially emit in significant amounts (i.e., those that exceed the PSD significant emission rate thresholds shown in Table 3-2).

Preconstruction ambient air monitoring for a period of up to 1 year generally is appropriate to complete the PSD requirements. Existing data from the vicinity of the proposed source may be used if the data meet certain quality assurance (QA) requirements; otherwise, additional data may need to be gathered. Guidance in designing a PSD monitoring

network is provided by EPA's *Ambient Monitoring Guidelines for Prevention of Significant Deterioration* (1987).

Rule 62-212.400(2)(e), F.A.C., provides an exemption from preconstruction monitoring requirements that excludes or limits the pollutants for which an air quality monitoring analysis is conducted. This exemption states that a proposed facility shall be exempt from the monitoring requirements of Rule 62-212.400(5)(f) and (g), F.A.C., with respect to a particular pollutant if the emissions increase of the pollution from the source or modification would cause, in any area, air quality impacts less than the PSD *de minimis* ambient impact levels presented in Section 62-212.400, Table 212.400-3, F.A.C. (see Table 4-1). In addition, an exemption may be granted if the air quality impacts due to existing sources in the area of concern are less than the PSD *de minimis* ambient impact levels.

Applicability of the PSD preconstruction ambient monitoring requirements to the proposed project is discussed in Section 8.0.

4.3 AMBIENT IMPACT ANALYSIS

An air quality or source impact analysis must be performed for a proposed major source subject to PSD for each pollutant for which the increase in emissions exceeds the significant emission rates (see Table 3-2). The FDEP rules specifically require the use of applicable EPA atmospheric dispersion models in determining estimates of ambient concentrations (refer to Rule 62-204.220[4], F.A.C.). Guidance for the use and application of dispersion models is presented in the EPA *Guideline on Air Quality Models* (GAQM) as published in Appendix W to 40 CFR 51. Criteria pollutants may be exempt from the full source impact analysis if the net increase in impacts due to the new source or modification is below the appropriate Rule 62-210.200(259), F.A.C., significant impact level, as presented in Table 4-2.

Ozone is one pollutant for which a source impact analysis is not normally required. Ozone is formed in the atmosphere as a result of complex photochemical reactions. Models for ozone generally are applied to entire urban areas.

Table 4-1. PSD *De Minimis* Ambient Impact Levels

Averaging Time	Pollutant	Significance Level ($\mu g/m^3$)
Annual	NO_2	14
Quarterly	Lead	0.1
24-Hour	PM_{10}	10
	SO_2	13
	Mercury	0.25
	Fluorides	0.25
8-Hour	CO	575
1-Hour	Hydrogen sulfide	0.2
NA	Ozone	100 tpy of VOC emissions

Note: $\mu g/m^3$ = micrograms per cubic meter.

Source: Section 62-212.400, Table 212.400-3, F.A.C.

Table 4-2. Significant Impact Levels

Pollutant	Averaging Period	Concentration ($\mu g/m^3$)
SO_2	Annual	1
	24-Hour	2
	3-Hour	25
PM_{10}	Annual	1
	24-Hour	5
NO_2	Annual	1
CO	8-Hour	500
	1-Hour	2,000
Lead	Quarterly	0.03

Source: Rule 62-210.200(260), F.A.C.

The ambient impact analysis for the project is provided in Sections 6.0 (methodology) and 7.0 (results).

4.4 ADDITIONAL IMPACT ANALYSES

Rule 62-212.400(5)(e), F.A.C., requires additional impact analyses for three areas: (1) associated growth, (2) soils and vegetation impact, and (3) visibility impairment. The level of analysis for each area should be commensurate with the scope of the project under review. A more extensive analysis would be conducted for projects having large emission increases than those that will cause a small increase in emissions.

The growth analysis generally includes:

- A projection of the associated industrial, commercial, and residential growth that will occur in the area.
- An estimate of the air pollution emissions generated by the permanent associated growth.
- An air quality analysis based on the associated growth emission estimates and the emissions expected to be generated directly by the new source or modification.

The soils and vegetation analysis is typically conducted by comparing projected ambient concentrations for the pollutants of concern with applicable susceptibility data from the air pollution literature. For most types of soils and vegetation, ambient air concentrations of criteria pollutants below the NAAQS will not result in harmful effects. Sensitive vegetation and emissions of toxic air pollutants could necessitate a more extensive assessment of potential adverse effects on soils and vegetation.

The visibility impairment analysis pertains particularly to Class I area impacts and other areas where good visibility is of special concern. A quantitative estimate of visibility impairment is conducted, if warranted by the scope of the project under review.

The additional impact analyses for the modification project is provided in Section 9.0.

5.0 BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS

5.1 METHODOLOGY

BACT analyses were performed in accordance with the EPA top-down method as previously described in Section 4.1. The first step in the top-down BACT procedure is the identification of all available control technologies. Alternatives considered included process designs and operating practices that reduce the formation of emissions, postprocess stack controls that reduce emissions after they are formed, and combinations of these two control categories. Sources of information used to identify control alternatives included:

- EPA reasonably available control technology (**R**ACT)/**B**ACT/lowest achievable emission rate (**L**AER) **C**learinghouse (RBLC) via the RBLC Information System database.
- EPA NSR web site.
- EPA Control Technology Center (CTC) web site.
- Recent FDEP BACT determinations for similar facilities.
- Vendor information.
- Environmental Consulting & Technology, Inc. (ECT), experience for similar projects.

Following the identification of available control technologies, the next step in the analysis is to determine which technologies may be technically infeasible. Technical feasibility was evaluated using the criteria contained in Chapter B of the *EPA NSR Workshop Manual* (EPA, 1990a). The third step in the top-down BACT process is the ranking of the remaining technically feasible control technologies from high to low in order of control effectiveness.

An assessment of energy, environmental, and economic impacts is then performed. The economic analysis employed the procedures found in the Office of Air Quality Planning and Standards (OAQPS) *Alternate Control Techniques Document—NO_x Emissions from Stationary Reciprocating Internal Combustion Engines* (EPA, 1993).

The fifth and final step is the selection of a BACT emission limitation corresponding to the most stringent, technically feasible control technology that was not eliminated based on adverse energy, environmental, or economic grounds.

As indicated in Section 3.3, Table 3-2, projected annual emission rates of NO_x, CO, and VOCs for the HFCAWTF IC engine/generator modification project exceed the PSD significance rates and, therefore, are subject to BACT analysis. Control technology analyses using the five-step top-down BACT method are provided in Sections 5.3 and 5.4 for products of incomplete combustion (CO and VOCs) and acid gases (NO_x), respectively.

5.2 FEDERAL AND FLORIDA EMISSION STANDARDS

Pursuant to Rule 62-212.400(5)(b), F.A.C., BACT emission limitations must be no less stringent than any applicable NSPS (40 CFR 60), NESHAP (40 CFR 61 and 63), and FDEP emission standards (Chapter 62-296, Stationary Sources—Emission Standards, F.A.C.).

There are no emission standards applicable to stationary IC engines on the federal level. FDEP emission standards for stationary sources are contained in Chapters 62-296, Stationary Sources—Emission Standards, F.A.C. Chapter 62-296, F.A.C., contains general emission standards for sources emitting PM (Section 62-296.320, F.A.C.) which are applicable to the HFCAWTF modification project. Visible emissions are limited to a maximum of 20-percent opacity pursuant to Rule 62-296.320(4)(b), F.A.C. Sections 62-296.401 through 62-296.417, F.A.C., specify emission standards for 17 categories of sources; none of these categories are applicable to stationary IC engines. RACT emission standards applicable to sources located in nonattainment areas are contained in Sections 62-296.500 (for ozone nonattainment areas) and 62-296.700, F.A.C. (for PM nonattainment areas). None of these RACT emission standards are applicable to IC engines. The VOC RACT emission standards of 62-296.500 through 62-296.516, F.A.C., and the NO_x RACT emission standards of 62-296.570 are also not applicable to modified VOC- and NO_x-emitting sources which are subject PSD review under 62-212.400, F.A.C. Finally, Section 62-204.800, F.A.C., adopts federal NSPS and NESHAP, respectively, by

reference. As noted previously, there are no NSPS or NESHAP requirements applicable to stationary IC engines.

Table 5-1 summarizes the applicable state emission standard. As previously noted, there are no applicable federal emission standards.

5.3 BACT ANALYSIS FOR CO AND VOC

CO and VOC emissions result from the incomplete combustion of carbon and organic compounds. Factors affecting CO and VOC emissions include firing temperatures, residence time in the combustion zone, and combustion chamber mixing characteristics. Decreased combustion zone temperature due to combustion design for NO_x control will also result in an increase in CO and VOC emissions. An increase in combustion zone residence time and improved mixing of fuel and combustion air will increase oxidation rates and cause a decrease in CO and VOC emission rates. Generally, emissions of NO_x and CO/VOC are inversely related (i.e., decreasing NO_x emissions will result in an increase in CO/VOC emissions).

5.3.1 POTENTIAL CONTROL TECHNOLOGIES

There are three available technologies for controlling CO and VOC from IC engines: combustion process design, nonselective catalytic reduction (NSCR), and oxidation catalysts.

Combustion Process Design

Combustion process controls involve combustion chamber designs and operation practices that improve the oxidation process and minimize incomplete combustion. CO and VOCs are intermediate combustion products that are formed due to the incomplete oxidation of fuel carbon and hydrocarbons to carbon dioxide (CO_2) and water. Combustion designs that promote complete combustion include those that provide adequate combustion residence time, high combustion temperatures, and sufficient quantities of oxygen. The natural gas-fired IC engines planned for the HFCAWTF employ four-cycle, spark ignition, turbocharged, lean burn, low-emission combustion technology. Due to the

Table 5-1. Florida Emission Limitations

Pollutant	Emission Limitation
General Visible Emissions Standard Rule 62-296.320(4)(b)1., F.A.C.	
• Visible emissions	<20-percent opacity (averaged over a 6-minute period)

Source: Chapter 62-296, F.A.C.

large amount of excess air that occurs for this engine combustion technology (i.e., approximately twice the stoichiometric air-to-fuel [A/F] ratio), CO and VOC emissions are relatively low.

Nonselective Catalytic Reduction

NSCR is a control technology primarily used to reduce NO_x emissions. Also referred to as a three-way catalyst because it simultaneously reduces NO_x, CO, and VOC emissions, this control technology is essentially the same as the catalytic reduction systems used on automobiles.

In contrast to selective catalytic reduction (SCR) technology which uses ammonia as a reducing agent, the NSCR process achieves catalytic reduction of NO_x without the addition of a reductant that is specific for NO_x. The NSCR process uses a platinum/rhodium catalyst to reduce NO_x to nitrogen and water vapor under fuel-rich (less than 3 percent oxygen) conditions. Under these exhaust stream conditions, NSCR will use CO to reduce NO_x to nitrogen and CO as shown by the following reaction:

$$2CO + 2NO_x \rightarrow 2CO_2 + N_2$$

The NO_x control efficiency of NSCR technology increases with decreasing exhaust stream oxygen content. Although primarily used for NO_x abatement, NSCR will reduce CO and VOC emissions by approximately 80 and 50 percent, respectively. NSCR technology, which is effective within a temperature range of 700 to 1,500 degrees Fahrenheit (°F), has been applied to automobiles and rich burn stationary reciprocating engines.

Oxidation Catalysts

Noble metal (commonly platinum or palladium) oxidation catalysts are used to promote oxidation of CO and VOC to CO_2 and water at temperatures lower than would be necessary for oxidation without a catalyst. The operating temperature range for oxidation catalysts is between 650 and 1,150°F.

Efficiency of CO and VOC oxidation varies with inlet temperature. Control efficiency will increase with increasing temperature for both CO and VOC up to a temperature of approximately 1,100°F; further temperature increases will have little effect on control efficiency. Significant CO oxidation will occur at any temperature above roughly 500°F; higher temperatures on the order of 900°F are needed to oxidize VOC. Inlet temperature must also be maintained below 1,350 to 1,400°F to prevent thermal aging of the catalyst, which will reduce catalyst activity and pollutant removal efficiencies. Removal efficiency will also vary with gas residence time which is a function of catalyst bed depth. Increasing bed depth will increase removal efficiencies but will also cause an increase in pressure drop across the catalyst bed. Oxidation catalyst control systems typically achieve 80 to 90 percent oxidation of CO. VOC removal efficiency will vary with the species of hydrocarbon. In general, unsaturated hydrocarbons such as ethylene are more reactive with oxidation catalysts than saturated species such as ethane. A typical VOC control efficiency using oxidation catalyst is 50 percent.

Oxidation catalysts are susceptible to deactivation due to impurities present in the exhaust gas stream. Arsenic, iron, sodium, phosphorous, and silica will all act as catalyst poisons, causing a reduction in catalyst activity and pollutant removal efficiencies.

Oxidation catalysts are nonselective and will oxidize other compounds in addition to CO and VOC. The nonselectivity of oxidation catalysts is important in assessing applicability to exhaust streams containing sulfur compounds. Sulfur compounds that have been oxidized to SO_2 in the combustion process will be further oxidized by the catalyst to sulfur trioxide (SO_3). SO_3 will, in turn, combine with moisture in the gas stream to form sulfuric acid mist. Due to the oxidation of sulfur compounds and excessive formation of sulfuric acid mist emissions, oxidation catalysts are not considered to be technically feasible for combustion devices that are fired with fuels containing appreciable amounts of sulfur.

Technical Feasibility

Both IC engine combustion design and oxidation catalyst control systems are considered to be technically feasible for the proposed HFCAWTF IC engine/generator sets. NSCR control technology is only applicable to exhaust streams having low oxygen levels (i.e.,

less than 3 percent oxygen). Accordingly, NSCR is not a technically feasible control technology for lean burn IC engines, which typically have exhaust oxygen levels of 10 percent or greater. Information regarding energy, environmental, and economic impacts and proposed BACT limits for CO and VOC are provided in the following sections.

5.3.2 ENERGY AND ENVIRONMENTAL IMPACTS

There are no significant adverse energy or environmental impacts associated with the use of good combustor designs and operating practices to minimize CO and VOC emissions.

Because CO and VOC emission rates from IC engines are relatively low, further reductions through the use of oxidation catalysts will result in minimal air quality improvements (e.g., well below the defined PSD significant impact levels for CO). The location of the HFCAWTF (Hillsborough County, Florida) is classified attainment for all criteria pollutants. From an air quality perspective, the only potential benefit of CO oxidation catalyst is to prevent the possible formation of a localized area with elevated concentrations of CO. The catalyst does not remove CO but rather simply accelerates the natural atmospheric oxidation of CO to CO_2. Dispersion modeling of CO emissions from the proposed HFCAWTF IC engine/generator sets indicate maximum CO impacts, without oxidation catalyst, will be insignificant.

The application of oxidation catalyst technology to an IC engine will result in an increase in back pressure on the engine due to a pressure drop across the catalyst bed. The increased backpressure will, in turn, constrain engine output power, thereby decreasing the engine's fuel efficiency. An estimated pressure drop across the catalyst bed of approximately 1.5 inch of water will result in an increase in brake-specific fuel consumption (BSFC) of 0.2 percent. This backpressure is estimated to decrease engine power output by 0.75 percent.

5.3.3 ECONOMIC IMPACTS

The proposed Waukesha 16V-AT27GL IC engine/generator sets will employ lean burn, low-emissions combustion technology. CO and VOC emission rates will not exceed 1.66 and 0.55 g/hp-hr, respectively. For CO and VOC, these emission rates approximately rep-

resent the "top" cases based on the EPA RBLC data for natural gas-fired IC engines. The most stringent CO and VOC limits in the RBLC, excluding one California LAER determination and engines equipped with NSCR, are 1.6 and 0.5 g/hp-hr, respectively. As noted previously, NSCR technology is not technically feasible for lean burn IC engines. A review of the RBLC data shows there are no installations of oxidation catalyst control systems for natural gas-fired IC engines. Accordingly, no detailed economic analysis of oxidation catalyst controls for the HFCAWTF IC engine/generator set modification project was conducted.

5.3.4 PROPOSED BACT EMISSION LIMITATIONS

BACT CO and VOC limits obtained from the RBLC database for natural gas-fired IC engines are provided in Tables 5-3 and 5-4, respectively. The most stringent CO limit in the RBLC, excluding one California LAER determination and two engines equipped with NSCR, is 1.6 g/hp-hr. The most stringent VOC limit in the RBLC, excluding the California LAER determination and NSCR installations, is 0.5 g/hp-hr.

Because CO and VOC emission rates from IC engines are relatively low, further reductions through the use of oxidation catalysts will result in only minor improvement in air quality (i.e., well below the defined PSD significant impact levels for CO).

The application of lean burn, low-emission combustion for the proposed HFCAWTF IC engine/generator sets results in a trade-off between NO_x and CO emission rates. Because ambient CO concentrations in the vicinity of the HFCAWTF would be expected to be well below ambient standards, the reduction in NO_x emissions is considered to have a greater environmental benefit and would more than compensate for the higher CO emission rates associated with low-emission combustion technology.

Use of lean burn, low-emission combustion design and good operating practices to minimize incomplete combustion are proposed as BACT for CO and VOC. Table 5-5 summarizes the CO and VOC BACT emission limits proposed for the new HFCAWTF IC engine/generator sets.

Table 5.3 RBLC CO Summary for Natural Gas Fired IC Engines

RBLCID	Facility Name	City	Permit Dates: Issuance	Permit Dates: Update	Process Description	Throughput Rate	Emission Limit	Control System Description	Control Efficiency	Basis
AZ-0007	MOJAVE PIPELINE OPERATING COMPANY	TOPOCK	06/12/1991	03/24/1995	ENGINES, INTERIM BUILD-OUT 3	13800 HP	441.81 T/YR	FUEL SPECIFICATION	0	BACT-PSD
AZ-0007	MOJAVE PIPELINE OPERATING COMPANY	TOPOCK	06/12/1991	03/24/1995	ENGINES, RECIPROCATING 5 FULL BUILD OUT	17500 HP	549.51 T/YR	FUEL SPECIFICATION	0	BACT-PSD
CA-0416	DE LA GUERRA POWER INC		11/12/1991	01/31/1992	ENGINE IC & GEN (1 OF 3)	380 HP	7.46 LB/D	NON SELECTIVE CATALYTIC CONVERTER	70	BACT-PSD
CA-0766	KAISER PERMANENTE MEDICAL CENTER	FRESNO	09/02/1997	03/16/1998	JOHN DEERE MODEL 6076AFN30 IC ENGINE	160 BHP	148 PPMV @ 15% O2	NATURAL GAS FUEL	0	LAER
CA-0788	VINTAGE PETROLEUM COMPANY	SANTA MARIA	02/04/1997	04/23/1998	IC ENGINES (13) RECIPROCATING PISTON TYPE	117 - 186 BHP	215 PPMV @ 15% O2	NSCR AND ENGINE FUEL AIR RATIO EMISSIONS CONTROL SYSTEM	0	LAER
CA-0791	CITY OF CLOVIS	CLOVIS	11/08/1996	03/16/1998	CATERPILLAR MODEL G3406TA NATURAL GAS IC ENGINE	0	2 G/B-HP-H	NSCR THREE WAY CATALYTIC CONVERTER, PCV, AND AN O2 CONTROLLER	0	LAER
CA-0792	TOYS R US	CLOVIS	11/27/1996	03/16/1998	NATURAL GAS FIRED EMERGENCY IC ENGINE	0	0.78 G/B-HP-H	GOOD COMBUSTION	0	LAER
CO-0022	SNYDER OIL CORP / ENTERPRISE STATION		11/13/1992	03/24/1995	ENGINES, RECIPROCATING (6)	2500 HP (EACH)	635.1 LBS/MILLION SCF	LEAN COMBUSTION & FUEL SPEC: FIRING RESIDUE QUALITY NAT. GAS	0	BACT-OTHER
CO-0028	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESV	04/01/1997	03/30/1999	COMPRESSOR ENGINE, GAS-FIRED, 2	0	5.4 LB/H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A NSCR CONVERTER	0	BACT-PSD
CO-0028	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESV	04/01/1997	03/30/1999	IC ENGINE, WAUKESHA L5790 GSI 3	1215 HP	5.4 LB/H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A NSCR CONVERTER	0	BACT-PSD
CO-0029	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07/31/1997	05/03/1999	COMPRESSOR ENGINE, GAS-FIRED, 2	0	5.4 LB/H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A NSCR CONVERTER	0	BACT-PSD
CO-0032	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07/31/1997	04/06/1999	COMPRESSOR ENGINE, GAS FIRED, TS4 1	738 HP	3.3 LB/H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A NSCR CONVERTER	50	BACT-PSD
CO-0032	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07/31/1997	04/06/1999	COMPRESSOR ENGINE, GAS-FIRED, TS4 2	738 HP	3.3 LB/H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A NSCR CONVERTER	0	BACT-PSD
CO-0032	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07/31/1997	04/06/1999	COMPRESSOR ENGINE, GAS FIRED, TS4 3	1215 HP	5.4 LB/H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A NSCR CONVERTER	0	BACT-PSD
CO-0033	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07/31/1997	04/01/1999	COMPRESSOR ENGINE, GAS-FIRED, TS5 1	421 HP	1.9 LB/H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A NSCR CONVERTER	0	BACT-PSD
CO-0033	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07/31/1997	04/01/1999	COMPRESSOR ENGINE, GAS FIRED, TS5 4	738 HP	3.3 LB/H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A NSCR CONVERTER	0	BACT-PSD
CO-0033	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07/31/1997	04/01/1999	COMPRESSOR ENGINE, GAS FIRED, TS5 3	1215 HP	5.4 LB/H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A NSCR CONVERTER	0	BACT-PSD
CO-0034	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07/31/1987	03/30/1999	COMPRESSOR ENGINE, GAS FIRED, 1	1478 HP	6.6 LB/H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A NSCR CONVERTER	0	BACT-PSD
CO-0034	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07/31/1987	03/30/1999	COMPRESSOR ENGINE, GAS-FIRED, 2	0	5.4 LB/H 2 EACH	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A NSCR CONVERTER	0	BACT-PSD
CO-0035	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07/31/1987	03/30/1999	COMPRESSOR ENGINE, GAS FIRED, TS7 5 1	421 HP	1.9 LB/H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A NSCR CONVERTER	0	BACT-PSD
CO-0035	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07/31/1997	03/30/1999	COMPRESSOR ENGINE, GAS-FIRED, TS7 4 1	1215 HP	5.4 LB/H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A NSCR CONVERTER	0	BACT-PSD
CO-0036	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07/31/1997	03/30/1999	COMPRESSOR ENGINES, GAS FIRED, 3	0	3.3 LB/H 3 EACH	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A NSCR CONVERTER	0	BACT-PSD
IA-0023	NORTHERN NATURAL GAS COMPANY		06/05/1990	06/29/1991	ENGINE, COMPRESSOR	4000 HP	2.5 G/B-HP-H	GOOD COMBUSTION PRACTICES	0	BACT-PSD
IA-0023	NORTHERN NATURAL GAS COMPANY		06/05/1990	06/29/1991	ENGINES, COMPRESSOR, 2	2000 HP EACH	2.5 G/B-HP-H	GOOD COMBUSTION PRACTICES	0	BACT-PSD
IL-0043	NATURAL GAS PIPELINE CO	GENESEO	03/01/1989	06/10/1993	ENGINE, MLV 10, 4 EA	6000 HP	5 G/B-HP-H	DESIGN & OPERATING PRACTICES	0	BACT-PSD
LA-0063	OXY NGL, INC	JOHNSON BAYOU	11/14/1989	01/31/1990	GENERATOR, EMERGENCY	1.4 MMBTU/H	0.56 LB/H		0	BACT-PSD
LA-0063	OXY NGL, INC	JOHNSON BAYOU	11/14/1989	01/31/1990	COMPRESSOR, AIR, DIESEL FIRED	0	2.6 LB/H		0	BACT-PSD
MA-0072	BERKSHIRE POWER DEVELOPMENT, INC	AGAWAM	09/22/1997	04/19/1999	ENGINES, CHILLER, NATURAL GAS FIRED, TWO	23.4 MMBTU/H	0.4 LB/H	DRY LOW NOX COMBUSTION TECHNOLOGY WITH SCR ADD ON NOX CONTROL	0	BACT-PSD
MI-0221	BLUE LAKE GAS STORAGE CO		05/07/1992	03/24/1995	ENGINES, RECIPROCATING, 2 CYCLE	6000 HP	0	INTERNAL COMBUSTION DESIGN	0	BACT-PSD
MI-0221	BLUE LAKE GAS STORAGE CO		05/07/1992	03/24/1995	ENGINES, RECIPROCATING, 4 CYCLE	1076 HP	0	CATALYTIC OXIDIZER	83	BACT-PSD
MO-0009	MARSHALL MUNICIPAL UTILITIES (BD. OF PUBLIC WORKS)	MARSHALL	04/06/1993	10/06/1997	ENGINE, I.C. (RECIPROCATING)	8500 HP	2 G/B-HP-H	GOOD COMBUSTION	0	BACT-PSD
MO-0019	MARSHALL MUNICIPAL UTILITIES (BOARD OF PUBLIC WORK	MARSHALL	04/06/1993	10/06/1997	NEW COOPER BESSEMER INTERNAL COMBUSTION ENGINE	6.3 MW	2 G/B-HP-H		0	BACT-PSD
MS-0021	FLORIDA GAS TRANSMISSION CO		06/14/1991	05/31/1992	ENGINE, 412 KVSR DRESSER	2400 HP	2.48 G/B-HP-H	LEAN COMBUSTION	0	BACT-PSD
ND-0010	WESTERN GAS RESOURCES INC		08/24/1987	08/04/1994	COMPRESSOR ENGINE	1100 BHP	25.3 LB/HR	GOOD COMBUSTION PRACTICES	0	BACT-PSD
NM-0019	MERIDIAN OIL GATHERING INC	BLANCO	10/11/1990	01/14/1994	COMPRESSOR, IC, NATURAL GAS FIRED	2650 HP, 8 EACH	1.6 G/B-HP-H	CLEAN BURN ENGINE DESIGN	5	BACT-PSD
NM-0021	WILLIAMS FIELD SERVICES CO - EL CEDRO COMPRESSOR	BLANCO	10/29/1993	03/02/1994	ENGINE, GAS FIRED, RECIPROCATING	1000 HP	7.5 G/B-HP-H	CLEAN LEAN BURN TECHNOLOGY	0	BACT-PSD
NM-0025	MERIDIAN OIL INC - FRANCIS MESA STA	FARMINGTON	08/15/1995	09/01/1995	COMPRESSOR ENGINES (8) & GLYCOL DEHYDRATOR	2650 HP (EACH)	1.6 G/B-HP-H	COMPRESSOR ENGINE, CLEAN BURN ENGINE	0	BACT-PSD
NM-0026	MERIDIAN OIL INC /VALVERDE GAS PROCESSING FAC	FARMINGTON	10/27/1995	02/27/1996	RECIPROCATING ENGINE, NATURAL GAS (4)	0	2.2 G/B-HP-H	CLEAN BURN ENGINE, MODEL # 3612 TA/SW66, MANUFACTURER: CATERPILLAR	0	BACT-PSD
NM-0030	WILLIAMS FIELD SERVICES, MIDDLE MESA CDP	ARCHULETA	12/03/1997	06/31/1997	NATURAL GAS COMPRESSOR STATION, 14 ENGINES	478 HP EACH	8 LB/HR EACH ENGINE	CLEAN LEAN BURN TECHNOLOGY	0	BACT-PSD
NM-0032	WILLIAMS FIELD SERVICES CO	CEDAR HILL	04/25/1998	01/20/1999	NATURAL GAS RECIPROCATING ENGINE	1478 HP	2.65 G/B-HP-H	LEAN BURN DESIGN	0	BACT-PSD
NM-0033	WILLIAMS FIELD SERVICES CO	BLANCO	04/06/1998	04/18/1999	ENGINE, IC RECIPROCATING, NAT. GAS	1374 HP	2.65 G/B-HP-H	CLEAN BURN COMBUSTION TECHNOLOGY	0	BACT-PSD
NM-0035	WILLIAMS FIELD SERVICES CO	ARCHULETA	07/24/1998	02/10/1999	RECIPROCATING ENGINE, NAT. GAS	1375 HP	2.65 G/B-HP-H	CLEAN BURN COMBUSTION TECHNOLOGY	0	BACT-PSD
NM-0036	WILLIAMS FIELD SERVICES CO	ARCHULETA	08/10/1998	01/27/1999	RECIPROCATING ENGINES, NAT. GAS	21920 HP	2.65 G/B-HP-H	LEAN BURN ENGINE DESIGN	0	BACT-PSD
NY-0044	BROOKLYN NAVY YARD COGENERATION PARTNERS L.P.	NEW YORK CITY	06/08/1995	06/30/1995	GENERATOR, 3000 KW EMERGENCY	3000 KW	0.25 LB/MMBTU		0	LAER
NY-0046	SARANAC ENERGY COMPANY	PLATTSBURGH	07/31/1993	09/13/1994	GENERATOR, EMERGENCY (#2 DIESEL FUEL)	4.68 MMBTU/HR	1.76 LB/MMBTU	COMBUSTION CONTROL	0	BACT-OTHER
NY-0047	PASNY/HOLTSVILLE COMBINED CYCLE PLANT	HOLTSVILLE	09/01/1992	09/13/1994	GENERATOR, EMERGENCY, NATURAL GAS)	1.5 MMBTU/HR	6.5 LB/MMBTU	COMBUSTION CONTROL	0	BACT-OTHER
OH-0211	CGN TRANSMISSION	CANAL WINCHESTER	03/11/1992	03/23/1993	ENGINE, NATURAL GAS COMPRESSOR	3200 HP	2.6 G/B-HP-H	ENGINE TUNING (SEE NOTES)	0	BACT-PSD
OH-0211	CGN TRANSMISSION	CANAL WINCHESTER	03/11/1992	03/23/1993	ENGINES, NATURAL GAS COMPRESSOR (2)	4700 HP (EACH)	2.5 G/B-HP-H	ENGINE TUNING (SEE NOTES)	0	BACT-PSD
OH-0212	CGN TRANSMISSION	LEBANON	04/08/1992	03/23/1993	ENGINES, NATURAL GAS COMPRESSOR (2)	4200 HP (EACH)	2.8 G/B-HP-H	ENGINE TUNING (SEE NOTES)	0	BACT-PSD
OH-0213	CGN TRANSMISSION	GILMORE	05/28/1992	03/23/1993	ENGINE, NATURAL GAS COMPRESSOR	3200 HP	2.6 G/B-HP-H	ENGINE TUNING (SEE NOTES)	0	BACT-PSD
OH-0213	CGN TRANSMISSION	GILMORE	05/28/1992	03/23/1993	ENGINE, NATURAL GAS COMPRESSOR	4200 HP	2.3 G/B-HP-H	ENGINE TUNING (SEE NOTES)	0	BACT-PSD
OH-0220	NORTH STAR RECYCLING CO	TOLEDO	06/09/1993	08/15/1994	RECIPROCATING ENGINES (NATURAL GAS) (3)	1700 HP (EACH)	2.2 G/B-HP-H	3 WAY CATALYST	80	BACT-OTHER
OK-0024	NGPL		11/01/1990	12/07/1993	ENGINE	2400 HP	2.5 G/B-HP-H	LEAN BURN COMBUSTION	78	BACT-OTHER
OK-0024	NGPL		11/01/1990	12/07/1993	ENGINE	1600 HP	2.5 G/B-HP-H	LEAN BURN COMBUSTION	78	BACT-OTHER
OK-0026	SWIFT ENERGY		09/05/1991	12/07/1993	ENGINES, I.C.	1132 HP EACH	35.7 T/YR	CATALYTIC CONVERTER	67	OTHER
PA-0077	NATIONAL FUEL GAS SUPPLY	ALLEGANY TOWNSHIP	10/01/1990	03/24/1995	ENGINES, NAT GAS FIRED, RECIP (2)	1300 HP EACH	2.3 G/B-HP-H	CLEAN BURN TECHNOLOGY	0	OTHER
PA-0085	CNG TRANSMISSION CORPORATION	FINNEFROCK STATION	09/24/1991	03/24/1995	ENGINE, I.C., RECIP., GAS FIRED, 2 CYCLE	4700 HP	2.8 G/B-HP-H	CLEAN BURN TECHNOLOGY	0	BACT-PSD
PA-0087	CNG TRANSMISSION CORP	PITTSBURGH	03/13/1992	03/24/1995	ENGINES, RECIP I.C., 4, NAT. GAS	3200 HP	2.8 G/B-HP-H	LEAN BURN TECHNOLOGY	0	BACT-PSD
PA-0095	TEMPLE UNIVERSITY	PHILADELPHIA	10/02/1992	03/24/1995	ELECTRIC GENERATOR (NATURAL GAS)	1.5 MW	1.92 G/B-HP-H	LEAN BURN GAS ENGINE	0	BACT-OTHER
PA-0096	PHILADELPHIA SOUTHWEST WATER TREATMENT PLANT	PHILADELPHIA	10/15/1992	03/24/1995	ENGINES (2) (NATURAL GAS)	443 KW (EACH)	0	LEAN BURN ENGINE	0	OTHER
PA-0097	PHILADELPHIA NORTHEAST WATER TREATMENT PLANT	PHILADELPHIA	10/15/1992	03/24/1995	ENGINES (3) (NATURAL GAS)	443 KW (EACH)	0	LEAN BURN ENGINE	0	OTHER
RI-0006	THE WORCESTER CO	CENTERDALE	03/22/1989	05/16/1990	ENGINE, I.C., 3 EA	2000 BHP	1.6 G/B-HP-H	LEAN BURN	0	BACT-PSD
SC-0029	SC ELECTRIC AND GAS COMPANY - HAGOOD STATION	CHARLESTON	12/11/1989	03/24/1995	INTERNAL COMBUSTION TURBINE	110 MEGAWATTS	23 LBS/HR	GOOD COMBUSTION PRACTICES	0	BACT-PSD
UT-0038	KENT COGENERATION ASSOCIATES		10/22/1987	04/30/1990	ENGINE, GAS FIRED, 3 EA	16950 KW	155.59 T/YR	SEE NOTES	0	BACT-PSD
WV-0011	CNG TRANSMISSION CORPORATION		05/03/1993	03/02/1994	GENERATOR, AUXILARY	814 HP	1.6 G/B-HP-H		0	BACT-OTHER
WV-0011	CNG TRANSMISSION CORPORATION		05/03/1993	03/02/1994	ENGINE, NATURAL GAS COMPRESSOR	6060 HP	2.6 G/B-HP-H	LEAN BURN COMBUSTION	0	BACT-OTHER
WY-0020	SNYDER OIL CORPORATION-RIVERTON DOME GAS PLANT	THE WIND RIVER INDIAN	07/05/1994	10/18/1994	2 GAS FIRED GENERATOR ENGINES	385 HORSEPOWER	1.3 LBS/HR	GOOD COMBUSTION	0	BACT
WY-0020	SNYDER OIL CORPORATION-RIVERTON DOME GAS PLANT	THE WIND RIVER INDIAN	07/05/1994	10/18/1994	NATURAL GAS FIRED COMPRESSOR ENGINE	520 HORSEPOWER	1.7 LBS/HR	GOOD COMBUSTION	0	BACT
WY-0020	SNYDER OIL CORPORATION-RIVERTON DOME GAS PLANT	THE WIND RIVER INDIAN	07/05/1994	10/18/1994	1 GAS FIRED GENERATOR ENGINE	577 HORSEPOWER	1.9 LBS/HR	GOOD COMBUSTION	0	BACT
WY-0033	WESTERN GAS RESOURCES, INC. HILIGHT GAS PLANT	GILLETTE	03/31/1997	02/01/1999	COMPRESSOR ENGINES, NATURAL GAS FIRED, EACH	1500 HP	1 G/B-HP-H	CATALYTIC CONVERTER	0	BACT-PSD
WY-0040	CHEVRON USA - PAINTER CENTRAL STATION	8 MILES NE OF EVANSTON	04/19/1993	03/10/1999	ENGINES, COMPRESSOR, 2 EACH	2650 BHP EACH	1.8 G/B-HP-H	CLEAN BURN TECHNOLOGY	0	BACT-PSD
WY-0049	WESTERN GAS RESOURCES - HILIGHT GAS PLANT	GILLETTE	10/14/1998	04/08/1999	ENGINES, COMPRESSOR, 2 EA	1850 HP	2 G/B-HP-H	3-WAY CATALYST SYSTEM AND AIR FUEL RATIO CONTROLLER	0	BACT-PSD
WY-0051	UNION PACIFIC RESOURCES - PATRICK DRAW GAS PLANT	36 MILE N OF ROCK SPRINGS	05/18/1998	08/08/1999	ENGINE, COMPRESSOR, 9 EA	3250 HP	0.9 G/B-HP-H	ULTRA LOW NOX LEAN BURN TECHNOLOGY AND CATALYTIC CRACKING	0	BACT-PSD
WY-0051	UNION PACIFIC RESOURCES - PATRICK DRAW GAS PLANT	36 MILE N OF ROCK SPRINGS	05/18/1998	08/09/1999	COMPRESSOR ENGINES, 2 EA	1200 HP	2.8 G/B-HP-H	ULTRA LOW NOX LEAN BURN TECHNOLOGY	0	BACT-PSD
WY-0052	UNION PACIFIC RESOURCES - PATRICK DRAW GAS PLANT	36 M EAST OF ROCK SPRINGS	05/18/1998	08/17/1999	ENGINES, COMPRESSOR, 3 EA	3200 HP	0.5 G/B-HP-H	ULTRA LOW NOX LEAN BURN TECHNOLOGY, CATALYTIC CONVERTER	0	BACT-PSD
WY-0052	UNION PACIFIC RESOURCES - PATRICK DRAW GAS PLANT	36 M EAST OF ROCK SPRINGS	05/18/1998	08/17/1999	ENGINES, COMPRESSOR, 2 EA	1200 HP	2.6 G/B-HP-H	ULTRA LOW NOX LEAN BURN TECHNOLOGY	0	BACT-PSD

Minimum	0.50	G/B-HP-H
Maximum	16.00	G/B-HP-H
Average	2.67	G/B-HP-H
Count	11	

Table 5-4 RBLC VOC Summary for Natural Gas Fired IC Engines

RBLID	Facility Name	City	Permit Dates: Issuance	Permit Dates: Updated	Process Description	Throughput Rate		Emission Limit		Control System Description	Control Efficiency	Basis
CA-0416	DE LA GUERRA POWER INC		11/12/1991	01/31/1992	ENGINE IC & GEN (1 OF 3)	380	HP	7.68	LB/D	NON SELECTIVE CATALYTIC CONVERTER	70	BACT PSD
CA-0416	DE LA GUERRA POWER INC		11/12/1991	01/31/1992	ENGINE IC & GEN (1 OF 3)	380	HP	0	UNQUANTIFIED CRANKCA	VENT CRANKCASE EMISSIONS TO INTAKE MANIFOLD	100	BACT PSD
CA-0855	SOUTHERN CALIFORNIA GAS COMPANY	VISALIA	06/30/1995	09/28/1996	EMERGENCY IC ENGINE DRIVING A GENERATOR	132	HP	3		TWO WAY CATALYST	0	BACT-OTHER
CA-0754	MOBIL EXPLORATION & PRODUCING U.S. INC		07/02/1996	09/28/1997	LEAN BURN NATURAL GAS FIRED IC ENGINE	280	BHP	1.5	G/BHP-H	AIR/FUEL RATIO CONTROLLER AND CLEANBURN COMBUSTIONTECHNOLOGY WITH WEEKLY N	0	LAER
CA-0788	KAISER PERMANENTE MEDICAL CENTER	FRESNO	09/02/1997	03/16/1998	JOHN DEERE MODEL 6076AFM30 IC ENGINE	150	BHP	150	PPMV @ 15% O2	NATURAL GAS FUEL	0	LAER
CA-0791	CITY OF CLOVIS	CLOVIS	11/08/1996	03/16/1998	CATERPILLAR MODEL G3606TA NATURAL GAS IC ENGINE	0		0.268	G/BHP-H	THREE WAY CATALYTIC CONVERTER	0	LAER
CA-0828	G E N Y OPERATIONS COMPANY	BAKERSFIELD	11/03/1997	08/31/1998	IC ENGINE NAT GAS FIRED CATERPILLAR MODEL 333	165	BHP	2	G/BHP-H	POSITIVE CRANKCASE VENTILATION	0	BACT
CO-0022	SNYDER OIL CORP / ENTERPRISE STATION		11/13/1992	03/24/1995	ENGINES RECIPROCATING (8)	2500	HP (EACH)	141.3	LBS/MILLION SCF	LEAN COMBUSTION & FUEL SPEC FIRING RESIDUE QUALITY NAT GAS	0	BACT-OTHER
CO-0028	VASTAR RESOURCES, INC	SO UTE INDIAN TRIBE RESV	04/01/1997	03/30/1999	COMPRESSOR ENGINE GAS FIRED 2	0		0.03	LB/H	GOOD COMBUSTION PRACTICES	0	BACT PSD
CO-0028	VASTAR RESOURCES, INC	SO UTE INDIAN TRIBE RESV	04/01/1997	03/30/1999	IC ENGINE WAUKESHA L5790 GSI 2	1215	HP	0.03	LB/H	GOOD COMBUSTION TECHNIQUES	0	BACT PSD
CO-0028	VASTAR RESOURCES, INC	SO UTE INDIAN TRIBE RESERV	07/31/1997	03/03/1998	COMPRESSOR ENGINE GAS FIRED 2	0		0.03	LB/H	GOOD COMBUSTION TECHNIQUES	0	BACT PSD
CO-0032	VASTAR RESOURCES, INC	SO UTE INDIAN TRIBE RESERV	07/31/1997	04/06/1999	COMPRESSOR ENGINE GAS FIRED TSA 1	738	HP	0.01	LB/H	GOOD COMBUSTION TECHNIQUES	50	BACT PSD
CO-0032	VASTAR RESOURCES, INC	SO UTE INDIAN TRIBE RESERV	07/31/1997	04/06/1999	COMPRESSOR ENGINE GAS FIRED TSA 2	738	HP	0.01	LB/H	GOOD COMBUSTION TECHNIQUES	0	BACT PSD
CO-0032	VASTAR RESOURCES, INC	SO UTE INDIAN TRIBE RESERV	07/31/1997	04/06/1999	COMPRESSOR ENGINE GAS FIRED TSA 3	1215	HP	0.01	LB/H	GOOD COMBUSTION	0	BACT PSD
CO-0033	VASTAR RESOURCES, INC	SO UTE INDIAN TRIBE RESERV	07/31/1997	04/01/1999	COMPRESSOR ENGINE GAS FIRED TSS 1	421	HP	0.01	LB/H	GOOD COMBUSTION TECHNIQUES	0	BACT PSD
CO-0033	VASTAR RESOURCES, INC	SO UTE INDIAN TRIBE RESERV	07/31/1997	04/01/1999	COMPRESSOR ENGINE GAS FIRED TSS 3	1215	HP	0.01	LB/H	GOOD COMBUSTION TECHNIQUES	0	BACT PSD
CO-0033	VASTAR RESOURCES, INC	SO UTE INDIAN TRIBE RESERV	07/31/1997	04/01/1999	COMPRESSOR ENGINE GAS FIRED TSS 4	738	HP	0.01	LB/H	GOOD COMBUSTION TECHNIQUES	0	BACT PSD
CO-0034	VASTAR RESOURCES, INC	SO UTE INDIAN TRIBE RESERV	07/31/1997	03/30/1999	COMPRESSOR ENGINE GAS FIRED 1	1478	HP	0.02	LB/H	GOOD COMBUSTION TECHNIQUES	0	BACT PSD
CO-0034	VASTAR RESOURCES, INC	SO UTE INDIAN TRIBE RESERV	07/31/1997	03/30/1999	COMPRESSOR ENGINE GAS FIRED 2	0		0.01	LB/H 2 EACH	GOOD COMBUSTION TECHNIQUES	0	BACT PSD
CO-0035	VASTAR RESOURCES, INC	SO UTE INDIAN TRIBE RESERV	07/31/1997	03/30/1999	COMPRESSOR ENGINE GAS FIRED TST S 1	421	HP	0.01	LB/H	GOOD COMBUSTION TECHNIQUES	0	BACT PSD
CO-0035	VASTAR RESOURCES, INC	SO UTE INDIAN TRIBE RESERV	07/31/1997	03/30/1999	COMPRESSOR ENGINE GAS FIRED TST 4 1	1215	HP	0.01	LB/H	3500 COMBUSTION TECHNIQUES	0	BACT PSD
CO-0036	VASTAR RESOURCES, INC	SO UTE INDIAN TRIVE RESERV	07/31/1997	03/30/1999	COMPRESSOR ENGINES GAS FIRED 7	0		0.02	LB/H 3 EACH	3300 COMBUSTION TECHNIQUES	0	BACT PSD
IA-0023	NORTHERN NATURAL GAS COMPANY		08/05/1990	06/29/1991	ENGINE COMPRESSOR	4000	HP	3.83	G/BHP-H	3300 COMBUSTION PRACTICES	0	BACT PSD
IA-0023	NORTHERN NATURAL GAS COMPANY		08/05/1990	06/29/1991	ENGINES COMPRESSOR 2	2000	HP EACH	0.65	G/BHP-H	GOOD COMBUSTION PRACTICES	0	BACT PSD
LA-0082	TEXACO INC - ONSHORE DIVISION	PARADIS	09/23/1992	08/08/1994	COMPRESSORS RECIPROCATING (3)	1842	HP EACH	2		LEAN BURN ENGINE	0	BACT
MA-0022	BERKSHIRE POWER DEVELOPMENT, INC	AGAWAM	09/22/1997	04/18/1998	ENGINES CHILLER NATURAL GAS FIRED TWO	23.4	MMBTU/H	0.3	LB/MMBTU	DRY LOW NOX COMBUSTION TECHNOLOGY WITH SCR ADD-ON NOX CONTROL	0	BACT PSD
MI-0221	BLUE LAKE GAS STORAGE CO		05/07/1992	03/24/1995	ENGINES RECIPROCATING 2 CYCLE	6000	HP	2		INTERNAL COMBUSTION DESIGN	0	BACT PSD
MI-0221	BLUE LAKE GAS STORAGE CO		05/07/1992	03/24/1995	ENGINES RECIPROCATING 4 CYCLE	1078	HP	2		CATALYTIC OXIDIZER	90	BACT PSD
MO-0009	MARSHALL MUNICIPAL UTILITIES (BD. OF PUBLIC WORKS)	MARSHALL	04/06/1993	10/06/1997	ENGINE I.C. (RECIPROCATING)	8500	HP	0.7	G/BHP-H	GOOD COMBUSTION	0	BACT PSD
MO-0018	MARSHALL MUNICIPAL UTILITIES (BOARD OF PUBLIC WORKS)	MARSHALL	04/06/1993	10/06/1997	NEW COOPER BESSEMER INTERNAL COMBUSTION ENGINE	4.3	MW	0.7	G/BHP-H		0	BACT PSD
MS-0027	FLORIDA GAS TRANSMISSION CO		05/14/1991	06/11/1992	ENGINE 412 KVSR DRESSER	2400	HP	7.33	G/BHP-H	LEAN COMBUSTION	0	BACT PSD
NM-0021	WILLIAMS FIELD SERVICES CO - EL CEDRO COMPRESSOR	BLANCO	10/29/1993	03/02/1994	ENGINE GAS FIRED RECIPROCATING	1000	HP	1	G/BHP-H	CLEAN LEAN BURN TECHNOLOGY	0	BACT PSD
NM-0025	MERIDIAN OIL INC - FRANCIS MESA STA	FARMINGTON	08/15/1995	08/01/1996	COMPRESSOR ENGINES (6) & GLYCOL DEHYDRATOR	2650	HP EACH	8.6	G/BHP-H	COMPRESSOR STATION CLEAN BURN ENGINES	0	BACT PSD
NM-0028	MERIDIAN OIL INC /VALVERDE GAS PROCESSING FAC	FARMINGTON	10/27/1995	02/27/1996	RECIPROCATING ENGINE NATURAL GAS (4)	0		2.6	G/BHP-H	CLEAN BURN ENGINE MODEL # J612 TA SW66 MANUFACTURER CATERPILLAR	0	BACT PSD
NM-0030	WILLIAMS FIELD SERVICES - MIDDLE MESA CDP	ARCHULETA	12/03/1997	05/31/1997	NATURAL GAS COMPRESSOR STATION 14 ENGINES	1476	HP EACH	1	LB/HR EACH ENGINE	CLEAN/LEAN BURN TECHNOLOGY	0	BACT PSD
NM-0032	WILLIAMS FIELD SERVICES CO	CEDAR HILL	04/25/1995	01/20/1999	NATURAL GAS RECIPROCATING ENGINE	1478	HP	1	G/BHP-H	LEAN BURN DESIGN	0	BACT PSD
NM-0033	WILLIAMS FIELD SERVICES CO	BLANCO	04/25/1995	04/19/1999	ENGINE IC RECIPROCATING NAT GAS	1374	HP	1	G/BHP-H	CLEAN BURN COMBUSTION TECHNOLOGY	0	BACT PSD
NM-0035	WILLIAMS FIELD SERVICES CO	ARCHULETA	07/24/1998	07/19/1999	RECIPROCATING ENGINE NAT GAS	1375	HP	1	G/BHP-H	CLEAN BURN COMBUSTION TECHNOLOGY	0	BACT PSD
NM-0036	WILLIAMS FIELD SERVICES CO	ARCHULETA	06/10/1998	01/27/1999	RECIPROCATING ENGINES NAT GAS	21870	HP	2.95	G/BHP-H	LEAN BURN ENGINE DESIGN	0	BACT PSD
OH-0211	CGN TRANSMISSION	CANAL WINCHESTER	03/11/1992	03/23/1993	ENGINE NATURAL GAS COMPRESSOR	3200	HP	2.6	G/BHP-H	ENGINE TUNING (SEE NOTES)	0	BACT PSD
OH-0211	CGN TRANSMISSION	CANAL WINCHESTER	03/11/1992	03/23/1993	ENGINES NATURAL GAS COMPRESSOR (2)	4200	HP (EACH)	3.9	G/BHP-H	ENGINE TUNING ISEE NOTES	0	BACT PSD
OH-0212	CGN TRANSMISSION	LEBANON	04/08/1992	03/23/1993	ENGINES NATURAL GAS COMPRESSOR (2)	4200	HP (EACH)	0.89	G/BHP-H	ENGINE TUNING (SEE NOTES)	0	BACT PSD
OH-0213	CGN TRANSMISSION	GILMORE	05/28/1992	03/23/1993	ENGINE NATURAL GAS COMPRESSOR	3200	HP	0.8	G/BHP-H	ENGINE TUNING (SEE NOTES)	0	BACT PSD
OH-0213	CGN TRANSMISSION	GILMORE	05/28/1992	03/23/1993	ENGINE NATURAL GAS COMPRESSOR	4200	HP	0.9	G/BHP-H	ENGINE TUNING (SEE NOTES)	0	BACT PSD
OH-0220	NORTH STAR RECYCLING CO	TOLEDO	06/09/1993	06/19/1994	RECIPROCATING ENGINES (NATURAL GAS) (3)	1100	HP EACH	0.4	G/BHP-H	3 WAY CATALYST	80	BACT-OTHER
OH-0224	NGPL		11/01/1990	12/07/1993	ENGINE	2400	HP	1	G/BHP-H	LEAN BURN COMBUSTION	65	BACT-OTHER
OH-0224	NGPL		11/01/1990	12/07/1993	ENGINE	1400	HP	1	G/BHP-H	LEAN BURN COMBUSTION	65	BACT-OTHER
OH-0226	SWIFT ENERGY		09/05/1991	12/07/1993	ENGINES I.C.	1132	HP EACH	1.1	T/YR	CATALYTIC CONVERTER	70	OTHER
PA-0077	NATIONAL FUEL GAS SUPPLY	ALLEGANY TOWNSHIP	10/01/1990	03/24/1995	ENGINES NAT GAS FIRED RECIP (2)	1200	HP EACH	0.75	G/BHP-H	CLEAN BURN TECHNOLOGY	0	OTHER
PA-0083	CNG TRANSMISSION CORPORATION	FINNEYROCK STATION	06/24/1991	03/24/1995	ENGINE, I.C., RECIP., GAS FIRED 2 CYCLE	4200	HP	0.8	G/BHP-H	CLEAN BURN TECHNOLOGY	0	BACT-OTHER
PA-0087	CNG TRANSMISSION CORP	PITTSBURGH	03/13/1992	03/24/1995	ENGINES RECIP I.C. 4 NAT GAS	3200	HP	0.8	G/BHP-H	LEAN BURN TECHNOLOGY	0	BACT-OTHER
PA-0092	TEMPLE UNIVERSITY	PHILADELPHIA	10/02/1992	03/24/1995	ELECTRIC GENERATOR (NATURAL GAS)	1.8	MW	31	LBS/HR	LEAN BURN GAS ENGINE	0	BACT-OTHER
PA-0096	PHILADELPHIA SOUTHWEST WATER TREATMENT PLANT	PHILADELPHIA	10/15/1992	03/24/1995	ENGINES (2) (NATURAL GAS)	443	HP (EACH)	0		LEAN BURN ENGINE	0	OTHER
PA-0097	PHILADELPHIA NORTHEAST WATER TREATMENT PLANT	PHILADELPHIA	10/15/1992	03/24/1995	ENGINES (3) (NATURAL GAS)	443	HP (EACH)	0		LEAN BURN ENGINE	0	OTHER
PA-0146	CNG TRANSMISSION CORPORATION-LEIDY	RENOVO	02/28/1994	10/06/1996	NATURAL GAS FIRED ENGINE	3400	HP	0.93	G/BHP-H		0	BACT
PA-0146	CNG TRANSMISSION CORPORATION-LEIDY	RENOVO	02/28/1994	10/08/1998	NATURAL GAS FIRED ENGINE	1000	HP	1	G/BHP-H		0	BACT
PA-0146	CNG TRANSMISSION CORPORATION-LEIDY	RENOVO	02/28/1994	10/06/1996	NATURAL GAS FIRED ENGINE	2000	HP	1.65	G/BHP-H		0	BACT
PI-0006	THE WORCESTER CO	CENTERDALE	08/27/1998	05/18/1999	ENGINE I.C. 3 EA	2000	BHP	0.6	G/BHP-H	LEAN BURN	0	BACT PSD
SC-0028	SC ELECTRIC AND GAS COMPANY - HAGOOD STATION	CHARLESTON	12/11/1989	03/24/1995	INTERNAL COMBUSTION TURBINE	110	MEGAWATTS	10	LBS/HR	GOOD COMBUSTION PRACTICES	0	BACT PSD
UT-0028	LEHI COGENERATION ASSOCIATES		10/22/1987	04/30/1990	ENGINE GAS FIRED 3EA	18950	KW	8.03	T/YR	SEE NOTES	0	BACT PSD
WY-0011	CNG TRANSMISSION CORPORATION		05/03/1993	03/07/1994	GENERATOR AUXILIARY	814	HP	0.74	G/BHP-H		0	BACT-OTHER
WY-0011	CNG TRANSMISSION CORPORATION		05/03/1993	03/02/1994	ENGINE NATURAL GAS COMPRESSOR	6060	HP	0.82	G/BHP-H	LEAN BURN COMBUSTION	0	BACT-OTHER
WY-0020	SNYDER OIL CORPORATION-RIVERTON DOME GAS PLANT	THE WIND RIVER INDIAN	03/05/1994	10/18/1994	2 GAS FIRED GENERATOR ENGINES	385	HORSEPOWER	0.6	LBS/HR	3000 COMBUSTION	0	BACT
WY-0020	SNYDER OIL CORPORATION-RIVERTON DOME GAS PLANT	THE WIND RIVER INDIAN	07/05/1994	10/18/1994	NATURAL GAS-FIRED COMPRESSOR ENGINE	520	HORSEPOWER	0.2	LBS/HR	3000 COMBUSTION	0	BACT
WY-0020	SNYDER OIL CORPORATION-RIVERTON DOME GAS PLANT	THE WIND RIVER INDIAN	07/05/1994	10/18/1994	1 GAS FIRED GENERATOR ENGINE	537	HORSEPOWER	0.6	LBS/HR	3000 COMBUSTION	0	BACT
WY-0040	CHEVRON USA - PAINTER CENTRAL STATION	8 MILES NE OF EVANSTON	04/18/1993	03/10/1999	ENGINES COMPRESSOR 2 EACH	2650	BHP EACH	0.6	G/BHP-H	CLEAN BURN TECHNOLOGY	0	BACT PSD
WY-0048	WESTERN GAS RESOURCES - HILIGHT GAS PLANT	GILLETTE	10/14/1998	08/08/1999	ENGINES COMPRESSOR 2 EA	1650	HP	1	G/BHP-H	3 - WAY CATALYST SYSTEM AND AIR/FUEL RATIO CONTROLLER	0	BACT PSD
WY-0051	UNION PACIFIC RESOURCES - PATRICK DRAW GAS PLANT	36 MILE N OF ROCK SPRINGS	05/18/1998	08/08/1998	ENGINE COMPRESSOR 8 EA	3200	HP	0.3	G/BHP-H	ULTRA LOW NOX LEAN BURN TECHNOLOGY AND CATALYTIC CONVERTER	0	BACT PSD
WY-0051	UNION PACIFIC RESOURCES - PATRICK DRAW GAS PLANT	38 MILE N OF ROCK SPRINGS	05/18/1998	08/08/1999	COMPRESSOR ENGINES 2 EA	200	HP	0.5	G/BHP-H	ULTRA LOW NOX LEAN BURN TECHNOLOGY	0	BACT PSD
WY-0052	UNION PACIFIC RESOURCES - PATRICK DRAW GAS PLANT	36 M EAST OF ROCK SPRINGS	05/18/1998	08/12/1999	ENGINES COMPRESSOR 8 EA	3200	HP	0.3	G/BHP-H	ULTRA LOW NOX LEAN BURN TECHNOLOGY CATALYTIC CONVERTER	0	BACT PSD
WY-0052	UNION PACIFIC RESOURCES - PATRICK DRAW GAS PLANT	36 M EAST OF ROCK SPRINGS	05/18/1998	06/17/1999	ENGINES COMPRESSOR 2 EA	1750	HP	0.5	G/BHP-H	ULTRA LOW NOX LEAN BURN TECHNOLOGY	0	BACT PSD

Minimum	0.2	G/BHP-H
Maximum	8.50	G/BHP-H
Average	1.25	G/BHP-H
Count	71	

5.4 BACT ANALYSIS FOR NO_X

NO_x emissions from combustion sources consist of two components: oxidation of combustion air atmospheric nitrogen (thermal NO_x and prompt NO_x) and conversion of chemically bound fuel nitrogen (fuel NO_x). Essentially all IC engine NO_x emissions originate as nitric oxide (NO). NO generated by the IC engine combustion process is subsequently further oxidized in the engine exhaust system or in the atmosphere to the more stable NO_2 molecule.

Thermal NO_x results from the oxidation of atmospheric nitrogen under high temperature combustion conditions. The amount of thermal NO_x formed is primarily a function of combustion temperature and residence time, A/F ratio, and, to a lesser extent, combustion pressure. Thermal NO_x increases exponentially with increases in temperature and linearly with increases in residence time as described by the Zeldovich mechanism. Prompt NO_x is formed near the combustion flame front from the oxidation of intermediate combustion products such as hydrogen cyanide (HCN) and nitrogen (N). Prompt NO_x comprises a small portion of total NO_x in conventional near-stoichiometric IC engines but increases under fuel-lean conditions. Prompt NO_x, therefore, may be an important consideration with respect to IC engines that use lean fuel mixtures. Fuel NO_x arises from the oxidation of nonelemental nitrogen contained in the fuel. The conversion of fuel-bound nitrogen (FBN) to NO_x depends on the bound nitrogen content of the fuel. In contrast to thermal NO_x, fuel NO_x formation does not vary appreciably with combustion variables such as temperature or residence time. Presently, there are no combustion processes or fuel treatment technologies available to control fuel NO_x emissions. NO_x emissions from combustion sources fired with fuel oil are higher than those fired with natural gas due to higher combustion flame temperatures and FBN contents. Natural gas may contain molecular nitrogen (N_2); however, the N_2 found in natural gas does not contribute significantly to fuel NO_x formation. Typically, natural gas contains a negligible amount of FBN.

Table 5-5. Proposed CO and VOC BACT Emission Limits

Emission Source	lb/hr	g/hp-hr
Waukesha 16V-AT27GL IC Engine (per engine)		
CO	14.9	1.66
VOC	4.9	0.55

Sources: ECT, 2000.
Waukesha, 1999.

5.4.1 POTENTIAL CONTROL TECHNOLOGIES

Available technologies for controlling NO_x emissions from IC engines include combustion process modifications and postcombustion exhaust gas treatment systems. A listing of available technologies for each of these categories follows:

Combustion Process Modifications:

- A/F ratio adjustments
- Ignition timing retard
- Low-emission combustion

Postcombustion Exhaust Gas Treatment Systems:

- Selective noncatalytic reduction (SNCR).
- NSCR.
- SCR.

A description of each of the listed control technologies is provided in the following sections.

A/F Ratio Adjustments

Maximum NO_x formation in IC engines occurs at A/F ratios that are slightly fuel lean from stoichiometric conditions. For natural gas-fired IC engines, the mass stoichiometric A/F is approximately 16:1. For rich burn IC engines, which operate at substoichiometric A/F ratios, decreasing the A/F ratio further will inhibit NO_x formation due to reduced oxygen availability and lower combustion temperatures. However, incomplete combustion under these fuel-rich combustion conditions will also increase CO and VOC emission rates.

For lean burn engines, increasing the A/F ratio decreases NO_x formation. The increase in air content increases the heat capacity of the combustion gas mixture thereby lowering peak combustion temperatures. An increase in combustion air may require the addition of a turbocharger to a naturally aspirated engine or the modification/replacement of an existing turbocharger for turbocharged engines. For both rich and lean burn engines, an

automatic A/F ratio controller may be needed to maintain the desired A/F ratio under varying operating conditions.

Adjustments in A/F ratios will adversely affect engine fuel efficiency and decrease the engine's ability to response to load changes.

Ignition Timing Retard

For both rich and lean burn engines, adjusting the ignition timing in the power cycle affects the operating pressures and temperatures in the combustion chamber. Advancing the timing so that ignition occurs earlier in the power cycle results in peak combustion when the piston is near the top of the cylinder, when the combustion chamber volume is at a minimum. This timing adjustment results in maximum combustion pressures and temperatures and has the potential to increase NO_x emissions. Retarding the ignition timing causes the combustion process to occur later in the power stroke when the piston is in its downward motion and combustion chamber volume is increasing. Ignition timing retard reduces combustion operating pressures, temperatures, and residence time and has the potential to reduce NO_x formation. An electronic ignition and control system is typically required if ignition timing retard is employed to maintain proper engine performance and achieve the desired NO_x reductions.

Ignition timing retard delays the combustion process causing higher exhaust temperatures, decreased engine speed stability, and a potential for engine misfire and decreased power output.

Low-Emission Combustion

Both rich and lean burn engine NO_x emission rates can be reduced by significantly increasing the A/F ratio. To achieve low-emissions, major engine components (i.e., intake manifolds, cylinder heads, pistons, ignition systems, etc.) are specifically designed to accommodate the increase in air flow. The low-emission engine design may also include equipment to provide additional combustion air (e.g., turbochargers). Specific engine designs and NO_x emission reductions vary for each engine manufacturer.

Selective Noncatalytic Reduction

The SNCR process involves the gas phase reaction, in the absence of a catalyst, of NO_x in the exhaust gas stream with injected ammonia or urea to yield nitrogen and water vapor.

Due to reaction temperature considerations, the SNCR injection system must be located at a point in the exhaust duct where temperatures are consistently between 1,600 and 2,000°F.

Nonselective Catalytic Reduction

The NSCR technology, which also reduces CO and VOC in addition to NO_x, was previously described in Section 5.3.1 of this report. In brief, the NSCR process uses a platinum/rhodium catalyst to reduce NO_x to nitrogen and water vapor under fuel-rich (less than 3 percent oxygen) conditions. NSCR technology has been applied to automobiles and rich burn stationary reciprocating engines.

Selective Catalytic Reduction

In contrast to SNCR, SCR reduces NO_x emissions by reacting ammonia with exhaust gas NO_x to yield nitrogen and water vapor in the presence of a catalyst. Ammonia is injected upstream of the catalyst bed where the following primary reactions take place:

$$4NH_3 + 4NO + O_2 \rightarrow 4N_2 + 6H_2O \quad (1)$$

$$4NH_3 + 2NO_2 + O_2 \rightarrow 3N_2 + 6H_2O \quad (2)$$

The catalyst serves to lower the activation energy of these reactions, which allows the NO_x conversions to take place at a lower temperature (i.e., in the range of 600 to 750°F). Typical SCR catalysts include metal oxides (titanium oxide and vanadium), noble metals (combinations of platinum and rhodium), zeolite (alumino-silicates), and ceramics.

Factors affecting SCR performance include space velocity (volume per hour of flue gas divided by the volume of the catalyst bed), ammonia/NO_x molar ratio, and catalyst bed temperature. Space velocity is a function of catalyst bed depth. Decreasing the space velocity (increasing catalyst bed depth) will improve NO_x removal efficiency by increasing residence time, but will also cause an increase in catalyst bed pressure drop. The reaction

of NO_x with ammonia theoretically requires a 1:1 molar ratio. Ammonia/NO_x molar ratios greater than 1:1 are necessary to achieve high-NO_x removal efficiencies due to imperfect mixing and other reaction limitations. However, ammonia/NO_x molar ratios are typically maintained at 1:1 or lower to prevent excessive unreacted ammonia (ammonia slip) emissions.

As was the case for SNCR, reaction temperature is critical for proper SCR operation. The optimum temperature range for conventional SCR operation is 600 to 750°F. Below this temperature range, reduction reactions (1) and (2) will not proceed. At temperatures exceeding the optimal range, oxidation of ammonia will take place resulting in an increase in NO_x emissions. Specially formulated high temperature zeolite catalysts have been recently developed that function at exhaust stream temperatures up to a maximum of approximately 1,025°F. NO_x removal efficiencies for SCR systems typically range from 60 to 90 percent.

SCR catalyst is subject to deactivation by a number of mechanisms. Loss of catalyst activity can occur from thermal degradation if the catalyst is exposed to excessive temperatures over a prolonged period of time. Catalyst deactivation can also occur due to chemical poisoning. Principal poisons include arsenic, sulfur, potassium, sodium, and calcium. Due to the potential for chemical poisoning with fuels other than natural gas, application of SCR has been primarily limited to natural gas-fired units.

Technical Feasibility

All of the combustion process modification technologies described (A/F ratio adjustment, ignition timing retard, and low-emission combustion) are feasible for the proposed HFCAWTF IC engine/generator sets.

Of the postcombustion stack gas treatment technologies, SNCR is not feasible because the temperature required for this technology (between 1,600 and 2,000°F) exceeds that found in the IC engine exhaust gas stream (approximately 700°F). NSCR was also determined to be technically infeasible because the process must take place in a fuel-rich

(less than 3-percent oxygen) environment. Due to high excess air rates, the oxygen content of the IC exhaust gases is typically 10 percent.

For lean burn IC engines, NO_x reductions of 10 to 40 percent can be achieved using a combination of A/F ratio adjustment and ignition timing retard. The NO_x reductions achievable with low-emission combustion are considerably higher, ranging from 70 to 90 percent depending on engine manufacturer. Therefore, use of low-emission combustion technology will achieve NO_x emission rates lower than those obtainable from the application of A/F ratio adjustment and ignition timing retard technology.

Accordingly, the BACT analysis for NO_x for the proposed HFCAWTF IC engine/generator sets was confined to low-emission combustion and the application of post-combustion SCR control technologies. The following sections provide information regarding energy, environmental, and economic impacts and proposed BACT limits for NO_x.

5.4.2 ENERGY AND ENVIRONMENTAL IMPACTS

There are no significant adverse energy or environmental impacts associated with the use of good combustor designs and operating practices to minimize NO_x emissions.

The installation of SCR technology would cause an increase in back pressure on the IC engines due to the pressure drop across the catalyst bed. Additional energy would be needed for the pumping of aqueous ammonia from storage to the injection nozzles and ammonia vaporization. For lean burn IC engines, the engine backpressure will increase by approximately 2 to 4 inches water column (w.c.) due to the installation of an SCR control system. The increase in BSFC is estimated to be 0.5 percent for a 4 inches w.c. backpressure. This backpressure will decrease the power output by approximately 2 percent.

There are no significant adverse environmental effects due to the use of low-emission combustion technology. In contrast, application of SCR technology would result in the following adverse environmental impact:

Ammonia emissions due to *ammonia slip*; ammonia emissions are estimated to total 2.2 tpy for a SCR design ammonia slippage rate of 10 parts per million by dry volume (ppmvd) for both IC engines. However, ammonia slip can increase significantly during start-ups, upsets or failures of the ammonia injection system, or due to catalyst degradation. In instances where such events have occurred, ammonia exhaust concentrations of 50 ppmv or greater have been measured. Since the odor threshold of ammonia is 20 ppmv, releases of ammonia during upsets or malfunctions have the potential to cause ambient odor problems. Ammonia also acts as an irritant to human tissue. Depending on the concentration and duration of exposure, ammonia can cause eye, skin, and mucous membrane irritation. These effects can vary from minor irritation to severe damage. Contact of the skin or mucosa with liquid ammonia or a high vapor concentration can result in burns or obstructed breathing.

5.4.3 ECONOMIC IMPACTS

An assessment of economic impacts was performed by comparing control costs between a baseline case of low-emission combustion combustor technology and baseline technology with the addition of SCR controls. Baseline technology is expected to achieve a NO_x emission rate of 1.56 g/hp-hr. SCR technology was premised to achieve a NO_x control efficiency of 90 percent equivalent to an outlet NO_x emission rate of 0.156 g/hp-hr. The controlled NO_x emission rate of 0.156 g/hp-hr is approximately equal to the most stringent limit (i.e., a California LAER limit of 0.15 g/hp-hr) contained in the RBLC for natural gas-fired IC engines..

Total installed SCR capital and annualized operating costs for the lean burn IC engines were estimated using the following relationships obtained from the EPA *Alternate Control Techniques Document – NO_x Emissions from Stationary Reciprocating Internal Combustion Engines* (EPA, 1993):

- Total capital costs = \$310,000 + (\$72.7 × horsepower [hp]).
- Total annualized operating costs = \$171,000 + (\$49.7 × hp).

Based on the HFCAWTF Waukesha 16V-AT27GL engine rating of 4,073 hp, the total installed SCR capital and annualized operating costs for both IC engines are calculated to be $1,212,214 and $746,856, respectively. Application of a 90-percent efficient SCR control system for the proposed HFCAWTF IC engine/generator sets will result in a 110.5-tpy decrease in NO_x emissions. This emission decrease yields a project SCR control technology cost effectiveness of $6,759 per ton of NO_x controlled. This control cost is considered economically unreasonable. Table 5-6 summarizes the results of the NO_x BACT analysis.

5.4.4 PROPOSED BACT EMISSION LIMITATIONS

BACT NO_x limits obtained from the RBLC database for natural gas-fired IC engines are provided in Table 5-7.

Use of lean burn, low-emission combustion design is proposed as BACT for NO_x. Table 5-8 summarizes the NO_x BACT emission limits proposed for the new HFCAWTF IC engine/generator sets.

Table 5-6. Summary of SCR BACT Analysis

Control Option	Emission Impacts: Emission Rates lb/hr	Emission Impacts: Emission Rates tpy	Emission Impacts: Emission Reduction (tpy)	Economic Impacts: Installed Capital Cost ($)	Economic Impacts: Total Annualized Cost ($/yr)	Economic Impacts: Cost Effectiveness Over Baseline ($/ton)	Energy Impacts: Increase Over Baseline (MMBtu/yr)	Environmental Impacts: Toxic Impact (Y/N)	Environmental Impacts: Adverse Envir. Impact (Y/N)
SCR	2.8	12.3	110.5	1,212,214	746,856	6,759	2.32	Y	Y
Baseline	28.0	122.8	N/A	N/A	N/A	N/A	N/A	N/A	

Basis: Two Waukesha 16V-AT27GL IC engine/generator sets, 100-percent load for 8,760 hr/yr.

Sources: Waukesha, 1999.
ECT, 2000.

Table 5-7 RBLC NOx Summary for Natural Gas Fired IC Engines

RBLID	Facility Name	City	Permit Dates Issued	Permit Dates Update	Process Description	Throughput	Emission Limit	Control System Description	Control Efficiency	Basis
AK-0030	CITY OF UNALASKA	UNALASKA	06-21-1996	12-30-1996	INTERNAL COMBUSTION	7 MW	832.5 TPY	LIMIT OF OPERATION HOURS AND AFTERCOOLERS	0	BACT-PSD
AK-0031	CITY OF ST PAUL POWER PLANT	ST PAUL	06-27-1996	12-30-1996	INTERNAL COMBUSTION	3 MW	427 TPY	AFTERCOOLERS	0	BACT-PSD
AL-0041	FLORIDA GAS TRANSMISSION CO	MT VERNON	02-22-1991	12-07-1993	ENGINE I.C., RICOP	2,400 BHP	2 G/B-HP H	LEAN COMBUSTION	0	BACT-PSD
AZ-0007	MOJAVE PIPELINE OPERATING COMPANY	TOPOCK	06/12/1991	03-24-1995	ENGINES INTERIM BUILD OUT 3	13,800 HP	147.87 T/YR	FUEL SPECIFICATION	0	BACT-PSD
AZ-0007	MOJAVE PIPELINE OPERATING COMPANY	TOPOCK	06/12/1991	03-24-1995	ENGINES RECIPROCATING 5 FUEL BUILD-OUT	17,500 HP	491.7 T/YR	FUEL SPECIFICATION	0	BACT-PSD
AZ-0023	INTEL CORPORATION	CHANDLER	04-19-1994	03-24-1995	GENERATORS, BACKUP, 5	2,220 BHP	2	CYANURIC ACID INJECTION, TANIPE CONTROL	90	BACT
CA-0418	DE LA GUERRA POWER, INC		11-13-1991	01-31-1992	ENGINE IC 6 GEN IT OF 3	380 HP	8.34 LB/D	NON SELECTIVE CATALYTIC CONVERTER	90	BACT-PSD
CA-0766	KAISER PERMANENTE MEDICAL CENTER	FRESNO	09/02/1997	03-18-1998	JOHN DEERE MODEL 8076AFN 90 IC ENGINE	180 BHP	15 PPMV @ 15% O2	NATURAL GAS FUEL	0	LAER
CA-0791	CITY OF CLOVIS	CLOVIS	11/08/1996	03-18-1998	CATERPILLAR MODEL G3606TA NATURAL GAS IC ENGINE	0	0.33 G/B-HP-H	NATURAL GAS FUEL, A THREE WAY CATALYTIC CONVERTER AND AN O2 CONTROLLER	0	LAER
CA-0793	TOYS R' US	CLOVIS	11/27/1996	03-18-1998	NATURAL GAS FIRED EMERGENCY IC ENGINE	0	14.56 G/B-HP H	NO CONTROL	0	LAER
CA-0829	G E N Y OPERATIONS COMPANY	BAKERSFIELD	11/03/1997	08-31-1998	IC ENGINE, NAT GAS FIRED, CATERPILLAR MODEL 333	145 BHP	10 G/B-HP H	NO CONTROL	0	BACT
CA-0853	SABA PETROLEUM INC. (BELL COMPRESSOR PLANT)	SANTA MARIA	10/17/1998	04-19-1999	IC ENGINE, COMPRESSOR, NATURAL GAS FIRED	747 BHP	0.75 G/B-HP H	3 WAY CATALYTIC CONVERTER WITH ELECTRONIC AIR/FUEL RATIO CONTROLLER	0	BACT-OTHER
CO-0033	SNYDER OIL CORP. / ENTERPRISE STATION		11/13/1992	03/24/1995	ENGINES RECIPROCATING (6)	7,500 HP-EACH	363.8 LBS MILLION BCF	LEAN COMBUSTION & FUEL SPEC. FIRING RESIDUE QUALITY NAT GAS	0	BACT-OTHER
CO-0036	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESV	04/01/1997	03-30-1999	COMPRESSION ENGINE GAS FIRED 2	0	2.7 LB-H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A 3 WAY NSCR CONVERTER	0	BACT-PSD
CO-0035	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESV	04-01-1997	03-30-1999	IC ENGINE WAUKESHA L5790 GSI 2	1,215 HP	2.7 LB-H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A 3 WAY NSCR CONVERTER	0	BACT-PSD
CO-0026	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07-31-1997	05-02-1998	COMPRESSION ENGINE GAS FIRED 7	0	2.7 LB-H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A 3 WAY NSCR CONVERTER	0	BACT-PSD
CO-0032	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07/31/1997	04-08-1999	COMPRESSION ENGINE GAS FIRED TS4 1	738 HP	1.6 LB-H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A 3 WAY NSCR CONVERTER	90	BACT-PSD
CO-0032	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07/31/1997	04-08-1999	COMPRESSION ENGINE GAS FIRED TS4 2	738 HP	1.6 LB-H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A 3 WAY NSCR CONVERTER	0	BACT-PSD
CO-0027	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07-31-1997	04-08-1998	COMPRESSOR ENGINE GAS FIRED TS4 3	1,215 HP	2.7 LB-H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A 3 WAY NSCR CONVERTER	0	BACT-PSD
CO-0033	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07-31-1997	04-01-1999	COMPRESSOR ENGINE GAS FIRED TS5 1	421 HP	0.9 LB-H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A 3 WAY NSCR CONVERTER	0	BACT-PSD
CO-0033	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07-31-1997	04-01-1999	COMPRESSOR ENGINE GAS FIRED TS5 4	738 HP	1.6 LB-H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A 3 WAY NSCR CONVERTER	0	BACT-PSD
CO-0002	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07-31-1997	04-01-1999	COMPRESSOR ENGINE GAS FIRED TS5 3	1,215 HP	2.7 LB-H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A 3 WAY NSCR CONVERTER	0	BACT-PSD
CO-0034	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07/31/1997	03-30-1999	COMPRESSOR ENGINE GAS FIRED 1	1,478 HP	4.8 LB-H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A 3 WAY NSCR CONVERTER	0	BACT-PSD
CO-0034	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07-31-1997	03-30-1999	COMPRESSION ENGINE GAS FIRED 2	0	2.7 LB-H 2 EACH	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A 3 WAY NSCR CONVERTER	0	BACT-PSD
CO-0035	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07/31/1997	03/30/1999	COMPRESSOR ENGINE GAS FIRED, TS7 5 1	421 HP	0.9 LB-H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A 3 WAY NSCR CONVERTER	0	BACT-PSD
CO-0035	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIBE RESERV	07-31-1997	03-30-1999	COMPRESSOR ENGINE GAS FIRED, TS7 6 1	1,215 HP	2.7 LB-H	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A 3 WAY NSCR CONVERTER	0	BACT-PSD
CO-0036	VASTAR RESOURCES, INC	SO. UTE INDIAN TRIVE RESERV	07-31-1997	03-30-1999	COMPRESSOR ENGINES GAS FIRED 3	0	1.6 LB-H 3 EACH	ACCUNOX AIR TO FUEL RATIO CONTROL SYSTEM AND A 3 WAY NSCR CONVERTER	0	BACT-PSD
FL-0046	FLORIDA GAS TRANSMISSION COMPANY	PERRY	08/06/1991	08-14-1993	COMPRESSOR 1 EACH	4,000 BHP	2 G/B-HP H	COMBUSTION CONTROL	0	BACT-PSD
FL-0061	FLORIDA GAS TRANSMISSION COMPANY	MAYLAND	05-10-1991	05-14-1993	COMPRESSOR 1 EACH	2,400 BHP	2 G/B-HP H	COMBUSTION CONTROL	0	BACT-PSD
FL-0075	FLORIDA GAS TRANSMISSION	FT. PIERCE	09-27-1993	04-11-1994	ENGINE RECIPROCATING GAS	4,000 BHPH	2 G/B-HP H	LEAN BURN ENGINE	0	BACT-PSD
IA-0023	NORTHERN NATURAL GAS COMPANY		09/05/1990	08-29-1991	ENGINE COMPRESSOR	4,000 HP	1.8 G/B-HP H	GOOD COMBUSTION PRACTICES	0	BACT-PSD
IA-0023	NORTHERN NATURAL GAS COMPANY		09-05-1990	08/29/1991	ENGINES COMPRESSOR, 2	2,000 HP EACH	1.8 G/B-HP H	GOOD COMBUSTION PRACTICES	0	BACT-PSD
IL-0043	NATURAL GAS PIPELINE CO	GENESEO	03/01/1993	08/10/1993	ENGINE MLV 10, 4 EA	1,000 HP	0 G/B-HP H	DESIGN & OPERATING PRACTICE	0	BACT-PSD
LA-0077	FLORIDA GAS TRANSMISSION COMPANY	FRANKLINTON	04-17-1991	06-28-1991	ENGINE RECIP NATURAL GAS COMPRESSOR	2,400 HP	3.5 G/B-HP H	LEAN BURN	99	BACT-PSD
MA-0022	BERKSHIRE POWER DEVELOPMENT, INC	AGAWAM	09-12-1997	04-19-1999	ENGINES CHILLER NATURAL GAS FIRED TWO	23 MMBTU/H	0.9 LB/H	DRY SCR NOX COMBUSTION TECHNOLOGY WITH SCR ADD ON NOX CONTROL	0	BACT-PSD
MI-0231	BLUE LAKE GAS STORAGE CO		05-07-1992	03-24-1995	ENGINES RECIPROCATING 2 CYCLE	8,000 HP	0	LEAN COMBUSTION	83	BACT-PSD
MI-0231	BLUE LAKE GAS STORAGE CO		05-07-1992	03-24-1995	ENGINES RECIPROCATING 4 CYCLE	1,575 HP	0	LEAN COMBUSTION	83	BACT-PSD
MN-0018	GREAT LAKES GAS TRANSMISSION LIMITED PARTNERSHIP	CLOQUET	07/09/1992	03/24/1995	COMPRESSION TRANSMISSION OF NATURAL GAS	0	160 PPMV @ 15% O2 DRY	ENGINE DESIGN AND FUEL SPEC. NATURAL GAS	0	BACT-PSD
MO-0008	MARSHALL MUNICIPAL UTILITIES (BD OF PUBLIC WORKS)	MARSHALL	04/08/1993	10/06/1997	ENGINE I.C. (RECIPROCATING)	8,500 HP	1 G/B-HP H	INCREASED AFR RATIO, REDUCTION IN AIR INTAKE MANIFOLD TEMP	0	BACT-PSD
MO-0018	MARSHALL MUNICIPAL UTILITIES (BOARD OF PUBLIC WORKS	MARSHALL	04/08/1993	10/06/1997	NEW COOPER BESSEMER INTERNAL COMBUSTION ENGINE	8 MW	1 G/B-HP H	INCREASED A F RATIO, REDUCTION IN AIR INTAKE MANIFOLD TEMP	0	BACT-PSD
MS-0021	FLORIDA GAS TRANSMISSION CO		05/14/1991	04-15-1992	ENGINE, 412 KVSR DRESSER	2,400 HP	1 G/B-HP H	LEAN COMBUSTION	0	BACT-PSD
NM-0019	MERIDIAN OIL GATHERING INC	BLANCO	10/11/1990	01-14-1994	ENGINE RECIPROCATING GAS FIRED	2,850 HP @ EACH	1.5 G/B-HP H	CLEAN BURN ENGINE DESIGN	0	BACT-PSD
NM-0021	WILLIAMS FIELD SERVICES CO - EL CEDRO COMPRESSOR	BLANCO	10/29/1993	03/02/1994	ENGINE GAS FIRED RECIPROCATING	1,000 HP	1.4 G/B-HP H	CLEAN LEAN BURN TECHNOLOGY	0	BACT-PSD
NM-0025	MERIDIAN OIL INC. - FRANCIS MESA STA	FARMINGTON	04/15/1995	09/03/1995	COMPRESSOR ENGINES (8) & GAS/OIL DEHYDRATOR	2,850 HP-EACH	1.5 G/B-HP H	COMPRESSOR ENGINE CLEAN BURN ENGINE	0	BACT-PSD
NM-0026	MERIDIAN OIL INC./ LA PLATA GAS PROCESSING FAC	FARMINGTON	10/27/1995	02-27-1996	RECIPROCATING ENGINE NATURAL GAS (4)	0	0.7 G/B-HP H	CLEAN BURN ENGINE MODEL # 3612 TA/16SB MANUFACTURER CATERPILLAR	0	BACT-PSD
NM-0030	WILLIAMS FIELD SERVICES -MIDDLE MESA CDP	ARCHULETA	12-03-1997	09/23/1997	NATURAL GAS COMPRESSOR STATION 74 ENGINES	1,478 HP EACH	4.51 LB/HR EACH ENGINE	CLEAN LEAN BURN COMBUSTION	0	BACT-PSD
NY-0047	PASNY-HOLTSVILLE COMBINED CYCLE PLANT	HOLTSVILLE	03/01/1992	09-13-1994	GENERATOR EMERGENCY, NATURAL GAS	2 MMBTU/HR	1.3 LB/MMBTU	LEAN BURN ENGINE	0	BACT-OTHER
OH-0120	NORTH STAR RECYCLING CO	TOLEDO	04/08/1993	08-18-1994	RECIPROCATING ENGINES (NATURAL GAS) (3)	1,100 HP EACH	1.95 G/B-HP H	3 WAY CATALYST	85	BACT-OTHER
OK-0022	NGPL		11/01/1990	12-07-1993	ENGINE	2,400 HP	2.5 G/B-HP H	LEAN BURN COMBUSTION	76	BACT-OTHER
OK-0024	NGPL		11/01/1990	12/07/1993	ENGINE	1,660 HP	2.5 G/B-HP H	LEAN BURN COMBUSTION	76	BACT-OTHER
OK-0026	SWEET ENERGY		09/05/1991	12/07/1993	ENGINES I.C.	1,137 HP EACH	23.8 T/YR	CATALYTIC CONVERTER	76	OTHER
PA-0077	NATIONAL FUEL GAS SUPPLY	ALLEGANY TOWNSHIP	10/01/1990	03/24/1995	ENGINES NAT GAS FIRED RICOP (2)	1,300 HP EACH	2 G/B-HP H	CLEAN BURN TECHNOLOGY	0	BACT-PSD
PA-0089	CNG TRANSMISSION CORPORATION	FINNEYROCK STATION	09/24/1991	03-24-1995	ENGINE, I.C., RICOP, GAS FIRED 2 CYCLE	4,200 HP	2 G/B-HP H	CLEAN BURN TECHNOLOGY	0	BACT-OTHER
PA-0087	CNG TRANSMISSION CORP	PITTSBURGH	03/13/1992	03-24-1995	ENGINES RECIP I.C. 4 NAT GAS	2,200 HP	2 G/B-HP H	LEAN BURN TECHNOLOGY	0	BACT-PSD
PA-0095	TEMPLE UNIVERSITY	PHILADELPHIA	10/02/1992	03-24-1995	ELECTRIC GENERATOR (NATURAL GAS)	2 MW	2 G/B-HP H	LEAN BURN GAS ENGINE	0	BACT-OTHER
PA-0096	PHILADELPHIA SOUTHWEST WATER TREATMENT PLANT	PHILADELPHIA	10/15/1992	03-24-1995	ENGINES (2) (NATURAL GAS)	443 KW EACH	2 G/B-HP H	LEAN BURN ENGINE	0	BACT-OTHER
PA-0097	PHILADELPHIA NORTHEAST WATER TREATMENT PLANT	PHILADELPHIA	10/15/1992	03-24-1995	ENGINES (3) (NATURAL GAS)	443 KW EACH	2 G/B-HP H	LEAN BURN ENGINE	0	BACT-OTHER
PA-0118	TRANSCONTINENTAL GAS PIPELINE CORP	FRAZER	09/06/1995	11-27-1995	I.C. ENGINES, NATURAL GAS, UNITS 1-8	2,050 HP	18.1 LB/HR	LOW EMISSION COMBUSTION (LEC) TECHNOLOGY	80	BACT
PA-0118	TRANSCONTINENTAL GAS PIPELINE CORP	FRAZER	09/06/1995	11-27-1995	I.C. ENGINES, NATURAL GAS, UNITS 7 9, 13	3,100 HP	16.94 LB/HR	LOW EMISSION COMBUSTION (LEC) TECHNOLOGY	72	BACT
PA-0118	TRANSCONTINENTAL GAS PIPELINE CORP	FRAZER	09/06/1995	11-27-1995	I.C. ENGINES, NATURAL GAS, UNITS 10 11	3,400 HP	30 LB/HR	LOW EMISSION COMBUSTION (LEC) TECHNOLOGY	45	BACT
PA-0118	TRANSCONTINENTAL GAS PIPELINE CORP	FRAZER	09/06/1995	11-27-1995	I.C. ENGINES NATURAL GAS, UNIT 12	5,100 HP	46.56 LB HR	LOW EMISSION COMBUSTION (LEC) TECHNOLOGY	87	BACT
PA-0148	CNG TRANSMISSION CORPORATION (LEIDY	RENOVO	02 29 1996	10-08-1996	NATURAL GAS FIRED ENGINE	3,450 HP	4 G/B-HP H	INSTALL LEA TECHNOLOGY & OPERATE W/A LEANER A F MIXTURE	75	BACT
PA-0148	CNG TRANSMISSION CORPORATION (LEIDY	RENOVO	02 29 1996	10-08-1996	NATURAL GAS FIRED ENGINE	2,000 HP	4 G/B-HP H	INSTALL LEA TECHNOLOGY & OPERATE W/A LEANER A F MIXTURE	75	BACT
PA-0148	CNG TRANSMISSION CORPORATION (LEIDY	RENOVO	02 29 1996	10-08-1996	NATURAL GAS FIRED ENGINE	1,000 HP	7 G/B-HP H	INSTALLATION OF LEA TECHNOLOGY	59	BACT
RI-0006	THE WORCESTER CO	CENTERDALE	06-27-1989	05-18-1990	ENGINE I.C., 3 EA	2,040 BHP	1.5 G/B-HP H	LEAN BURN	0	BACT-PSD
TN-0043	TENNECO GAS	PORTLAND		06-30-1994	IC ENGINE NATURAL GAS	3,300 HP	160 TPY	CLEAN BURN RETROFIT	0	BACT
TN-0046	TENNECO GAS	PORTLAND		06/30/1994	IC ENGINE NATURAL GAS	400 HP	2 G/B-HP H	NON SELECTIVE CATALYTIC REDUCTION (NSCR)	0	OTHER
TN-0046	TENNECO GAS	PORTLAND		06-30-1994	IC ENGINE NATURAL GAS	400 HP	2 G/B-HP H	PRE 1994 FIRED CHARGE	0	OTHER
TN-0046	TENNECO GAS	PORTLAND		06-30-1994	IC ENGINES NATURAL GAS (2)	3,400 HP	946 TPY	PARAMETRIC CONTROL	0	OTHER
TN-0047	MIDWESTERN GAS	PORTLAND		06-30-1994	IC ENGINE NATURAL GAS	2,000 HP	58 TPY	CLEAN BURN RETROFIT	0	OTHER
TN-0047	MIDWESTERN GAS	PORTLAND		06-30-1994	IC ENGINE NATURAL GAS	2,700 HP	79 TPY	CLEAN BURN RETROFIT	0	OTHER
UT-0036	LENT COGENERATION ASSOCIATES		10-27-1987	04-30-1990	ENGINE GAS FIRED, 3 EA	18,950 KW	249.87 TPY	SEE NOTES	0	BACT-PSD
WY-0011	CNG TRANSMISSION CORPORATION		05/02/1983	03-02-1994	ENGINE, NATURAL GAS COMPRESSOR	4,060 HP	2 G/B-HP H	LEAN BURN COMBUSTION	0	BACT-OTHER
WY-0011	CNG TRANSMISSION CORPORATION		05-02/1983	02/02/1994	GENERATOR AUXILIARY	814 HP	2 G/B-HP H		0	BACT-OTHER
WY-0020	SNYDER OIL CORPORATION RIVERTON DOME GAS PLANT	THE WIND RIVER INDIAN	07/05/1994	10-18-1994	2 GAS FIRED GENERATOR ENGINES	765 HORSEPOWER	1.7 LBS/HR	RETROFIT WITH AIR TO FUEL RATIO CONTROL W/ NSCR	0	BACT
WY-0020	SNYDER OIL CORPORATION RIVERTON DOME GAS PLANT	THE WIND RIVER INDIAN	07-05-1994	10/18/1994	NATURAL GAS FIRED COMPRESSOR ENGINE	520 HORSEPOWER	2.3 LBS/HR	RETROFIT WITH AIR TO FUEL RATIO CONTROL W/ NSCR	0	BACT
WY-0020	SNYDER OIL CORPORATION RIVERTON DOME GAS PLANT	THE WIND RIVER INDIAN	07/05/1994	10-18-1994	1 GAS FIRED GENERATOR ENGINE	577 HORSEPOWER	2.5 LBS/HR	RETROFIT WITH AIR TO FUEL RATIO CONTROL W/ NSCR	0	BACT
WY-0023	WESTERN GAS RESOURCES, INC. HILIGHT GAS PLANT	GILLETTE	03-31-1997	02-01-1995	COMPRESSOR ENGINES NATURAL GAS FIRED 6 EACH	1,600 HP	2 G/B-HP H	CATALYTIC CONVERTER	0	BACT-PSD
WY-0060	CHEVRON USA - PAINTER CENTRAL STATION	8 MILES NE OF EVANSTON	04-19-1993	03-10/1995	ENGINES COMPRESSOR 2 EACH	2,850 BHP EACH	1.5 G/B-HP H	CLEAN BURN TECHNOLOGY	0	BACT-PSD
WY-0069	WESTERN GAS RESOURCES - HILIGHT GAS PLANT	GILLETTE	10/14/1998	08-06/1999	ENGINES COMPRESSOR 2 EA	1,850 HP	1 G/B-HP H	3 WAY CATALYST SYSTEM AND AIR/FUEL RATIO CONTROLLER	0	BACT-PSD
WY-0051	UNION PACIFIC RESOURCES - PATRICK DRAW GAS PLANT	38 MILE N OF ROCK SPRINGS	05-18-1990	01-08-1992	ENGINE COMPRESSOR 5 EA	3,270 HP	0.5 G/B-HP H	ULTRA LOW NOX LEAN BURN TECHNOLOGY	0	BACT-PSD
WY-0051	UNION PACIFIC RESOURCES - PATRICK DRAW GAS PLANT	38 MILE N OF ROCK SPRINGS	05-18-1990	08-08-1995	COMPRESSOR ENGINES 2 EA	1,700 HP	0.9 G/B-HP H	ULTRA LOW NOX LEAN BURN TECHNOLOGY	0	BACT-PSD
WY-0052	UNION PACIFIC RESOURCES - PATRICK DRAW GAS PLANT	38 M EAST OF ROCK SPRINGS	05-18-1990	08-17-1995	ENGINES COMPRESSOR 3 EA	1,200 HP	0.9 LB-HP H	ULTRA LOW NOX LEAN BURN TECHNOLOGY	0	BACT-PSD
WY-0053	UNION PACIFIC RESOURCES - PATRICK DRAW GAS PLANT	38 M EAST OF ROCK SPRINGS	05-18-1990	08-17-1995	ENGINES COMPRESSOR 3 EA	1,200 HP	0.9 G/B-HP H	ULTRA LOW NOX LEAN BURN TECHNOLOGY	0	BACT-PSD

Minimum	0.33	G/B-HP H
Maximum	14.56	G/B-HP H
Average	2.58	G/B-HP H
Count	96	

Table 5-8. Proposed NO_x BACT Emission Limits

Emission Source	lb/hr	g/hp-hr
Waukesha 16V-AT27GL IC Engine (per engine)		
NO_x	14.0	1.56

Sources: ECT, 2000.
Waukesha, 1999.

6.0 AMBIENT IMPACT ANALYSIS METHODOLOGY

6.1 GENERAL APPROACH

The approach used to analyze the potential impacts of the proposed facility, as described in detail in the following sections, was developed in accordance with accepted practice. Guidance contained in EPA manuals and user's guides was sought and followed.

6.2 POLLUTANTS EVALUATED

A comparison of estimated potential annual emission rates for the HFCAWTF IC engine/generator modification project and the PSD significant emission rate thresholds was previously provided in Table 3-2. As shown in that table, potential emissions of NO_x, CO, and ozone/VOC are each projected to exceed the applicable PSD significant emission rate level. These pollutants are, therefore, subject to the PSD NSR air quality impact analysis requirements of Rule 62-212.400(5)(d), F.A.C. No modeling analysis was performed for ozone/VOCs since ozone is a regional problem typically addressed by regional dispersion models. All Florida counties, including Hillsborough County, are presently classified attainment for ozone. Pollutants evaluated for ambient air quality impacts for the HFCAWTF IC engine/generator modification project therefore consisted of NO_x (annual averaging period) and CO (1- and 8-hour averaging periods).

6.3 MODEL SELECTION AND USE

The most recent regulatory version of the Industrial Source Complex (ISC3) models (EPA, 1999) is recommended and was used in this analysis. The ISC3 models are steady-state Gaussian plume models that can be used to assess air quality impacts over simple terrain from a wide variety of sources. The ISC3 models are capable of calculating concentrations for averaging times ranging from 1 hour to annual. For this study, the Industrial Source Complex short-term (ISCST3) (Version 99155) model was used to calculate short-term ambient impacts with averaging times between 1 and 24 hours as well as long-term annual averages.

Procedures applicable to the ISCST3 dispersion model specified in EPA's GAQM were followed in conducting this dispersion modeling analysis. The GAQM is codified in Ap-

pendix W of 40 CFR 51. In particular, the ISCST3 model control pathway MODELOPT keyword parameters DFAULT, CONC, RURAL, and NOCMPL were selected. Selection of the parameter DFAULT, which specifies use of the regulatory default options, is recommended by the GAQM. The CONC, RURAL, and NOCMPL parameters specify calculation of concentrations, use of rural dispersion, and suppression of complex terrain calculations, respectively. As previously mentioned, the ISCST3 model was also used to determine annual average impact predictions, in addition to short-term averages, by using the PERIOD parameter for the AVERTIME keyword. Conservatively, no consideration was given to pollutant exponential decay.

For annual NO_2 impacts, the tiered screening approach described in the GAQM, Section 6.2.3 was used. Tier 1 of this screening procedure assumes complete conversion of NO_x to NO_2. Tier 2 applies an empirically derived NO_2/NO_x ratio of 0.75 to the Tier 1 results.

6.4 DISPERSION OPTION SELECTION

Area characteristics in the vicinity of proposed emission sources are important in determining model selection and use. One important consideration is whether the area is rural or urban since dispersion rates differ between these two classifications. In general, urban areas cause greater rates of dispersion because of increased turbulent mixing and buoyancy-induced mixing. This is due to the combination of greater surface roughness caused by more buildings and structures and greater amount of heat released from concrete and similar surfaces. EPA guidance provides two procedures to determine whether the character of an area is predominantly urban or rural. One procedure is based on land use typing, and the other is based on population density. The land use typing method uses the work of Auer (Auer, 1978) and is preferred by EPA and FDEP because it is meteorologically oriented. In other words, the land use factors employed in making a rural/urban designation are also factors that have a direct effect on atmospheric dispersion. These factors include building types, extent of vegetated surface area and water surface area, types of industry and commerce, etc. Auer recommends these land use factors be considered within 3 km of the source to be modeled to determine urban or rural classifications. The Auer land use typing method was used for the ambient impact analysis.

The Auer technique recognizes four primary land use types: industrial (I), commercial (C), residential (R), and agricultural (A). Practically all industrial and commercial areas come under the heading of urban, while the agricultural areas are considered rural. However, those portions of generally industrial and commercial areas that are heavily vegetated can be considered rural in character. In the case of residential areas, the delineation between urban and rural is not as clear. For residential areas, Auer subdivides this land use type into four groupings based on building structures and associated vegetation. Accurate classification of the residential areas into proper groupings is important to determine the most appropriate land use classification for the study area.

USGS 7.5-minute series topographic maps for the area were used to identify the land use types within a 3-km radius area of the proposed site. Based on this analysis, more than 50 percent of the land use surrounding the plant was determined to be rural under the Auer land use classification technique. Therefore, rural dispersion coefficients and mixing heights were used for the ambient impact analysis.

6.5 TERRAIN CONSIDERATION

The GAQM defines *flat terrain* as terrain equal to the elevation of the stack base, *simple terrain* as terrain lower than the height of the stack top, and *complex terrain* as terrain above the height of the plume center line (for screening modeling, complex terrain is terrain above the height of the stack top). Terrain above the height of the stack top but below the height of the plume center line is defined as *intermediate terrain.*

USGS 7.5-minute series topographic maps were examined for terrain features in the vicinity of the HFCAWTF (i.e., within an approximate 10-km radius). Review of the USGS topographic maps indicates nearby terrain would be classified as ranging from flat to simple terrain. Due to the minimal amount of terrain elevation differences in the vicinity, assignment of receptor terrain elevations was not conducted (i.e., all receptors were assumed to be at the same elevation as the IC engine stack bases for modeling purposes).

6.6 GOOD ENGINEERING PRACTICE (GEP) STACK HEIGHT/BUILDING WAKE EFFECTS

According to EPA regulations (40 CFR 51), GEP stack height is defined as the highest of 65 meters or a height established by applying the formula:

$$Hg = H + 1.5\,L$$

where: Hg = GEP stack height.

H = height of the structure or nearby structure.

L = lesser dimension (height or projected width) of the nearby structure.

Nearby is defined as a distance up to five times the lesser of the height or width dimension of a structure or terrain feature, but not greater than 800 meters. While the GEP stack height regulations require that stack heights used in modeling for determining compliance with NAAQS and PSD increments not exceed GEP stack heights, the actual stack height may be greater. Guidelines for determining GEP stack height have been issued by EPA (1985).

The stack height proposed for the proposed engines (35 feet [ft]) is less than the *de minimis* GEP height of 65 meters (213 ft), and, therefore, complies with the EPA promulgated final stack height regulations (40 CFR 51).

While the GEP stack height rules address the maximum stack height that can be employed in a dispersion model analysis, stacks having heights lower than GEP stack height can potentially result in higher downwind concentrations due to building downwash effects. The ISC3 dispersion models contain two algorithms that assess the effect of building downwash; these algorithms are referred to as the Huber-Snyder and Schulman-Scire methods. The following steps are employed in determining the effects of building downwash:

- A determination is made as to whether a particular stack is located in the area of influence of a building (i.e., within five times the lesser of the building's height or projected width). If the stack is not within this area, it will not be subject to downwash from that building.

- If a stack is within a building's area of influence, a determination is made as to whether it will be subject to downwash based on the heights of the stack and building. If the stack height to building height ratio is equal to or greater than 2.5, the stack will not be subject to downwash from that building.
- If both conditions in the previous two items are satisfied (i.e., a stack is within the area of influence of a building and has a stack height to building height ratio of less than 2.5), the stack will be subject to building downwash. The determination is then made as to whether the Huber-Snyder or Schulman-Scire downwash method applies. If the stack height is less than or equal to the building height plus one-half the lesser of the building height or width, the Schulman-Scire method is used. Conversely, if the stack height is greater than this criterion, the Huber-Snyder method is employed.
- The ISCST3 downwash input data consists of an array of 36 wind direction-specific building heights and projected widths for each stack. LB is defined as the lesser of the height and projected width of the building. For directionally dependent building downwash, wake effects are assumed to occur if a stack is situated within a rectangle composed of two lines perpendicular to the wind direction, one line at 5 LB downwind of the building and the other at 2 LB upwind of the building, and by two lines parallel to the wind, each at 0.5 LB away from the side of the building.

Table 6-1 provides dimensions of the buildings evaluated for wake effects; the locations of these buildings were previously provided on Figure 2-2. The buildings presented in Table 6-1 were included in the modeling analysis as sources of downwash to the proposed engines.

6.7 RECEPTOR GRIDS

Receptors were placed at locations considered to be *ambient air*, which is defined as "that portion of the atmosphere, external to buildings, to which the general public has access." Section 2.0 provided a plot plan showing the site fence lines (see Figure 2-2). As shown in Figure 2-2, the entire perimeter of the plant site is fenced. Therefore, the nearest locations of general public access are at the facility fence lines.

Table 6-1. Building Dimensions.

Building	Dimensions (meters)		
	Width	Length	Height
Sludge heat drying building	31.4	49.1	11.0
Sludge dewatering building	17.1	78.9	8.9
Proposed engine building	15.2	22.9	7.9

Sources: TEC, 2000.
ECT, 2000.

Consistent with GAQM recommendations, the ambient impact analysis used the following receptor grids:

- Fence Line Cartesian Receptors—Discrete receptors placed on the site fence line at approximately 50-meter intervals.
- Nearfield Cartesian Receptors—Discrete receptors placed at 100-meter intervals from the site fence line to the first polar receptor ring.
- Nearfield Polar Receptors—Polar receptors consisting of 11 rings of 36 receptors each (36 radials at 10-degree [°] radial spacings) at 100-meter intervals beginning 1,000 meters from the receptor grid origin to a distance of 2,000 meters.
- Mid-Field Polar Receptors—Polar receptors consisting of 8 rings of 36 receptors each (36 radials at 10° radial spacings) at 250-meter intervals beginning 2,250 meters from the receptor grid origin to a distance of 4,000 meters.
- Farfield Polar Receptors—Polar receptors consisting of 12 rings of 36 receptors each (36 radials at 10° radial spacings) at 500-meter intervals beginning 4,500 meters from the receptor grid origin to a distance of 10,000 meters.

To improve the spatial distribution of the polar receptors, each polar ring was offset by 5°. Figure 6-1 illustrates a graphical representation of the receptor grids (out to a distance of 1,000 meters). A depiction of the receptor grids (from 1,000 meters to 10 km) is shown in Figure 6-2.

6.8 METEOROLOGICAL DATA

Detailed meteorological data are needed for modeling with the ISC3 dispersion models. The ISCST3 model requires a preprocessed data file compiled from hourly surface observations and concurrent twice-daily rawinsonde soundings (i.e., mixing height data).

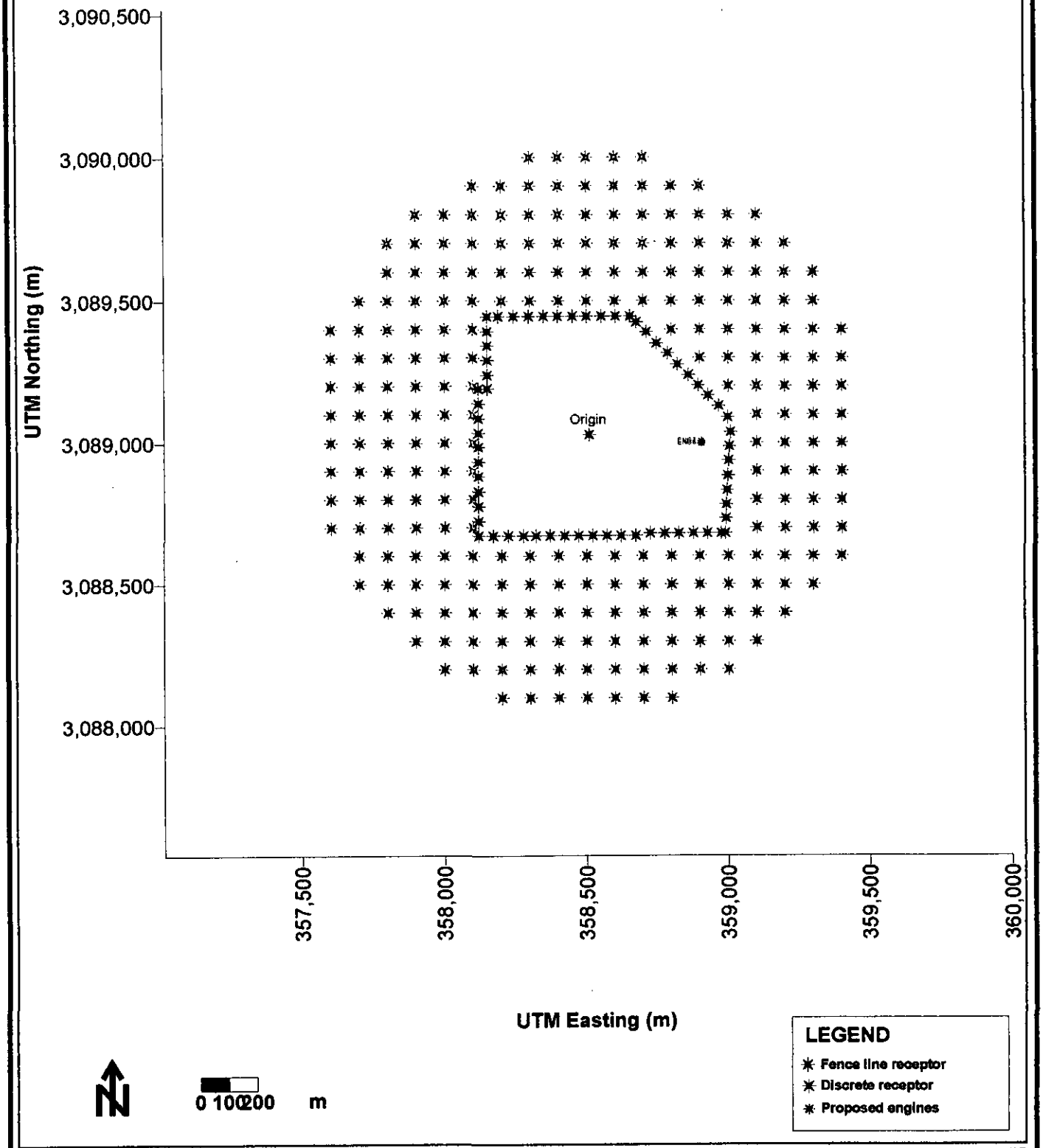


FIGURE 6-1.
RECEPTOR LOCATIONS (WITHIN 1,000 m)

ECT
Environmental Consulting & Technology, Inc.

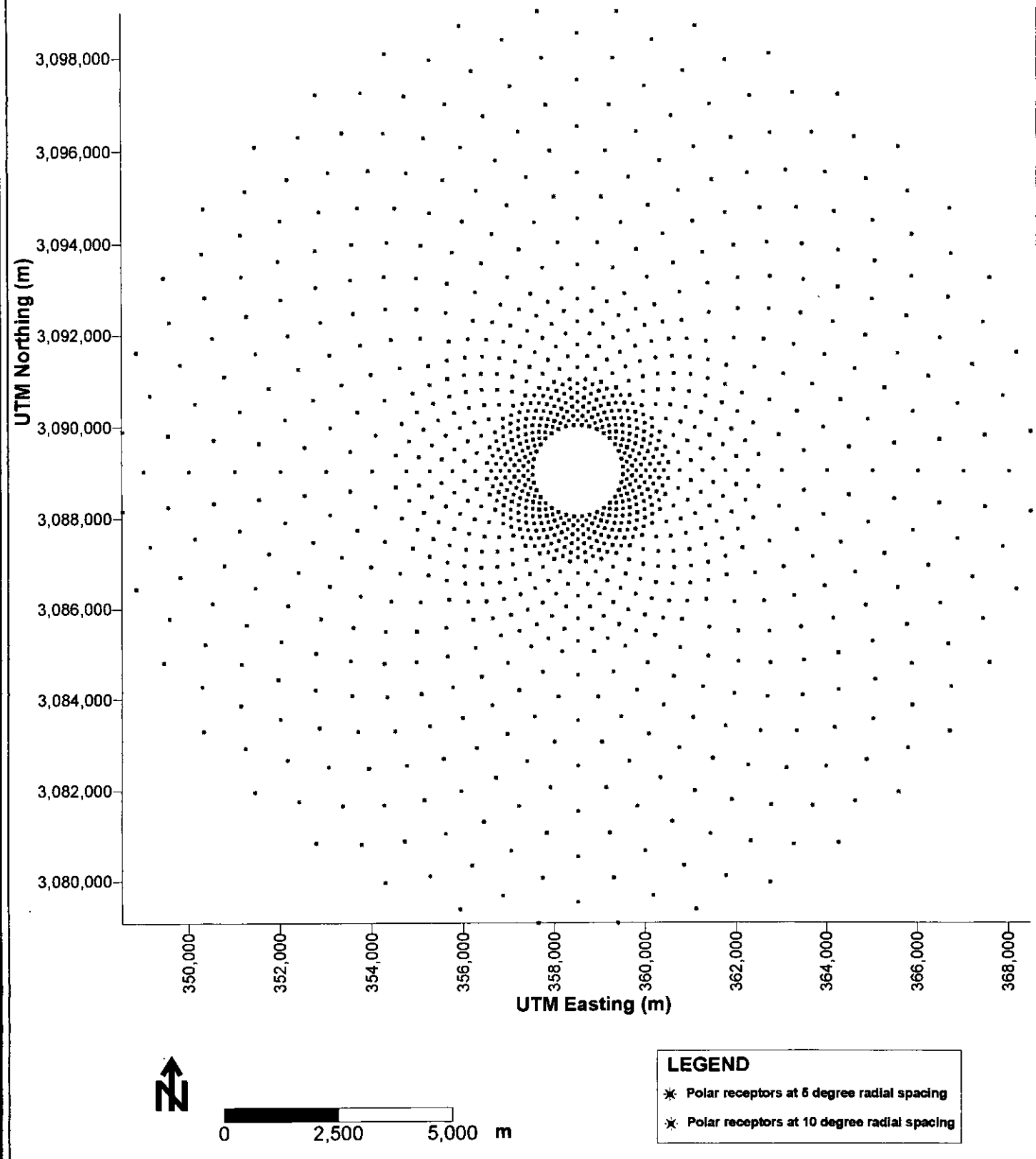


FIGURE 6-2.

RECEPTOR LOCATIONS (From 1,000 to 10 km)

ECT

Environmental Consulting & Technology, Inc.

Consistent with the GAQM and FDEP guidance, modeling should be conducted using the most recent, readily available, 5 years of meteorological data collected at a nearby observation station. In accordance with this guidance, the selected meteorological dataset consisted of St. Petersburg/Clearwater International Airport (SPG), Station ID 72211, surface data and Ruskin (RUS), Station ID 12842, upper air data. These data were obtained from the National Climatic Data Center (NCDC) for the 1992 through 1996 5-year period.

The surface and mixing height data for each of the 5 years were processed using EPA's PCRAMMET meteorological preprocessing program to generate the meteorological data files in the format required by the ISCST3 dispersion model.

6.9 MODELED EMISSION INVENTORY

The modeled on-property emission source consisted of the proposed engines. As will be discussed in Section 7.0, Ambient Impact Analysis Results, emissions from the proposed engines resulted in air quality impacts below the significance impact levels (reference Table 4-2) for all pollutants and all averaging periods with the exception of NO_2. Accordingly, additional, multisource interactive dispersion modeling was only required for NO_2.

The area of influence (AOI) for NO_2 impacts for the HFCAWTF IC engine/generator set modification project was determined to be 1.7 km. An inventory of NO_x emission sources within approximately 55 km of the HFCAWTF was obtained from FDEP. The FDEP off-site NO_x emission source data is provided Table 1, Appendix E. The "20D" screening procedure was used to eliminate emission sources that would not have a significant impact within the AOI. Specifically, emission sources with annual NO_x emissions (tpy) less than 20 times the distance (km) from the nearest edge of the AOI were removed from the modeling emissions inventory. Table 2 in Appendix E provides an evaluation of the FDEP emissions inventory with respect to the "20D" screening procedure and indicates which emission sources were included in the NO_2 air quality impact analysis.

Emission rates and stack parameters for the proposed engines were previously presented in Tables 2-1 and 2-3.

7.0 AMBIENT IMPACT ANALYSIS RESULTS

8.0 AMBIENT AIR QUALITY MONITORING AND ANALYSIS

8.1 EXISTING AMBIENT AIR QUALITY MONITORING DATA

The nearest FDEP ambient air monitoring station to the HFCAWTF is located at Davis Island, Tampa, Hillsborough County, approximately 1.6 km northwest of the project site. The FDEP monitoring station at Davis Island monitors CO, ozone, PM_{10}, and SO_2. During calendar year 1997, the nearest FDEP monitoring station that monitored PM_{10} was located at Harbor Island in Tampa, Hillsborough County, located approximately 2.3 km northwest of the project site. The nearest FDEP station that monitors NO_x is located on Gandy Boulevard in Tampa, Hillsborough County, approximately 9.3 km southwest of the project site. The nearest FDEP station monitoring for lead is situated on 66th Street in Tampa, Hillsborough County, approximately 5.6 km northeast of the project site. Summaries of 1997 and 1998 ambient air quality data for these FDEP stations are provided in Tables 8-1 and 8-2.

8.2 PRECONSTRUCTION AMBIENT AIR QUALITY MONITORING EXEMPTION APPLICABILITY

FDEP Rule 62-212.400(2)(e), F.A.C., provides an exemption from preconstruction monitoring requirement for sources with *de minimis* air quality impacts. The *de minimis* ambient impact levels were previously presented in Table 4-1. To assess the appropriateness of monitoring exemptions, dispersion modeling analyses were performed to determine the maximum pollutant concentrations caused by emissions from the proposed facility. The results of these analyses are presented in detail in Section 7.2. The following paragraphs summarize the dispersion modeling results as applied to the preconstruction ambient air quality monitoring exemptions.

8.2.1 NO_2

The maximum annual NO_2 impact was predicted to be 6.48 $\mu g/m^3$. This concentration is below the 14-$\mu g/m^3$ *de minimis* ambient impact level. Therefore, a preconstruction monitoring exemption is appropriate for the proposed facility.

Table 8-1. Summary of 1997 FDEP Ambient Air Quality Data

Pollutant	Site Location		Site No.	Relative to Project Site (km)	Averaging Period	Sampling Period	Number of Observations	Ambient Concentration ($\mu g/m^3$)				
	County	City						1st High	2nd High	99th Percentile	Arithmetic Mean	Standard
PM_{10}	Hillsborough	Tampa	4360-069-G02	2.3 NW	24-Hr	Jan-Dec	60	67	47	67		150*
					Annual						28	50†
SO_2	Hillsborough	Tampa	4360-035-G02	1.6 NW	1-Hr	Jan-Dec	8,696	548	540			
					3-Hr			348	285			1,300**
					24-Hr			104	93			260**
					Annual						21	60†
NO_2	Hillsborough	Tampa	4360-065-G01	9.3 SW	1-Hr	Jan-Dec	8,087	111	111			
					Annual						18	100†
CO	Hillsborough	Tampa	4360-035-G02	1.6 NW	1-Hr	Jan-Dec	8,716	4,581	4,581			40,000**
					8-Hr			2,290	2,290			10,000**
O_3	Hillsborough	Tampa	4360-035-G02	1.6 NW	1-Hr	Jan-Dec	8,700	225.8	219.9			235‡
Lead	Hillsborough	Tampa	4360-066-G02	5.6 NE	24-Hr	Jan-Mar	15				0.6	1.5†
						Apr-Jun	14				0.4	
						Jul-Sep	15				0.4	
						Oct-Dec	16					

*99th percentile.
†Arithmetic mean.
**2nd high.
‡4th highest day with hourly value exceeding standard over a 3-year period.

Sources: FDEP, 2000.
ECT, 2000.

Table 8-2. Summary of 1998 FDEP Ambient Air Quality Data

Pollutant	Site Location		Site No.	Relative to Project Site (km)	Averaging Period	Sampling Period	Number of Observations	Ambient Concentration ($\mu g/m^3$)				
	County	City						1st High	2nd High	99th Percentile	Arithmetic Mean	Standard
PM_{10}	Hillsborough	Tampa	4360-035-G02	1.6 NW	24-Hr Annual	Jan-Dec	352	108	105	108	27	150* 50†
SO_2	Hillsborough	Tampa	4360-035-G02	1.6 NW	1-Hr 3-Hr 24-Hr Annual	Jan-Dec	8,663	536.6 369.1 89.0	348.1 293.2 86.4		20.9	1,300** 260** 60†
NO_2	Hillsborough	Tampa	4360-065-G01	9.3 SW	1-Hr Annual	Jan-Dec	8,634	116.6	112.9		20.7	100†
CO	Hillsborough	Tampa	4360-035-G02	1.6 NW	1-Hr 8-Hr	Jan-Dec	8,691	3,779.1 2,633.9	3,321.1 2,175.9			40,000** 10,000**
O_3	Hillsborough	Tampa	4360-035-G02	1.6 NW	1-Hr	Jan-Dec	363	239.5	219.9			235‡
Lead	Hillsborough	Tampa	4360-066-G02	5.6 NE	24-Hr	Jan-Mar Apr-Jun Jul-Sep Oct-Dec	59				0.41 0.51 0.27 0.37	1.5†

*99th percentile.
†Arithmetic mean.
**2nd high.
‡4th highest day with hourly value exceeding standard over a 3-year period.

Sources: FDEP, 2000.
ECT, 2000.

8.2.2 CO

The maximum 8-hour CO impact was predicted to be 398.1 $\mu g/m^3$. This concentration is below the 575-$\mu g/m^3$ *de minimis* ambient impact level. Therefore, a preconstruction monitoring exemption for CO is appropriate for the proposed facility.

9.0 ADDITIONAL IMPACT ANALYSES

The additional impacts analysis, required for projects subject to PSD review, evaluates project impacts pertaining to associated growth; soils, vegetation, and wildlife; and visibility impairment. Each of these topics is discussed in the following sections.

9.1 GROWTH IMPACT ANALYSIS

The purpose of the growth impact analysis is to quantify growth resulting from the construction and operation of the proposed project and assess air quality impacts that would result from that growth.

Impacts associated with construction of the HFCAWTF IC engine/generator modification project will be minor. While not readily quantifiable, the temporary increase in vehicle miles traveled in the area would be insignificant, as would any temporary increase in vehicular emissions.

The new, IC engine/generators are being constructed to provide standby power for the HFCAWTF and to meet general area electric power demands; therefore, no significant secondary growth effects due to operation of the project are anticipated. The increase in natural gas demand due to operation of the new IC engines will have no major impact on local fuel markets. No significant air quality impacts due to associated industrial/commercial growth are expected.

9.2 IMPACTS ON SOILS, VEGETATION, AND WILDLIFE

Maximum air quality impacts in the vicinity of the HFCAWTF due to operation of the proposed IC engine/generator sets are well below applicable AAQS. Accordingly, no significant, adverse impacts on soils, vegetation, and wildlife in the vicinity of the HFCAWTF are anticipated. The following sections discuss potential impacts on the nearest Class I area; the Chassahowitzka NWR.

9.2.1 IMPACTS ON SOILS

The U.S. Department of Agriculture (USDA) (1991a and 1991b) lists the primary soil type in Chassahowitzka NWR as Weekiwachee-Durbin muck. This soil type is characterized by high levels of sulfur and organic content. Sulfur levels may approach 4 percent in the upper soil layer. Daily flooding by high tides causes the pH to vary between 6.1 and 7.8.

Typically, SO_2 represents the greatest threat to soil since this pollutant causes increased sulfur content and decreased pH. However, for this project, given the extremely low levels of SO_2 emitted, the distance from the source, the naturally high sulfur content of the Class I area soils, and the pH variability caused by tidal influences, no impacts to soils are expected.

9.2.2 IMPACTS ON VEGETATION

The Chassahowitzka NWR is a complex ecosystem of vegetation assemblages that depend on the subtle interplay of slight changes in elevation, salinity, hydroperiod, and edaphic factors for distribution, extent, and species composition. The mosaic of plant communities at the Chassahowitzka NWR is represented by pine woods and hammock forests within areas of higher ground, various fresh water forested and nonforested wetlands situated within lowland depressions that are inundated/saturated with fresh water for at least part of the year (mixed swamp, marsh, etc.) and brackish to salt water wetlands such as salt marsh and mangrove swamp distributed at lower elevations on land normally inundated by tidal action and freshwater pulses from upland surface water runoff. The predominant flora associated with these associations is typically common to the central Florida region and characterized by a high diversity of terrestrial, wetland, and aquatic species. Common vascular taxa within the Chassahowitzka NWR would include slash pine, laurel oak, live oak, cabbage palm, sweet gum, red maple, saw palmetto, and gallberry in the inland areas and needlerush, red mangrove, cordgrass, and saltgrass in the brackish to marine reaches.

The literature was reviewed as to potential effects of air pollutants on vegetation. Maximum impacts projected to occur in the immediate vicinity of the HFCAWTF due to op-

eration of the new IC engines will be well below thresholds shown to cause damage to vegetation. Maximum air pollutant impacts at Chassahowitzka NWR due to emissions from the new IC engines will be far less. The potential for damage at the Chassahowitzka NWR could be negligible given the absence of any plant species at Chassahowitzka NWR that would be especially sensitive to the very low predicted pollutant concentrations.

9.2.3 IMPACTS ON WILDLIFE

Wildlife resources in the 30,500-acre Chassahowitzka NWR are fairly typical of central Florida's Gulf Coast. The eastern portions of the site are fringed by hardwood swamp habitats, but the primary habitats are the estuarine and brackish marshes along with the saltwater bays containing many mangrove-covered islands. These habitats support large numbers of resident and migratory waterfowl, water birds, and shorebirds. Wading birds are also quite common. Deer, raccoons, black bears, otters, and bobcats are the notable mammals. Alligators are numerous. Bald eagles and the West Indian manatee are the primary endangered/threatened species utilizing the area.

Air pollution impacts to wildlife have been reported in the literature, although many of the incidents involved acute exposures to pollutants usually caused by unusual or highly concentrated releases or unique weather conditions.

Based on a review of the limited literature on air pollutant effects on wildlife, it is unlikely the low concentrations of pollutants resulting from the IC engine modification project will cause any injury to wildlife.

Bioaccumulation, particularly of mercury, has been a concern in Florida. There is increasing evidence that mercury may be naturally evolved in Florida and that, combined with manmade sources, is becoming bioaccumulated in certain fish and wildlife. It is unknown what naturally occurring levels may be present in onsite fish and wildlife. However, the likelihood that the small amount attributable to this Project would all be methylated, end up in the food chain, and then consumed by predators is considered negligible.

The acid rain effects on wildlife in Florida are primarily those related to aquatic animals. Acidified water may prevent fish egg hatching, damage larvae, and lower immunity factors in adult fish (Barker, 1983). Acid rain can also result in release of metals (especially aluminum) from lake sediments; this can cause a biochemical deterioration of fish gills leading to death by suffocation. However, the sensitivity of Florida lakes to acid rain is in question. Florida lakes have a wide natural range of pH (from 4 to 8.8 pH units). Most well-buffered lakes are in central and south Florida, and rainfall is in the pH range of 4.8 to 5.1. According to Barker (1983) and Charles (1991), no evidence is currently available to clearly show that degradation of aquatic systems have occurred as a direct result of acid precipitation in Florida. The air emissions from the HFCAWTF IC engine/generator sets that could contribute to the formation of atmospheric acids are not predicted to significantly increase acid precipitation and are predicted to have no impact on wildlife at Chassahowitzka NWR.

In conclusion, it is unlikely the projected air emission levels from the HFCAWTF IC engine/generator modification project will have any measurable direct or indirect effects on wildlife utilizing the Chassahowitzka NWR.

9.3 VISIBILITY IMPAIRMENT POTENTIAL

No visibility impairment at the local level is expected due to the types and quantities of emissions projected for the IC engine/generators. Opacity of the natural gas-fired IC engine exhausts will be 10 percent or less. Emissions of primary particulates and sulfur oxides from the IC engines will be low due to the exclusive use of pipeline quality natural gas. The new IC engines will comply with all applicable FDEP requirements pertaining to visible emissions.

Due to the exclusive use of natural gas as a fuel source, relatively minor project emissions, and the distance from the project site to the Chassahowitzka NWR Class I area (i.e., approximately 80 km), it can be concluded that the proposed IC engine/generator emissions will not cause impairment of visibility at this Class I area.

10.0 REFERENCES

Auer, A.H. 1978. Correlation of Land Use and Cover with Meteorological Anomalies. Journal of Applied Meteorology. 17:636-643.

Barker, D.R. 1983. Terrestrial and Aquatic Effects of Acid Deposition: A Florida Overview. In: Acid Deposition Causes and Effects, A State Assessment Model. A.E.S. Green and W.H. Smith, editors.

Barrett, T.W. and Benedict, H.M. 1970. Sulfur Dioxide. In: Recognition of Air Pollution Injury to Vegetation: A Pictorial Atlas. J.S. Jacobson and A.C. Hill, editors.

Bennett, J.H. and Hill, A.C. 1975. Interactions of Air Pollutants with Canopies of Vegetation. In: Responses of Plants to Air Pollution. J.B. Mudd and T.T. Kozlowski, editors.

Charles, D.F. 1991. Acidic Deposition and Aquatic Ecosystems, Regional Case Studies. Springer-Verlag, New York.

Gholz, H.L. 1983. Effects of Atmospheric Deposition on Forested Ecosystems in Florida—Suggested Research Priorities. pp. 149 to 155. In: Acid Deposition Causes and Effects, A State Assessment Model. A.E.S. Green and W.H. Smith, editors. University of Florida. Gainesville, FL.

Goldstein, R.A. *et al.* 1985. Plant Response to SO_2: An Ecosystem Perspective. In: Sulfur Dioxide and Vegetation, pp. 403 to 417. W.E. Winner *et al.*, editors. Sanford University Press, Sanford, CA.

Jones H.C. *et al.* 1974. Acceptable Limits for Air Pollution Dosages and Vegetation Effects: Sulfur Dioxide. Proceedings of the 67th Annual Meeting of the Air Pollution Control Association.

LeBlanc, F. and Rao, D.N. 1975. Effects of Air Pollutants on Lichens and Bryophytes. In: Responses of Plants to Air Pollution. J.B. Mudd and T.T. Kozlowski, editors.

Loomis, R.C. and Padgett, W.H. 1973. Air Pollution and Trees in the East. U.S. Department of Agriculture Forest Service.

MacLean, D.C. *et al.* 1968. Effects of Acute Hydrogen Fluoride and Nitrogen Dioxide on Citrus and Ornamental Plants of Central Florida. Environmental Science and Technology 2: 444 to 449.

Middleton, J.T. *et al.* 1950. Smog in the South Coastal Area of California. California Agriculture 4: 7 to 11.

Mudd, J.B. 1975. Peroxyacl Nitrates. In: Responses of Plants to Air Pollution. J.B. Mudd and T.T. Kozlowski, editors.

Newman, J.R. 1980. Effects of Air Emissions on Wildlife Resources. FWS/OBS-80/40.1. Biological Services Program, U.S. Fish and Wildlife Service. Washington, DC.

Prinz, B. and Brandt, C.J. 1985. Effects of Air Pollution on Vegetation. In: Pollutants and their Ecotoxicological Significance, pp. 67 to 84. H.W. Nurnberg, editor. John Wiley & Sons, New York.

Ravera, O. 1989. Ecological Assessment of Environmental Degradation, Pollution, and Recovery. Commission of the European Communities.

Reinert, R.A. *et al.* 1975. Plant Responses to Pollutant Combinations. In: Plant Responses to Air Pollution. J.B. Mudd and T.T. Kozlowski, editors.

Taylor, O.C. and MacLean, D.C. 1970. Nitrogen Oxides and Peroxyacyl Nitrates. In: Recognition Air Pollution Injury to Vegetation: A Pictorial Atlas; pp. E1-E14. J.S. Jacobsen, editor. Air Pollution Control Association, Pittsburgh, PA.

Taylor, O.C. *et al.* 1975. Oxides of Nitrogen. In: Responses of Plants to Air Pollution. J.B. Mudd and T.T. Kozlowski, editors.

U.S. Department of Health, Education, and Welfare. 1971. Air Pollution Injury to Vegetation. National Air Pollution Control Administration Publication, No. AP-71.

U.S. Department of Agriculture. 1972. Our Air. Forest Service Pamphlet NE-INF-14-72 Rev.

U.S. Department of Agriculture (USDA). 1991. Soil Survey for Hardee County, Florida. USDA Soil Conservation Service.

U.S. Environmental Protection Agency (EPA). 1976. Diagnosing Vegetation Injury Caused by Air Pollution. Developed for EPA by Applied Science Associates, Inc., EPA Contract No. 68-02-1344.

U.S. Environmental Protection Agency (EPA). 1985. Stack Height Regulation. Federal Register, Vol. 50, No. 130, July 8, 1985. Page 27892.

U.S. Environmental Protection Agency (EPA). 1987. Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD). EPA-450/4-87-007. Office of Air Quality Planning and Standards. Research Triangle Park, NC.

U.S. Environmental Protection Agency (EPA). 1990a. New Source Review Workshop Manual (Draft). Office of Air Quality Planning and Standards. Research Triangle Park, NC.

U.S. Environmental Protection Agency (EPA). 1992. Screening Procedures for Estimating the Air Quality Impacts of Stationary Sources, Revised. EPA-450/R-92-019. Research Triangle Park, NC.

U.S. Environmental Protection Agency (EPA). 1996. OAQPS Control Cost Manual, 5th Edition. EPA-453/B-96-001. Research Triangle Park, NC.

U.S. Environmental Protection Agency (EPA). 1997. Guideline on Air Quality Models (Revised). (Appendix W of 40 CFR Part 51).

U.S. Environmental Protection Agency (EPA). 1999. Industrial Source Complex (ISC3) Dispersion Model. Updated from EPA's Support Center for Regulatory Air Models (SCRAM) Web Site.

Umbach, D.M. and Davis, D.D. 1986. Severity of SO_2-Induced Leaf Necrosis on Caribbean Scots, and Virginia Pine Seedlings. Air and Pollution Control Association 36(9): 1019.

Varshney, C.K. and Garg, J.K. 1979. Plant Responses to Sulfur Dioxide Pollution. CRC Critical Reviews in Environmental Control.

Westman,W.F. *et al.* 1985. SO_2 Effects on the Growth of Native Plants. In: Sulfur Dioxide and Vegetation, pp. 264-180. W.E. Winner *et al.*, editors Sanford University Press, Sanford, CA.

Woltz, S.S. and Howe, T.K. 1981. Effects of Coal Burning Emission on Florida Agriculture. In: The Impact of Increased Coal Use in Florida. Interdisciplinary Center for Aeronomy and (other) Atmospheric Sciences. University of Florida, Gainesville, FL.

Department of Environmental Protection

Division of Air Resources Management

APPLICATION FOR AIR PERMIT - TITLE V SOURCE

See Instructions for Form No. 62-210.900(1)

I. APPLICATION INFORMATION

Identification of Facility

1. Facility Owner/Company Name: **City of Tampa, Department of Sanitary Sewers**	
2. Site Name: **Howard F. Curren Advanced Wastewater Treatment Facility**	
3. Facility Identification Number: **0570373** [ ] Unknown	
4. Facility Location: **Hookers Point, Between East McKay Bay and Hillsborough Bay** Street Address or Other Locator: **2700 Maritime Boulevard** City: **Tampa** County: **Hillsborough** Zip Code: **33605-6744**	
5. Relocatable Facility? [ ] Yes [✔] No	6. Existing Permitted Facility? [✔] Yes [ ] No

Application Contact

1. Name and Title of Application Contact: **Shannon K. Todd** **Engineer – Air Programs, Environmental Planning**
2. Application Contact Mailing Address: Organization/Firm: **Tampa Electric Company** Street Address: **6499 U.S. Highway 41 North** 1500 33572-9200 City: **Apollo Beach** State: **FL** Zip Code: **3572-9200**
3. Application Contact Telephone Numbers: Telephone: **(813) 641 – 5125** Fax: **(813) 641-5081**

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	4-26-00
2. Permit Number:	0570373-009-AC
3. PSD Number (if applicable):	PSD-FL-291
4. Siting Number (if applicable):	

Purpose of Application

Air Operation Permit Application

This Application for Air Permit is submitted to obtain: (Check one)

[ ] Initial Title V air operation permit for an existing facility which is classified as a Title V source.

[ ] Initial Title V air operation permit for a facility which, upon start up of one or more newly constructed or modified emissions units addressed in this application, would become classified as a Title V source.

Current construction permit number:_____

[ ] Title V air operation permit revision to address one or more newly constructed or modified emissions units addressed in this application.

Current construction permit number:_____

Operation permit number to be revised:_____

[✔] Title V air operation permit revision or administrative correction to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application. (Also check Air Construction Permit Application below.)

Operation permit number to be revised/corrected:_____

[ ] Title V air operation permit revision for reasons other than construction or modification of an emissions unit. Give reason for the revision; e.g., to comply with a new applicable requirement or to request approval of an "Early Reductions" proposal.

Operation permit number to be revised:_____

Reason for revision:_____

Air Construction Permit Application

This Application for Air Permit is submitted to obtain: (Check one)

[✔] Air construction permit to construct or modify one or more emissions units.

[ ] Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.

[ ] Air construction permit for one or more existing, but unpermitted, emissions units.

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official:
   Ralph L. Metcalf, II., P.E., Director

2. Application Contact Mailing Address:
   Organization/Firm: **City of Tampa, Department of Sanitary Sewers**
   Street Address: **City Hall Plaza, 6th Floor**
   City: **Tampa** State: **FL** Zip Code: **33602**

3. Owner/Authorized Representative or Responsible Official Telephone Numbers:
   Telephone: **(813) 641-5016** Fax: **(813) 641-5081**

4. Owner/Authorized Representative or Responsible Official Statement:

   I, the undersigned, am the owner or authorized representative(check here [ ], if so) or the responsible official (check here [✔], if so) of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.*

   Signature Date 4/20/00

* Attach letter of authorization if not currently on file.

Professional Engineer Certification

1. Professional Engineer Name: **Thomas W. Davis**
   Registration Number: **36777**

2. Professional Engineer Mailing Address:
   Organization/Firm: **Environmental Consulting & Technology, Inc.**
   Street Address: **3701 Northwest 98th Street**
   City: **Gainesville** State: **FL** Zip Code: **32606**

3. Professional Engineer Telephone Numbers:
   Telephone: **(352) 332-0444** Fax: **(352) 332-6722**

4. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [✔], if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [✔], if so), I further certify that the engineering features of each such emissions unit described in this application have been ~~designed or~~ examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ], if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Thom W. Davis — Signature

4/19/00 — Date

(seal)

* Attach any exception to certification statement.

Scope of Application

Emissions Unit ID	Description of Emissions Unit	Permit Type	Processing Fee
	IC Engine/Generator Set No. 7	AC1A	$7,500
	IC Engine/Generator Set No. 8	AC1A	N/A

Application Processing Fee

Check one: [✔] Attached - Amount: $ 7,500 [ ] Not Applicable

Construction/Modification Information

1. Description of Proposed Project or Alterations:

Project consists of the addition of two nominal 2.9-MW Waukesha 16V-AT27GL natural gas-fired internal combustion (IC) engine/generator sets. The IC engine/generator sets will serve as a source of standby power for the Howard F. Curren Advanced Wastewater Treatment Facility (HFCAWTF) as well as generating supplemental grid power for TEC. Heat contained in the exhausts of the new IC engines will also be used to provide most of the energy necessary for the HFCAWTF's existing sludge drying process.

2. Projected or Actual Date of Commencement of Construction: **Upon authorization**

3. Projected Date of Completion of Construction: **Within 30 days of construction start**

Application Comment

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates: Zone: **17** East (km): **364.0** North (km): **3,089.5**			
2. Facility Latitude/Longitude: Latitude (DD/MM/SS): Longitude (DD/MM/SS):			
3. Governmental Facility Code: **4**	4. Facility Status Code: **A**	5. Facility Major Group SIC Code: **49**	6. Facility SIC(s):
7. Facility Comment (limit to 500 characters):			

Facility Contact

1. Name and Title of Facility Contact: **John E. Drapp,**
2. Facility Contact Mailing Address: Organization/Firm: **City of Tampa, Department of Sanitary Sewers** Street Address: **2700 Maritime Boulevard** City: **Tampa** State: **FL** Zip Code: **33605-6744**
3. Facility Contact Telephone Numbers: Telephone: **(813) 247-3451** Fax: **(813) 248-5269**

Facility Regulatory Classifications

Check all that apply:

1. [ ] Small Business Stationary Source? [ ] Unknown
2. [✔] Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)?
3. [ ] Synthetic Minor Source of Pollutants Other than HAPs?
4. [ ] Major Source of Hazardous Air Pollutants (HAPs)?
5. [✔] Synthetic Minor Source of HAPs?
6. [ ] One or More Emissions Units Subject to NSPS?
7. [✔] One or More Emission Units Subject to NESHAP?
8. [ ] Title V Source by EPA Designation?
9. Facility Regulatory Classifications Comment (limit to 200 characters):

List of Applicable Regulations

See Title V permit application	

B. FACILITY POLLUTANTS

List of Pollutants Emitted

1. Pollutant Emitted	2. Pollutant Classif.	3. Requested Emissions Cap		4. Basis for Emissions Cap	5. Pollutant Comment
		lb/hour	tons/year		
NOX	**A**	**N/A**	**N/A**	**N/A**	
CO	**A**	**N/A**	**N/A**	**N/A**	

C. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements

1. Area Map Showing Facility Location: [ ] Attached, Document ID: [ ] Not Applicable [✔] Waiver Requested
2. Facility Plot Plan: [ ] Attached, Document ID: [ ] Not Applicable [✔] Waiver Requested
3. Process Flow Diagram(s): [✔] Attached, Document ID: **Fig. 2-3** [ ] Not Applicable [ ] Waiver Requested
4. Precautions to Prevent Emissions of Unconfined Particulate Matter: [ ] Attached, Document ID: [ ] Not Applicable [✔] Waiver Requested
5. Fugitive Emissions Identification: [ ] Attached, Document ID:_____ [ ] Not Applicable [✔] Waiver Requested
6. Supplemental Information for Construction Permit Application: [✔] Attached, Document ID: **PSD App.** [ ] Not Applicable
7. Supplemental Requirements Comment:

Additional Supplemental Requirements for Title V Air Operation Permit Applications

8. List of Proposed Insignificant Activities: [ ] Attached, Document ID:_____ [ ] Not Applicable
9. List of Equipment/Activities Regulated under Title VI: [ ] Attached, Document ID:_____ [ ] Equipment/Activities On site but Not Required to be Individually Listed [ ] Not Applicable
10. Alternative Methods of Operation: [ ] Attached, Document ID:_____ [ ] Not Applicable
11. Alternative Modes of Operation (Emissions Trading): [ ] Attached, Document ID:_____ [ ] Not Applicable
12. Identification of Additional Applicable Requirements: [ ] Attached, Document ID:_____ [ ] Not Applicable
13. Risk Management Plan Verification: [ ] Plan previously submitted to Chemical Emergency Preparedness and Prevention Office (CEPPO). Verification of submittal attached (Document ID:_____) or previously submitted to DEP (Date and DEP Office:_____) [ ] Plan to be submitted to CEPPO (Date required:_____) [ ] Not Applicable
14. Compliance Report and Plan: [ ] Attached, Document ID:_____ [ ] Not Applicable
15. Compliance Certification (Hard-copy Required): [ ] Attached, Document ID:_____ [ ] Not Applicable

Items 8. through 15. above previously submitted – see Title V permit application.

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in This Section: (Check one)

[✔] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Regulated or Unregulated Emissions Unit? (Check one)

[✔] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

2. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
Emission unit consists of one Waukesha Model 16V-AT27GL IC engine/generator set having a nominal rating of 2.9 megawatts (MW). The IC engine will be fired exclusively with pipeline quality natural gas.

4. Emissions Unit Identification Number:
ID: **IC Engine/Generator No. 7**
[✔] No ID
[ ] ID Unknown

5. Emissions Unit Status Code:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
C		**49**	[ ]

9. Emissions Unit Comment: (Limit to 500 Characters)

Emissions Unit Control Equipment

1. Control Equipment/Method Description (Limit to 200 characters per device or method):

   Lean burn, low-emission combustion

2. Control Device or Method Code(s): **024**

Emissions Unit Details

1. Package Unit:
   Manufacturer: **Waukesha Engine** Model Number: **16V-AT27GL**
2. Generator Nameplate Rating: **2.9** MW
3. Incinerator Information:
   Dwell Temperature: °F
   Dwell Time: seconds
   Incinerator Afterburner Temperature: °F

B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:	**25.2 (LHV)**	mmBtu/hr		
2. Maximum Incineration Rate:		lb/hr		tons/day
3. Maximum Process or Throughput Rate:				
4. Maximum Production Rate:				
5. Requested Maximum Operating Schedule:				
	24	hours/day	**7**	days/week
	52	weeks/year	**8,760**	hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):				
Maximum heat input is lower heating value (LHV) at 100 percent load				

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

See Section 5.2 of PSD application	

D. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? **ENG 7**	2. Emission Point Type Code: **1**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **N/A**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **N/A**		
5. Discharge Type Code: **V**	6. Stack Height: **35** feet	7. Exit Diameter: **2.3** feet
8. Exit Temperature: **731** °F	9. Actual Volumetric Flow Rate: **22,574** acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates: Zone: East (km): North (km):		
14. Emission Point Comment (limit to 200 characters):		

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment **1** of **1**

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **IC engine fired with pipeline quality natural gas.**		
3. Source Classification Code (SCC): **20100202**	3. SCC Units: **Million Cubic Feet Burned**	
4. Maximum Hourly Rate: **0.0265**	5. Maximum Annual Rate: **232.03**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: **950**
10. Segment Comment (limit to 200 characters): **Fuel heat content (Field 9) represents lower heating value (LHV).**		

Segment Description and Rate: Segment ____ of ____

1. Segment Description (Process/Fuel Type) (limit to 500 characters):		
2. Source Classification Code (SCC):	3. SCC Units:	
3. Maximum Hourly Rate:	4. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
6. Maximum % Sulfur:	7. Maximum % Ash:	8. Million Btu per SCC Unit:
9. Segment Comment (limit to 200 characters):		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
1 – NOX	**024**		**EL**
2 – CO	**024**		**EL**
3 – VOC	**024**		**EL**

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **NOX**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **14.0** lb/hour **61.4** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **1.56 g/hp-hr** Reference: **Waukesha data**	7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **See Attachment C.**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **Other**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **1.56 g/hp-hr**	4. Equivalent Allowable Emissions: **14.0** lb/hour **61.4** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Reference Method 7E**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **FDEP Rule 62-212.400(5)(c), F.A.C. (BACT)**	

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **CO**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **14.9** lb/hour **65.3** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **1.66 g/hp-hr** Reference: **Waukesha data**	7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **See Attachment C**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **Other**	2. Future Effective Date of Allowable Emissions:
4. Requested Allowable Emissions and Units: **1.66 g/hp-hr**	4. Equivalent Allowable Emissions: **14.9** lb/hour **65.3** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Reference Method 10**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **FDEP Rule 62-212.400(5)(c), F.A.C. (BACT)**	

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **VOC**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **4.9** lb/hour **21.6** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **0.55 g/hp-hr** Reference: **Waukesha data**	7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **See Attachment C**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions **1** of **1**

1. Basis for Allowable Emissions Code: **Other**	2. Future Effective Date of Allowable Emissions:
5. Requested Allowable Emissions and Units: **0.55 g/hp-hr**	4. Equivalent Allowable Emissions: **4.9** lb/hour **21.6** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Reference Methods 18, 25, or 25A.**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **FDEP Rule 62-212.400(5)(c), F.A.C. (BACT)**	

H. VISIBLE EMISSIONS INFORMATION
(Only Regulated Emissions Units Subject to a VE Limitation)

Visible Emissions Limitation: Visible Emissions Limitation ~~1~~ of ~~2~~

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: [ ] Rule [✔] Other
3. Requested Allowable Opacity: Normal Conditions: **10** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
5. Method of Compliance: **EPA Reference Method 9**	
6. Visible Emissions Comment (limit to 200 characters): **Rule 62-212.400(5)(c), F.A.C. (BACT)**	

Visible Emissions Limitation: Visible Emissions Limitation ~~2~~ of ~~2~~

2. Visible Emissions Subtype:	2. Basis for Allowable Opacity: [✔] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: **100** % Maximum Period of Excess Opacity Allowed: **60** min/hour	
7. Method of Compliance: **EPA Reference Method 9**	
8. Visible Emissions Comment (limit to 200 characters): **Excess emissions resulting from startup, shutdown, or malfunction not-to-exceed 2 hours in any 24 hour period unless authorized by FDEP for a longer duration. Rule 62-210.700(1), F.A.C.**	

I. CONTINUOUS MONITOR INFORMATION
(Only Regulated Emissions Units Subject to Continuous Monitoring)

Continuous Monitoring System: Continuous Monitor ____ of ____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
6. Continuous Monitor Comment (limit to 200 characters):	

Continuous Monitoring System: Continuous Monitor ____ of ____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters):	

J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements

1. Process Flow Diagram [✔] Attached, Document ID: **Fig. 2-3** [ ] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [ ] Attached, Document ID: _____ [ ] Not Applicable [✔] Waiver Requested
3. Detailed Description of Control Equipment [✔] Attached, Document ID: **Sect. 5.0** [ ] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities **To be provided** [ ] Attached, Document ID:_____ [ ] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [ ] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:_____ [✔] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [✔] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application **See PSD application** [ ] Attached, Document ID:_____ [ ] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:_____ [✔] Not Applicable
10. Supplemental Requirements Comment:

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation [ ] Attached, Document ID:_____ [ ] Not Applicable
12. Alternative Modes of Operation (Emissions Trading) [ ] Attached, Document ID:_____ [ ] Not Applicable
13. Identification of Additional Applicable Requirements [ ] Attached, Document ID:_____ [ ] Not Applicable
14. Compliance Assurance Monitoring Plan [ ] Attached, Document ID:_____ [ ] Not Applicable
15. Acid Rain Part Application (Hard-copy Required) [ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID:_____ [ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID:_____ [ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID:_____ [ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID:_____ [ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) Attached, Document ID:_____ [ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) Attached, Document ID:_____ [ ] Not Applicable

Above items previously submitted, see Title V permit application.

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in This Section: (Check one)

[✔] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Regulated or Unregulated Emissions Unit? (Check one)

[✔] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

10. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
Emission unit consists of one Waukesha Model 16V-AT27GL IC engine/generator set having a nominal rating of 2.9 megawatts (MW). The IC engine will be fired exclusively with pipeline quality natural gas.

4. Emissions Unit Identification Number:
ID: **IC Engine/Generator No. 8**
[✔] No ID
[ ] ID Unknown

5. Emissions Unit Status Code:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
C		**49**	[ ]

9. Emissions Unit Comment: (Limit to 500 Characters)

Emissions Unit Control Equipment

8. Control Equipment/Method Description (Limit to 200 characters per device or method):

Lean burn, low-emission combustion

2. Control Device or Method Code(s): **024**

Emissions Unit Details

1. Package Unit:
   Manufacturer: **Waukesha Engine** Model Number: **16V-AT27GL**
2. Generator Nameplate Rating: **2.9** MW
3. Incinerator Information:
   Dwell Temperature: °F
   Dwell Time: seconds
   Incinerator Afterburner Temperature: °F

B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:	**25.2 (LHV)**	mmBtu/hr		
2. Maximum Incineration Rate:		lb/hr		tons/day
3. Maximum Process or Throughput Rate:				
4. Maximum Production Rate:				
5. Requested Maximum Operating Schedule:				
	24	hours/day	**7**	days/week
	52	weeks/year	**8,760**	hours/year
7. Operating Capacity/Schedule Comment (limit to 200 characters):				
Maximum heat input is lower heating value (LHV) at 100 percent load				

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

See Section 5.2 of PSD application	

D. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? **ENG 8**		9. Emission Point Type Code: **1**
10. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **N/A**		
11. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **N/A**		
12. Discharge Type Code: **V**	6. Stack Height: **35** feet	7. Exit Diameter: **2.3** feet
8. Exit Temperature: **731** °F	9. Actual Volumetric Flow Rate: **22,574** acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm		12. Nonstack Emission Point Height: feet
13. Emission Point UTM Coordinates: Zone:	East (km):	North (km):
14. Emission Point Comment (limit to 200 characters):		

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type) (limit to 500 characters):		
IC engine fired with pipeline quality natural gas.		
11. Source Classification Code (SCC): **20100202**	3. SCC Units: **Million Cubic Feet Burned**	
12. Maximum Hourly Rate: **0.0265**	13. Maximum Annual Rate: **232.03**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	10. Million Btu per SCC Unit: **950**
10. Segment Comment (limit to 200 characters): **Fuel heat content (Field 9) represents lower heating value (LHV).**		

Segment Description and Rate: Segment ____ of ____

1. Segment Description (Process/Fuel Type) (limit to 500 characters):		
9. Source Classification Code (SCC):	3. SCC Units:	
10. Maximum Hourly Rate:	11. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
14. Maximum % Sulfur:	15. Maximum % Ash:	16. Million Btu per SCC Unit:
17. Segment Comment (limit to 200 characters):		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
1 – NOX	**024**		**EL**
2 – CO	**024**		**EL**
3 – VOC	**024**		**EL**

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **NOX**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **14.0** lb/hour **61.4** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **1.56 g/hp-hr** Reference: **Waukesha data**	7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **See Attachment C.**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **Other**	2. Future Effective Date of Allowable Emissions:
6. Requested Allowable Emissions and Units: **1.56 g/hp-hr**	4. Equivalent Allowable Emissions: **14.0** lb/hour **61.4** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Reference Method 7E**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **FDEP Rule 62-212.400(5)(c), F.A.C. (BACT)**	

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **CO**	2. Total Percent Efficiency of Control:	
3. Potential Emissions: **14.9** lb/hour **65.3** tons/year		4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year		
6. Emission Factor: **1.66 g/hp-hr** Reference: **Waukesha data**		7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **See Attachment C**		
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):		

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **Other**	2. Future Effective Date of Allowable Emissions:
7. Requested Allowable Emissions and Units: **1.66 g/hp-hr**	4. Equivalent Allowable Emissions: **14.9** lb/hour **65.3** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Reference Method 10**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **FDEP Rule 62-212.400(5)(c), F.A.C. (BACT)**	

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **VOC**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **4.9** lb/hour **21.6** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year	
6. Emission Factor: **0.55 g/hp-hr** Reference: **Waukesha data**	7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **See Attachment C**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **Other**	2. Future Effective Date of Allowable Emissions:
8. Requested Allowable Emissions and Units: **0.55 g/hp-hr**	4. Equivalent Allowable Emissions: **4.9** lb/hour **21.6** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Reference Methods 18, 25, or 25A.**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **FDEP Rule 62-212.400(5)(c), F.A.C. (BACT)**	

H. VISIBLE EMISSIONS INFORMATION
(Only Regulated Emissions Units Subject to a VE Limitation)

Visible Emissions Limitation: Visible Emissions Limitation ~~1~~ of ~~2~~

3. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: [ ] Rule [✔] Other
3. Requested Allowable Opacity: Normal Conditions: **10** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
12. Method of Compliance: **EPA Reference Method 9**	
13. Visible Emissions Comment (limit to 200 characters): **Rule 62-212.400(5)(c), F.A.C. (BACT)**	

Visible Emissions Limitation: Visible Emissions Limitation ~~2~~ of ~~2~~

4. Visible Emissions Subtype:	2. Basis for Allowable Opacity: [✔] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: **100** % Maximum Period of Excess Opacity Allowed: **60** min/hour	
14. Method of Compliance: **EPA Reference Method 9**	
15. Visible Emissions Comment (limit to 200 characters): **Excess emissions resulting from startup, shutdown, or malfunction not-to-exceed 2 hours in any 24 hour period unless authorized by FDEP for a longer duration. Rule 62-210.700(1), F.A.C.**	

I. CONTINUOUS MONITOR INFORMATION
(Only Regulated Emissions Units Subject to Continuous Monitoring)

Continuous Monitoring System: Continuous Monitor ____ of ____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
13. Continuous Monitor Comment (limit to 200 characters):	

Continuous Monitoring System: Continuous Monitor ____ of ____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
14. Continuous Monitor Comment (limit to 200 characters):	

J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements

1. Process Flow Diagram [✔] Attached, Document ID: **Fig. 2-3** [ ] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [ ] Attached, Document ID: _____ [ ] Not Applicable [✔] Waiver Requested
3. Detailed Description of Control Equipment [✔] Attached, Document ID: **Sect. 5.0** [ ] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities **To be provided** [ ] Attached, Document ID:_____ [ ] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:_____ [ ] Previously submitted, Date:_____ [ ] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:_____ [✔] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:_____ [✔] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application **See PSD application** [ ] Attached, Document ID:_____ [ ] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:_____ [✔] Not Applicable
10. Supplemental Requirements Comment:

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
[ ] Attached, Document ID:_____ [ ] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
[ ] Attached, Document ID:_____ [ ] Not Applicable

13. Identification of Additional Applicable Requirements
[ ] Attached, Document ID:_____ [ ] Not Applicable

14. Compliance Assurance Monitoring Plan
[ ] Attached, Document ID:_____ [ ] Not Applicable

15. Acid Rain Part Application (Hard-copy Required)

[ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
Attached, Document ID:_____

[ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
Attached, Document ID:_____

[ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
Attached, Document ID:_____

[ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
Attached, Document ID:_____

[ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
Attached, Document ID:_____

[ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
Attached, Document ID:_____

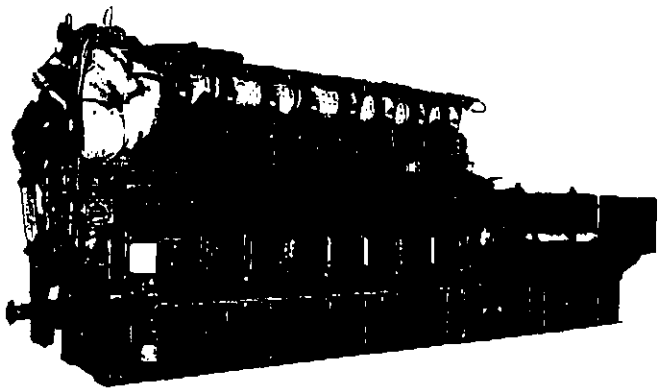
[ ] Not Applicable

Above items previously submitted, see Title V permit application.

Waukesha

16V - AT27GL

GAS ENGINATOR® GENERATING SYSTEM
2910 - 3250 kW



Model 16V-AT27GL Gas Enginator®

SPECIFICATIONS

ENGINE

Waukesha 16V-AT27GL, Four Cycle, Overhead Valve

Cylinders	V16
Piston Displacement	17398 cu. in. (285 L)
Bore & Stroke	10.83" x 11.81" (275 x 300 mm)
Compression Ratio	9:1
Jacket Water Capacity	130 gal. (492 L)
Auxiliary Water Capacity	26 gal. (98 L)
Lube Oil Capacity	313 gal. (1188 L)
Starting System, Air/Gas	150 psig (10.3 bar)
Fuel Pressure Range	45 - 60 psig (3.1 - 4.1 bar)

GENERATOR

Power Factor for Ratings	0.8
Insulation Material	NEMA Class F
Temperature Rise	within NEMA (105° C)
Voltage	4160/2400, 3 phase, 4 wire Wye, 60 Hz*
	3300/1905, 3 phase, 4 wire Wye, 50 Hz*
TIF and Deviation Factor	within NEMA, MG 1.22

*Additional voltages available

ENGINE COMPONENTS

CAMSHAFT – Consists of individual segments, one per cylinder, bolted together.

CONNECTING RODS – Low alloy, forged, fully machined.

CRANKCASE – Single piece, stress relieved, gray iron casting. Main bearing caps are retained with vertical studs and lateral tie bolts.

CRANKSHAFT – Low alloy, forged, fully machined, counterweighted with nine main bearing journals. The crankshaft is flanged for full power transmission from each end. Bearings are heavy duty, replaceable, precision aluminum type.

CYLINDER HEAD – Sixteen interchangeable, bore–cooled with two hard-faced intake and two hard-faced exhaust valves per head. Includes stainless steel intake and exhaust valve seats and prechamber fuel control valves.

CYLINDER LINER – Removable wet type with intermediate jacket water guide.

ENGINE INSTRUMENT CONNECTIONS – Thermocouples, K–type, for jacket water temperature, lube oil temperature, individual cylinder exhaust temperatures and pre and post turbocharger temperatures wired to a common junction box. Pressure taps piped to a common bulkhead for intake manifold pressure, lube oil pressure, prechamber fuel pressure, main chamber fuel pressure and jacket water pressure. Instruments and panel are by others. Recommend optional Model 4000 Remote Engine Instrument Panel (reference WPS Engomatic® controls.).

ENGINE PROTECTION SHUTDOWN CONTACTS - For high water temperature, low oil pressure, high intake manifold temperature (standard engine mounted thermocouple with one thermocouple relay - shipped loose), overspeed (electronic speed switch - shipped loose), and engine detonation sensing, alarm and shutdown, (see separate description of Detonation Sensing Module) Two engine mounted emergency shutdown/starter lockout palm buttons are supplied, one on either side of the engine. Use all of the above in conjunction with a DC control panel for unit shutdown. (reference WPS Engomatic® controls).

FLYWHEEL – With 291 tooth ring gear. Machined for direct connected, generator shaft or plate type coupling.

INTERCOOLER – Air–to–water.

PISTON – Single piece, aluminum alloy with integrally cast cooling passage. Four piston rings with the top two compression rings housed in a Ni–resist ring carrier. 9:1 compression ratio.

TURBOCHARGER – Two exhaust driven, with Turbocharger Control Module (TCM), electronic controlled wastegate and air bypass. 24V DC required.

VIBRATION DAMPER – Enclosed, viscous type.

ENGINE SYSTEMS

AIR INLET SYSTEM

Air Inlet Connection – Two 14.17" (360 mm) round.

Air Cleaner – Two dry panel type for remote mounting (shipped loose).

EXHAUST SYSTEM

Exhaust Manifold – Dry type with removable blankets.

Exhaust Outlet – Two 14" (356 mm) flanged vertical outlets.

FUEL SYSTEM – Carburetor with precombustion circuit. Single fuel inlet connection, mounted main and prechamber gas supply regulators. Pressure required: 45 - 60 psig (3.1 - 4.1 bar). Shipped loose 24V DC pilot operated main fuel valve. Mounted 24V DC pilot operated prechamber fuel valve. Includes adjustable speed switch for control of prechamber solenoid valve during start cycle.

Waukesha Engine ISO 9001 CERTIFIED

IGNITION SYSTEM – Waukesha Custom Engine Control® Ignition Module with flange mounted coils. Ignition system meets Canadian Standards Association Class 1, Group D, Division 2 hazardous location requirements. Includes fuses for protection against reverse polarity. 24V DC power required.

LUBRICATION SYSTEM – Gear driven, externally mounted gear type pump with pressure regulator and bypass circuit. Discharge side has flange for connection to remote oil cooler. Includes shell and tube type lube oil cooler sized for connection in series with intercooler. Not mounted. Includes full flow, 45 gallon (170 litre) capacity oil filter. Not mounted. Includes 175° F (79° C) lube oil temperature control valve, mounted on shipped loose oil cooler. Includes full flow filter strainer. Requires single customer lube oil inlet connection. Includes electric motor driven pre/post lube pump, 5 hp 230V AC/3ph/50 - 60 Hz, with motor starter (other voltages can be specified). Not mounted.

STARTING SYSTEM – Two turbine type pneumatic starters with 24V DC starting valves and strainers. Requires 150 psig (10.3 bar) air/gas supply. Crank termination switch is shipped loose.

WATER CIRCULATION SYSTEM

Auxiliary Circuit – Includes gear driven water pump with discharge piped to intercooler. Suction side has single flange for customer connection. Requires single customer outlet connection. Includes 130° F (54° C) auxiliary water temperature control valve, not mounted.

Engine Jacket – Includes gear driven water pump with discharge to engine inlet. Suction side has single flange for customer outlet connection. Requires single customer outlet connection. Includes 180° F (82° C) jacket water temperature control valve, not mounted.

ENGINE ACCESSORIES

BARRING DEVICE – Manual.

CRANKCASE PRESSURE RELIEF DOORS – Twelve mounted on side of crankcase..

CRANKCASE VENT CONNECTION – Single 3" (76.2 mm) round tube.

GOVERNOR – Woodward UG Actuator, mounted, with 701A speed control for single stand alone unit, shipped loose. Does not include optional generator load sharing control or portable programmer for 701A speed control.

JUNCTION BOXES - Separate AC, DC, and Instrument/thermocouple junction boxes for engine wiring and external connections.

WAUKESHA CUSTOM ENGINE CONTROL® DETONATION SENSING MODULE (DSM) – Includes individual cylinder sensors, Detonation Sensing Module, and filter. Device is compatible with Waukesha CEC Ignition Module only. Sensors are mounted and wired to DSM Filter. Detonation Sensing Module and filter are mounted. 24V DC power is required. The DSM meets Canadian Standards Association Class 1, Group D, Division 2, hazardous location requirements.

WAUKESHA CUSTOM ENGINE CONTROL® AIR/FUEL MODULE (AFM)– Electronic air/fuel ratio control. Includes Air/Fuel Module, main fuel gas regulator actuator, intake manifold pressure transducer, exhaust O_2 sensor assembly, junction box, and wiring harness. The Air/Fuel Module is shipped loose for customer installation. Wiring harness allows connection of the Air/Fuel Module to junction box. The module must be mounted off engine. 24V DC power is required. The AFM meets Canadian Standards Association Class 1, Group D, Division 2, hazardous location requirements.

GENERATOR AND BASE

GENERATOR - Waukesha, open dripproof, direct connected, fan cooled, 2/3 pitch, A.C. revolving field type, anti-friction grease lubricated bearing(s), with brushless PMG type exciter and damper windings. TIF and deviation factor within NEMA MG1.22. Voltage 4160/2400, 3 phase, 6-wire, WYE, 60 WYE, 60 Hz or 3300/1905, 3 phase, 6-wire WYE 50 Hz. Other voltages are available, consult factory. Insulation material NEMA Class F. Temperature rise within NEMA (105° C) for continuous power duty. All generators are rated at 0.8 power factor. Includes terminal standoff assembly.

VOLTAGE REGULATOR - SCR static automatic type, providing 1% regulation from no load to full load with automatic subsynchronous speed protection. Single phase sensing. Includes voltage adjustment rheostat. All items are shipped loose.

BASE - Engine and generator are mounted and aligned on a structural steel fabricated base designed for mounting on an isolated concrete pad and suitable for lifting. Base must be fully grouted in place according to Waukesha recommendations.

FLYWHEEL GUARD - Fabricated steel guard for protection of the rotating components is mounted to the engine-generator base.

TESTING - Standard Enginator testing.

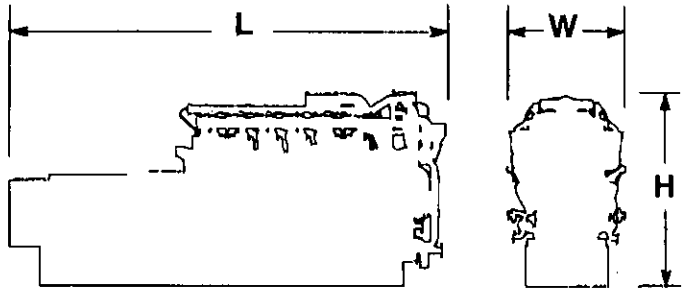
PAINT/PRESERVATION - Oil field orange paint. Internal preservation treatment for short-term storage up to one year.

PERFORMANCE DATA

WATER CONNECTION COOLING Intercooler Water 130° F (54°C)	CONTINUOUS POWER*	
	900 rpm	1000 rpm
	60 Hz	60 Hz
kWe Rating	2910	3250
Fuel Consumption x 1000 Btu/h (kW)	25830 (7570)	29065 (8518)
Jacket Water x 1000 Btu/h (kW)	3225 (945)	3380 (991)
Intercooler x 1000 Btu/h (kW)	1985 (582)	2325 (681)
Lube Oil x 1000 Btu/h (kW)	1020 (299)	1100 (322)
Heat Radiated x 1000 Btu/h (kW)	1626 (477)	1656 (485)
Exhaust Heat** x 1000 Btu/h (kW)	8045 (2358)	9515 (2789)
Exhaust Flow lb/h (kg/h)	45765 (20759)	48860 (22163)
Exhaust Temperature °F (° C)	703 (373)	768 (409)
Induction Air Flow scfm (m³/min)	10135 (287)	10805 (306)

Typical heat balance data is shown. Consult factory for guaranteed data.
***Continuous Power Rating:** The highest electrical power output of the Enginator® available for an unlimited number of hours per year, less maintenance.
Rating Standard: The Waukesha Enginator® power rating descriptions are in accordance to ISO 8528, DIN6271 and BS5514. It is also valid for ISO 3046/1-1986 with an engine mechanical efficiency of 90% and Tcra (clause 10.0) is limited to ±10° F (5° C).
**Heat rejection based on cooling exhaust gas to 85° F (29° C).

Cooling Equipment	L in. (mm)	W in. (mm)	H in. (mm)	Avg. Wt. lb. (Kg)
W.C.	396 (10,060)	102 (2590)	132 (3350)	108,000 (49,000)



WAUKESHA AT SERIES LEAN COMBUSTION GAS ENGINE

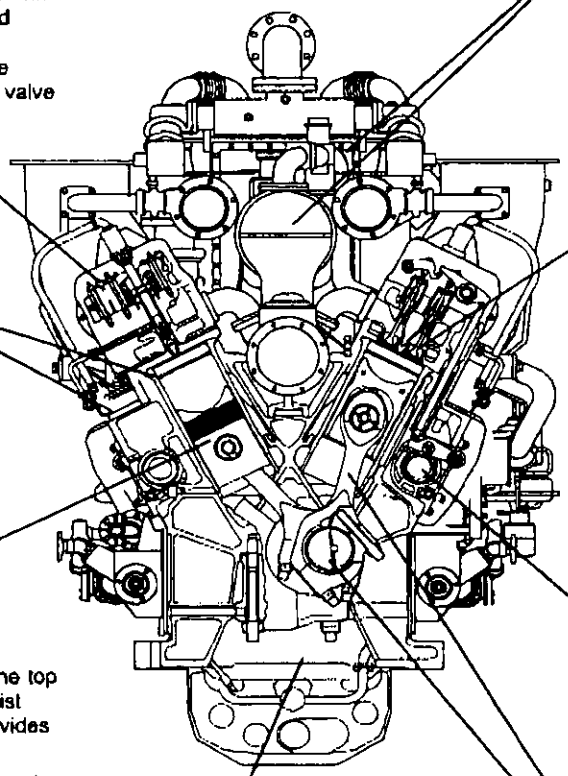
CYLINDER HEADS
In each of the individual bore-cooled cylinder heads jacket water is directed around the centrally located prechamber, the four valve guides and valve seats. This means lower overall temperatures and provides reduced deformation of the cylinder head flame deck. This feature results in extended spark plug, valve, valve guide and valve seat life.

CYLINDER LINERS AND WATER GUIDE ASSEMBLIES
An intermediate jacket water guide separates the bath-nitrided gray iron cylinder liners from the crankcase deck. This allows a high volume of coolant to flow around the combustion chamber and also reduces liner bore distortion due to preloading of the cylinder head studs. These features mean lower piston ring temperatures and longer ring life.

PISTONS
One piece aluminum alloy pistons. The top two rings are housed within a Ni-Resist insert, cast into the piston, which provides piston ring groove wear resistance.

Lubrication oil for cooling is supplied under pressure to a cooling passage cast into the piston crown. This feature provides for lower piston and piston ring operating temperatures. This design means longer piston and piston ring operating life.

CRANKCASE
The crankcase is a single piece gray iron casting which is stress relieved before final machining. The main bearing caps are retained with vertical studs and lateral tie bolts. These features assure structural rigidity and lower stress levels. This means a durable crankcase assembly and long main bearing life.



INTERCOOLER, CARBURETOR AND INTAKE MANIFOLD
A single intercooler, carburetor and intake manifold provide for a constant air/fuel ratio and uniform air/fuel distribution to each cylinder. This means improved fuel efficiency, lower exhaust emissions and simplified operation and maintenance.

VALVES AND VALVE TRAIN
The intake and exhaust valves (two each per cylinder) are made of a high silicon alloy material. The valve stems are chrome plated. The valve heads are hard faced and the valve seats are hardened stainless steel. These features provide for high strength and wear resistance. The hardened valve guides and valve seats are water cooled to minimize high temperature distortion and corrosion. These features mean long valve, seat and guide life.

CAMSHAFT
The camshaft consists of individual cylinder segments bolted together. This feature allows for simplified removal and replacement if necessary. The camshaft lobe design minimizes valve overlap which reduces gas flow between the intake and exhaust ports. This assures fuel efficiency and low exhaust emissions.

CRANKSHAFT AND CONNECTING RODS
Underslung crankshaft and connecting rods are fully machined from low alloy, high tensile strength forged steel. The crankshaft also features flanged construction on each end. This allows full power transmission from either the front or rear end of the engine for greater application flexibility.

Connecting rods have a high angle diagonal split at the rod cap. This permits the largest possible bearing diameter, for low unit loading, while allowing removal of the piston and rod assembly from the top of the engine. These features add up to high strength, application flexibility and long bearing life.

WAUKESHA ENGINE
A Halliburton Company
1000 West St. Paul Avenue
Waukesha, WI 53188-4999
Phone: (414) 547-3311 Fax: (414) 549-2795
http://www.waukeshaengine.com

WAUKESHA ENGINE DIVISION
Dresser Industrial Products, b.v.
Farmsumerweg 43, Postbus 330
9900 AH Appingedam, The Netherlands
Phone: (31) 596-652269 Fax: (31)596-624217

Waukesha (DRESSER)

WAUKESHA ENGINE
A HALLIBURTON COMPANY
WAUKESHA, WISCONSIN 53188-4999

Bulletin 8083
5M1198

SPECIAL APPLICATION APPROVAL

INFORMATION LISTED BELOW IS REQUESTED DATA - SEE PAGE 3 of 3 FOR APPROVAL

C-# _____

Project Name: City of Tampa WWTP

End User: City of Tampa

Consultant: Tampa Electric Co.

Application: Power Generation

Engine Model: 16V-AT27GL Qty: 2 Compression Ratio: 9:1

Duty: Continuous Y Intermittent N Standby N Hours/Year: 8760

Is this a Waukesha Power Systems Enginator®? Y If Yes, State:

Model: 16V-AT27GL Price Code: EJG908 Gen Synch/Ind.: S

Site Conditions:

4073 (3037) HP(KW_b)(Driven Equip) If Gen Set 2910 KWe 95.8 % Eff

_____ HP(KW_b)(Cooling Fan)

_____ HP(KW_b)(Misc.)

4073 (3037) HP(KW_b)(Total) @ 900 RPM = BMEP 206.0 (14.21) psi(bar)

_____ % Overload (O.L.) _____ Hours per _____

_____ HP(KW_b)(O.L.) @ _____ RPM = BMEP _____ psi(bar)

Location: Tampa, FL Elevation: ASL 500 (152) FT(M)

Jacket Water System Type (Solid Water/Ebullient): Solid Water

Jacket Water Outlet Temp.: 180 (82) °F(°C)

Intercooler Water Inlet Temp. *(Tcra)*: 130 (54) °F(°C)

Max. Combustion Air Inlet Temperature: 100 (38) °F(°C)

Fuel Types: Primary: Natural Gas Secondary: _____

If G or GSI then Requested Carburetor Setting: _____

Additional Information:

DRESSER

CERTIFICATION OF ENGINEERING APPROVAL

Are Special Codes or Equipment Required for this Approval? N

List:

Engineering Approval:

Ignition Timing 22 °BTDC Carb Setting (Lambda or MAFR) 10.85

When operating per the site conditions listed and when using a commercial quality natural gas consisting of a minimum of 93% Methane by volume, WKI(TM)=91, and 900 Btu/ft3 SLHV, WED approves a maximum continuous rating of 4073 BHP 6900 RPM with no overload allowed.

For the site conditions listed and per the above stated fuel with the engine operating at 4073 BHP 6900 RPM, the following heat rejection and emissions are guaranteed:

BSFC:(Btu/bhp-hr)	6178-0/+5% (per ISO 3046/1 -1995)
Induction Air(scfm):	9887
Exhaust Flow(lb/hr):	44399
Exhaust Temp(±75°F):	731°F
Heat To:(Btu/hr x1000)	
Jacket:	3272±5%
Lube Oil:	1028±5%
Intercooler:	1759±5%
Radiation:	1670±25%

Exhaust Emissions Not To Exceed:

NOx:	1.56 g/bhp-hr
CO:	1.66 g/bhp-hr
NMHC:	0.55 g/bhp-hr

Fuel must conform to WED "Gaseous Fuel Specification" S7884-6.

Signed: Mark Schreiner — Date: 01/20/2000

Signed: Steve Kuehl — Date: 01/20/2000

POTENTIAL EMISSION INVENTORY WORKSHEET

City of Tampa, Howard F. Curren AWT Plant

ENG-7

EMISSION SOURCE TYPE

HEAVY DUTY NATURAL GAS-FIRED ENGINES - CRITERIA POLLUTANTS

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	4-Cycle Lean Burn Engine
Emission Control Method(s)/ID No.(s):	None
Emission Point Description:	2.9 MW Engine/Generator Set No. 7, Waukesha 16V-AT27GL

EMISSION ESTIMATION EQUATIONS

Emission (lb/hr) = Engine Power Output (hp) x Pollutant Emission Factor (lb/hp-hr)

Emission (ton/yr) = Engine Power Output (hp) x Pollutant Emission Factor (lb/hp-hr) x Operating Period (hrs/yr) x (1 ton/ 2,000 lb)

Source: ECT, 2000.

INPUT DATA AND EMISSIONS CALCULATIONS

Operating Hours:	24	Hrs/Day	7	Days/Wk	52 Wks/Yr
Operating Hours:	8,760	Hrs/Yr			
Engine Heat Input:	25.2	10^6 Btu/hr (LHV)	Power Output:	2,910	kW
Engine Power Output:	4,073	HP	Typical Natural Gas Sulfur Content:	0.00064	weight %
Gas Heat Content:	950	Btu/ft^3 (LHV)	Heat Rate:	6,178	Btu/hp-hr
Number of Engines:	1	Gas Consumed:	0.0265	10^6 ft^3/hr	232.03 10^6 ft^3/yr

Criteria Pollutant	Pollutant Emission Factors (g/hp-hr)	Pollutant Emission Factors (lb/hp-hr)	Potential Emission Rates (lb/hr)	Potential Emission Rates (tpy)
NO_x	1.56	0.0034	14.0	61.4
CO	1.66	0.0037	14.9	65.3
NMHC	0.55	0.00121	4.9	21.6
SO_2	2.92E-03	6.45E-06	0.026	0.12
PM/PM_{10}	0.10	0.00022	0.90	3.9

SOURCES OF INPUT DATA

Parameter	Data Source
Operating Hours	TEC, 2000.
Engine Power Output	Waukesha, 1999.
Typical Natural Gas Sulfur Content	Calculated based on gas sulfur content of 2,000 grains per 10^6 cubic feet, ECT, 1999.
Emission Factors (except SO_2)	Waukesha, 2000.
Emission Factor, SO_2	Table 3.4-1, AP-42, EPA, October 1996.

NOTES AND OBSERVATIONS

DATA CONTROL

Data Collected by:	T.Davis	Date:	Apr-00
Data Entered by:	T.Davis	Date:	Apr-00
Reviewed by:	S. Todd	Date:	Apr-00

POTENTIAL EMISSION INVENTORY WORKSHEET

City of Tampa, Howard F. Curren AWT Plant

ENG-8

EMISSION SOURCE TYPE

HEAVY DUTY NATURAL GAS-FIRED ENGINES - CRITERIA POLLUTANTS

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	4-Cycle Lean Burn Engine
Emission Control Method(s)/ID No.(s):	None
Emission Point Description:	2.9 MW Engine/Generator Set No. 8, Waukesha 16V-AT27GL

EMISSION ESTIMATION EQUATIONS

Emission (lb/hr) = Engine Power Output (hp) x Pollutant Emission Factor (lb/hp-hr)

Emission (ton/yr) = Engine Power Output (hp) x Pollutant Emission Factor (lb/hp-hr) x Operating Period (hrs/yr) x (1 ton/ 2,000 lb)

Source: ECT, 2000.

INPUT DATA AND EMISSIONS CALCULATIONS

Operating Hours:	24	Hrs/Day	7 Days/Wk	52	Wks/Yr
Operating Hours:	8,760	Hrs/Yr			
Engine Heat Input:	25.2	10^6 Btu/hr (LHV)	Power Output:	2,910	kW
Engine Power Output:	4,073	HP	Typical Natural Gas Sulfur Content:	0.00064	weight %
Gas Heat Content:	950	Btu/ft^3 (LHV)	Heat Rate:	6,178	Btu/hp-hr
Number of Engines:	1	Gas Consumed:	0.0265 10^6 ft^3/hr	232.03	10^6 ft^3/yr

Criteria Pollutant	Pollutant Emission Factors (g/hp-hr)	Pollutant Emission Factors (lb/hp-hr)	Potential Emission Rates (lb/hr)	Potential Emission Rates (tpy)
NO_x	1.56	0.0034	14.0	61.4
CO	1.66	0.0037	14.9	65.3
NMHC	0.55	0.00121	4.9	21.6
SO_2	2.92E-03	6.45E-06	0.026	0.12
PM/PM_{10}	0.10	0.00022	0.90	3.9

SOURCES OF INPUT DATA

Parameter	Data Source
Operating Hours	TEC, 2000.
Engine Power Output	Waukesha, 1999.
Typical Natural Gas Sulfur Content	Calculated based on gas sulfur content of 2,000 grains per 10^6 cubic feet, ECT, 1999.
Emission Factors (except SO_2)	Waukesha, 2000.
Emission Factor, SO_2	Table 3.4-1, AP-42, EPA, October 1996.

NOTES AND OBSERVATIONS

DATA CONTROL

Data Collected by:	T.Davis	Date:	Apr-00
Data Entered by:	T.Davis	Date:	Apr-00
Reviewed by:	S. Todd	Date:	Apr-00

Table 1. FDEP Off-Site NO_x Emission Inventory

Facility ID	Company Name	EU ID	UTM Coordinates Easting (km)	UTM Coordinates Northing (km)	Distance from Project Site (km)	Allowable NO_x Emission Rates (lb/hr)	Allowable NO_x Emission Rates (g/s)	Allowable NO_x Emission Rates (tpy)	Stack Parameters Height (ft)	Stack Parameters Diameter (ft)	Stack Parameters Temperature (°F)	Stack Parameters Velocity (ft/sec)
0490015	HARDEE POWER PARTNERS,LTD	1	404.8	3,057.4	56.1	215.90	27.20	945.60	90.0	14.5	236.0	77.5
0490015	HARDEE POWER PARTNERS,LTD	1	404.8	3,057.4	56.1	383.80	48.36	1,681.00	90.0	14.5	236.0	77.5
0490015	HARDEE POWER PARTNERS,LTD	2	404.8	3,057.4	56.1	215.90	27.20	945.60	90.0	14.5	245.0	75.8
0490015	HARDEE POWER PARTNERS,LTD	2	404.8	3,057.4	56.1	383.80	48.36	1,681.00	90.0	14.5	245.0	75.8
0490015	HARDEE POWER PARTNERS,LTD	3	404.8	3,057.4	56.1	215.90	27.20	945.60	75.0	17.9	986.0	94.3
0490015	HARDEE POWER PARTNERS,LTD	3	404.8	3,057.4	56.1	383.80	48.36	1,681.00	75.0	17.9	986.0	94.3
0490015	HARDEE POWER PARTNERS,LTD	5	404.8	3,057.4	56.1	32.00	4.03	140.16	85.0	14.8	999.0	142.0
0490015	HARDEE POWER PARTNERS,LTD	5	404.8	3,057.4	56.1	167.00	21.04	73.15	85.0	14.8	999.0	142.0
0490043	IPS AVON PARK CORPORATION	1	408.8	3,044.5	67.1	351.00	44.23	252.00				
0490043	IPS AVON PARK CORPORATION	1	408.8	3,044.5	67.1	64.10	8.08	252.00				
0490043	IPS AVON PARK CORPORATION	2	408.8	3,044.5	67.1	351.00	44.23	252.00				
0490043	IPS AVON PARK CORPORATION	2	408.8	3,044.5	67.1	64.10	8.08	252.00				
0490043	IPS AVON PARK CORPORATION	3	408.8	3,044.5	67.1	351.00	44.23	252.00				
0490043	IPS AVON PARK CORPORATION	3	408.8	3,044.5	67.1	64.10	8.08	252.00				
0490043	IPS AVON PARK CORPORATION	4	408.8	3,044.5	67.1	351.00	44.23	252.00				
0490043	IPS AVON PARK CORPORATION	4	408.8	3,044.5	67.1	64.10	8.08	252.00				
0570001	JOHNSON CONTROLS BATTERY GROUP, INC	2	359.9	3,102.5	13.5				35.0	3.0	95.0	31.0
0570001	JOHNSON CONTROLS BATTERY GROUP, INC	5	359.9	3,102.5	13.5				35.0	0.8	125.0	69.0
0570001	JOHNSON CONTROLS BATTERY GROUP, INC	17	359.9	3,102.5	13.5				36.0	2.3	90.0	29.0
0570001	JOHNSON CONTROLS BATTERY GROUP, INC	22	359.9	3,102.5	13.5				35.0	2.7	85.0	43.0
0570001	JOHNSON CONTROLS BATTERY GROUP, INC	36	359.9	3,102.5	13.5				35.0	1.0		
0570001	JOHNSON CONTROLS BATTERY GROUP, INC	37	359.9	3,102.5	13.5			1.99				
0570001	JOHNSON CONTROLS BATTERY GROUP, INC	38	359.9	3,102.5	13.5			1.10				
0570001	JOHNSON CONTROLS BATTERY GROUP, INC	41	359.9	3,102.5	13.5			0.10	40.0	0.4	600.0	15.9
0570001	JOHNSON CONTROLS BATTERY GROUP, INC	44	359.9	3,102.5	13.5			1.10				
0570003	CF INDUSTRIES, INC.	1	362.8	3,098.4	10.3			12.70	25.0	2.5	500.0	28.0
0570003	CF INDUSTRIES, INC.	2	362.8	3,098.4	10.3							
0570005	CF INDUSTRIES, INC., PLANT CITY PHOSP	1	388.0	3,116.0	40.0	0.47	0.06	694.00	25.0	3.5	550.0	58.0
0570005	CF INDUSTRIES, INC., PLANT CITY PHOSP	7	388.0	3,116.0	40.0				199.0	8.0	175.0	53.0
0570005	CF INDUSTRIES, INC., PLANT CITY PHOSP	8	388.0	3,116.0	40.0				199.0	8.0	148.0	31.0
0570005	CF INDUSTRIES, INC., PLANT CITY PHOSP	10	388.0	3,116.0	40.0				94.0	10.0	128.0	26.0
0570005	CF INDUSTRIES, INC., PLANT CITY PHOSP	11	388.0	3,116.0	40.0				180.0	9.2	137.0	43.0
0570005	CF INDUSTRIES, INC., PLANT CITY PHOSP	12	388.0	3,116.0	40.0				180.0	9.2	105.0	26.0
0570005	CF INDUSTRIES, INC., PLANT CITY PHOSP	13	388.0	3,116.0	40.0				180.0	9.2		
0570005	CF INDUSTRIES, INC., PLANT CITY PHOSP	25	388.0	3,116.0	40.0				20.0	3.5	110.0	62.0
0570005	CF INDUSTRIES, INC., PLANT CITY PHOSP	28	388.0	3,116.0	40.0				119.0	1.0	120.0	
0570006	YUENGLING BREWING CO.	1	362.0	3,103.2	14.6	5.60	0.71	50.08	90.0	6.5	275.0	7.0
0570008	CARGILL FERTILIZER, INC.	4	362.9	3,082.5	7.9				150.0	7.5	153.0	44.0
0570008	CARGILL FERTILIZER, INC.	5	362.9	3,082.5	7.9				150.0	8.0	152.0	34.0
0570008	CARGILL FERTILIZER, INC.	6	362.9	3,082.5	7.9				150.0	9.0	170.0	41.6
0570008	CARGILL FERTILIZER, INC.	7	362.9	3,082.5	7.9				126.0	8.0	132.0	37.0
0570008	CARGILL FERTILIZER, INC.	22	362.9	3,082.5	7.9				133.0	7.3	120.0	48.0
0570008	CARGILL FERTILIZER, INC.	23	362.9	3,082.5	7.9				133.0	7.0	120.0	52.0
0570008	CARGILL FERTILIZER, INC.	41	362.9	3,082.5	7.9				40.0	1.7	120.0	39.7
0570008	CARGILL FERTILIZER, INC.	43	362.9	3,082.5	7.9	50.90	6.41	223.00	20.0	4.0	420.0	52.0
0570008	CARGILL FERTILIZER, INC.	55	362.9	3,082.5	7.9	20.00	2.52	87.60	133.0	7.0	108.0	50.0
0570008	CARGILL FERTILIZER, INC.	64	362.9	3,082.5	7.9							
0570008	CARGILL FERTILIZER, INC.	66	362.9	3,082.5	7.9							
0570008	CARGILL FERTILIZER, INC.	67	362.9	3,082.5	7.9							
0570008	CARGILL FERTILIZER, INC.	68	362.9	3,082.5	7.9				70.0	4.8	100.0	50.0
0570008	CARGILL FERTILIZER, INC.	73	362.9	3,082.5	7.9				125.0	6.0		
0570008	CARGILL FERTILIZER, INC.	78	362.9	3,082.5	7.9	6.50	0.82	28.42	70.0	2.5	170.0	64.5
0570008	CARGILL FERTILIZER, INC.	100	362.9	3,082.5	7.9	3.71	0.47	15.96	70.0	2.5	170.0	64.5
0570008	CARGILL FERTILIZER, INC.	101	362.9	3,082.5	7.9	3.71	0.47	15.96				
0570008	CARGILL FERTILIZER, INC.	103	362.9	3,082.5	7.9	6.50	0.82	28.42	70.0	3.0	165.0	47.2
0570008	CARGILL FERTILIZER, INC.	106	362.9	3,082.5	7.9				55.0	0.8	77.0	16.0
0570010	CITY OF TAMPA WATER DEPARTMENT	1	365.9	3,110.6	22.8							

Table 1: FDEP Off-Site NO_x Emission Inventory

Facility ID	Company Name	EU ID	UTM Coordinates Easting (km)	UTM Coordinates Northing (km)	Distance from Project Site (km)	Allowable NO_x Emission Rates (lb/hr)	Allowable NO_x Emission Rates (g/s)	Allowable NO_x Emission Rates (tpy)	Stack Parameters Height (ft)	Stack Parameters Diameter (ft)	Stack Parameters Temperature (°F)	Stack Parameters Velocity (ft/sec)
0570010	CITY OF TAMPA WATER DEPARTMENT	2	365.9	3,110.6	22.8				41.0	1.0	77.0	10.0
0570018	LAFARGE FLORIDA,INC.	18	357.9	3,090.7	1.8				16.0	2.4	77.0	55.0
0570018	LAFARGE FLORIDA,INC.	20	357.9	3,090.7	1.8				57.0	2.2	77.0	56.0
0570018	LAFARGE FLORIDA,INC.	21	357.9	3,090.7	1.8				30.0	2.4	77.0	55.0
0570018	LAFARGE FLORIDA,INC.	32	357.9	3,090.7	1.8				73.0	1.9	77.0	76.0
0570018	LAFARGE FLORIDA,INC.	54	357.9	3,090.7	1.8						77.0	
0570021	INTERNATIONAL SHIP REPAIR & MARINE SERV.	1	358.0	3,092.8	3.8			89.00	75.0	3.6	550.0	4.0
0570022	MARATHON ASHLAND PETROLEUM LLC	3	362.2	3,087.2	4.1				10.0	1.5	580.0	21.2
0570022	MARATHON ASHLAND PETROLEUM LLC	5	362.2	3,087.2	4.1			2.60	65.0	8.0	150.0	41.0
0570024	IMC-AGRICO CO.(PORT SUTTON TERMINAL)	1	361.5	3,087.5	3.3				50.0	1.7	350.0	108.0
0570025	TRADEMARK NITROGEN CORP	1	367.3	3,092.6	9.5				42.0	1.1	350.0	59.0
0570028	NATIONAL GYPSUM COMPANY	21	348.8	3,082.7	11.6	0.84	0.11	3.67	42.0	1.1	350.0	62.0
0570028	NATIONAL GYPSUM COMPANY	22	348.8	3,082.7	11.6	0.84	0.11	3.67	42.0	1.1	350.0	50.0
0570028	NATIONAL GYPSUM COMPANY	23	348.8	3,082.7	11.6				42.0	1.1	350.0	61.0
0570028	NATIONAL GYPSUM COMPANY	24	348.8	3,082.7	11.6	0.84	0.11	3.67	42.0	1.1	350.0	71.0
0570028	NATIONAL GYPSUM COMPANY	28	348.8	3,082.7	11.6	2.10	0.26	9.00	42.0	1.1	350.0	71.0
0570028	NATIONAL GYPSUM COMPANY	29	348.8	3,082.7	11.6	2.10	0.26	9.00	42.0	1.1	350.0	71.0
0570028	NATIONAL GYPSUM COMPANY	30	348.8	3,082.7	11.6	2.10	0.26	9.00	42.0	1.1	350.0	71.0
0570028	NATIONAL GYPSUM COMPANY	31	348.8	3,082.7	11.6	2.10	0.26	9.00	42.0	1.1	350.0	71.0
0570028	NATIONAL GYPSUM COMPANY	34	348.8	3,082.7	11.6	11.90	1.50	5.00	47.0	2.5	309.0	67.0
0570028	NATIONAL GYPSUM COMPANY	36	348.8	3,082.7	11.6	2.18	0.27	9.55	64.0	3.5	185.0	40.0
0570028	NATIONAL GYPSUM COMPANY	47	348.8	3,082.7	11.6	7.50	0.95	31.50	35.0	2.8	300.0	64.0
0570028	NATIONAL GYPSUM COMPANY	100	348.8	3,082.7	11.6				42.0	1.1	350.0	71.9
0570028	NATIONAL GYPSUM COMPANY	101	348.8	3,082.7	11.6				42.0	1.1	350.0	71.9
0570028	NATIONAL GYPSUM COMPANY	102	348.8	3,082.7	11.6	2.08	0.26	9.11	90.0	3.9	200.0	44.7
0570028	NATIONAL GYPSUM COMPANY	103	348.8	3,082.7	11.6	2.08	0.26	9.11	90.0	3.0	200.0	75.5
0570028	NATIONAL GYPSUM COMPANY	104	348.8	3,082.7	11.6	2.08	0.26	9.11	90.0	3.0	200.0	75.5
0570029	NITRAM, INC.	3	362.5	3,089.0	4.0				90.0	4.5	260.0	35.0
0570029	NITRAM, INC.	4	362.5	3,089.0	4.0				30.0	4.5	450.0	35.0
0570029	NITRAM, INC.	7	362.5	3,089.0	4.0	103.10	12.99	294.00	55.0	2.5	250.0	121.0
0570029	NITRAM, INC.	13	362.5	3,089.0	4.0	1.74	0.22	7.61	9.0	1.7	260.0	24.0
0570029	NITRAM, INC.	100	362.5	3,089.0	4.0							
0570038	TAMPA ELECTRIC COMPANY	1	358.0	3,091.0	2.0	121.00	15.25	530.00	280.0	11.3	356.0	82.0
0570038	TAMPA ELECTRIC COMPANY	2	358.0	3,091.0	2.0	121.00	15.25	530.00	280.0	11.3	356.0	82.0
0570038	TAMPA ELECTRIC COMPANY	3	358.0	3,091.0	2.0	167.00	21.04	731.00	280.0	12.0	341.0	62.7
0570038	TAMPA ELECTRIC COMPANY	4	358.0	3,091.0	2.0	167.00	21.04	731.00	280.0	12.0	341.0	62.7
0570038	TAMPA ELECTRIC COMPANY	5	358.0	3,091.0	2.0	243.00	30.62	1,064.00	280.0	11.3	356.0	82.0
0570038	TAMPA ELECTRIC COMPANY	6	358.0	3,091.0	2.0	222.00	27.97	972.00	280.0	9.4	329.0	75.2
0570039	TAMPA ELECTRIC COMPANY	1	361.9	3,075.0	14.4	6,171.00	777.55	27,029.00	490.0	24.0	294.0	115.9
0570039	TAMPA ELECTRIC COMPANY	2	361.9	3,075.0	14.4	6,191.00	780.07	27,118.00	490.0	24.0	125.0	87.6
0570039	TAMPA ELECTRIC COMPANY	3	361.9	3,075.0	14.4	2,881.00	363.01	12,619.00	499.0	24.0	279.0	47.0
0570039	TAMPA ELECTRIC COMPANY	4	361.9	3,075.0	14.4	2,598.00	327.35	11,379.00	499.0	24.0	156.0	59.0
0570039	TAMPA ELECTRIC COMPANY	5	361.9	3,075.0	14.4	447.00	56.32	1,958.00	75.0	14.0	928.0	61.0
0570039	TAMPA ELECTRIC COMPANY	6	361.9	3,075.0	14.4	447.50	56.39	1,960.00	75.0	14.0	928.0	61.0
0570039	TAMPA ELECTRIC COMPANY	7	361.9	3,075.0	14.4	128.00	16.13	561.00	35.0	11.0	1,010.0	91.9
0570040	TAMPA ELECTRIC COMPANY	1	360.0	3,087.5	2.1	1,839.00	231.71	8,055.00	315.0	10.0	289.0	94.0
0570040	TAMPA ELECTRIC COMPANY	2	360.0	3,087.5	2.1	1,898.00	239.15	8,314.00	315.0	10.0	298.0	101.0
0570040	TAMPA ELECTRIC COMPANY	3	360.0	3,087.5	2.1	2,401.00	302.53	10,518.00	315.0	10.6	296.0	126.0
0570040	TAMPA ELECTRIC COMPANY	4	360.0	3,087.5	2.1	2,638.00	332.39	11,555.00	315.0	10.0	309.0	75.0
0570040	TAMPA ELECTRIC COMPANY	5	360.0	3,087.5	2.1	3,454.00	435.20	15,128.00	315.0	14.6	303.0	76.0
0570040	TAMPA ELECTRIC COMPANY	6	360.0	3,087.5	2.1	5,698.00	717.95	24,957.00	315.0	17.6	320.0	81.0
0570040	TAMPA ELECTRIC COMPANY	7	360.0	3,087.5	2.1	128.00	16.13	561.00	35.0	11.0	1,010.0	92.6
0570040	TAMPA ELECTRIC COMPANY	8	360.0	3,087.5	2.1						77.0	
0570041	FLORIDA HEALTH SCIENCES CTR, INC	2	356.4	3,091.0	2.9				90.0	6.0	80.0	
0570054	SCRAP-ALL, INC.	2	359.4	3,093.1	4.2	0.74	0.09	30.00	38.0	0.7	435.0	51.0
0570054	SCRAP-ALL, INC.	5	359.4	3,093.1	4.2				28.0	2.0	1,497.0	12.0
0570055	CHEVRON PRODUCTS COMPANY	5	348.2	3,082.5	12.2				25.0	6.0		

Table 1: FDEP Off-Site NO_x Emission Inventory

Facility ID	Company Name	EU ID	UTM Coordinates Easting (km)	UTM Coordinates Northing (km)	Distance from Project Site (km)	Allowable NO_x Emission Rates (lb/hr)	Allowable NO_x Emission Rates (g/s)	Allowable NO_x Emission Rates (tpy)	Stack Parameters Height (ft)	Stack Parameters Diameter (ft)	Stack Parameters Temperature (°F)	Stack Parameters Velocity (ft/sec)
0570056	BUILDING MATERIALS MANUFACTURING CORP	4	362.2	3,087.2	4.1				33.0	2.3	800.0	28.0
0570056	BUILDING MATERIALS MANUFACTURING CORP	5	362.2	3,087.2	4.1				38.0	1.6	375.0	61.0
0570056	BUILDING MATERIALS MANUFACTURING CORP	8	362.2	3,087.2	4.1				45.0	2.0	77.0	4.0
0570056	BUILDING MATERIALS MANUFACTURING CORP	9	362.2	3,087.2	4.1							
0570057	GULF COAST RECYCLING, INC.	1	364.0	3,093.5	7.1	1.67	0.21		150.0	3.0	160.0	54.8
0570057	GULF COAST RECYCLING, INC.	2	364.0	3,093.5	7.1				25.0	2.0	87.0	76.9
0570057	GULF COAST RECYCLING, INC.	6	364.0	3,093.5	7.1				65.0	2.0	98.0	48.0
0570061	TAMPA ARMATURE WORKS	1	365.6	3,091.7	7.6			11.38	20.0	2.1	1,200.0	
0570061	TAMPA ARMATURE WORKS	2	365.6	3,091.7	7.6	1.28	0.16	2.00	18.0	0.8	400.0	33.0
0570061	TAMPA ARMATURE WORKS	6	365.6	3,091.7	7.6	0.31	0.04	1.36	27.0	1.7	1,400.0	19.4
0570065	SOUTHDOWN,INC.	2	349.5	3,102.0	15.8				60.0	2.0	78.0	10.0
0570069	INDUSTRIAL GALVANIZERS AMERICA, INC.	1	368.5	3,094.5	11.4				11.0	1.5	150.0	330.0
0570069	INDUSTRIAL GALVANIZERS AMERICA, INC.	2	368.5	3,094.5	11.4				28.0	2.0	94.0	53.1
0570072	BALL METAL BEVERAGE CONTAINER CORP.	1	360.5	3,103.0	14.1				40.0	0.5	350.0	106.0
0570072	BALL METAL BEVERAGE CONTAINER CORP.	2	360.5	3,103.0	14.1				40.0	1.2	80.0	17.0
0570072	BALL METAL BEVERAGE CONTAINER CORP.	3	360.5	3,103.0	14.1				40.0	1.0	190.0	38.0
0570072	BALL METAL BEVERAGE CONTAINER CORP.	6	360.5	3,103.0	14.1				35.0	4.3	300.0	61.6
0570075	CORONET INDUSTRIES, INC.	1	393.8	3,096.3	36.0	5.50	0.69	23.44	100.0	4.5	149.0	39.0
0570075	CORONET INDUSTRIES, INC.	3	393.8	3,096.3	36.0	5.28	0.67		152.0	5.8	81.0	31.0
0570075	CORONET INDUSTRIES, INC.	5	393.8	3,096.3	36.0	46.80	5.90	65.70	150.0	5.8	104.0	60.0
0570075	CORONET INDUSTRIES, INC.	8	393.8	3,096.3	36.0				100.0	3.0	115.0	28.0
0570075	CORONET INDUSTRIES, INC.	18	393.8	3,096.3	36.0				45.0	1.8	170.0	46.0
0570075	CORONET INDUSTRIES, INC.	19	393.8	3,096.3	36.0				25.0	1.3	450.0	50.0
0570075	CORONET INDUSTRIES, INC.	20	393.8	3,096.3	36.0	1.00	0.13		20.0	1.2	630.0	66.0
0570075	CORONET INDUSTRIES, INC	21	393.8	3,096.3	36.0				80.0	4.5	95.0	259.0
0570075	CORONET INDUSTRIES, INC.	22	393.8	3,096.3	36.0	23.40	2.95	83.00	152.0	5.8	80.0	39.0
0570075	CORONET INDUSTRIES, INC.	23	393.8	3,096.3	36.0				32.0	1.5	73.0	35.0
0570075	CORONET INDUSTRIES, INC.	24	393.8	3,096.3	36.0	6.22	0.78		152.0	5.8	72.0	36.0
0570075	CORONET INDUSTRIES, INC.	27	393.8	3,096.3	36.0				10.0	0.8	150.0	59.0
0570076	DELTA ASPHALT	1	372.1	3,105.4	21.3	54.00	6.80	154.00	28.0	3.8	300.0	80.0
0570076	DELTA ASPHALT	100	372.1	3,105.4	21.3	18.75	2.36	37.50				
0570076	DELTA ASPHALT	101	372.1	3,105.4	21.3			0.86				
0570076	DELTA ASPHALT	103	372.1	3,105.4	21.3							
0570077	VERLITE COMPANY	1	360.2	3,093.0	4.3	0.76	0.10	3.00	50.0	2.0	230.0	28.0
0570080	MARATHON ASHLAND PETROLEUM LLC	1	359.5	3,091.7	2.8				50.0	2.0	78.0	15.0
0570082	FREEPORT-MCMORAN SULPHUR LLC	3	358.0	3,090.0	1.1							
0570082	FREEPORT-MCMORAN SULPHUR LLC	4	358.0	3,090.0	1.1				50.0	0.8		
0570083	AMOCO PETROLEUM PRODUCTS	10	357.8	3,092.0	3.1				20.0	0.8	28.0	1.3
0570085	GATX TERMINALS CORP	4	358.0	3,089.0	0.5							
0570087	CORESLAB STRUCTURES(TAMPA),INC.	1	363.2	3,098.4	10.5				15.0	1.5	75.0	5.0
0570087	CORESLAB STRUCTURES(TAMPA),INC.	2	363.2	3,098.4	10.5				60.0	0.8	78.0	99.0
0570087	CORESLAB STRUCTURES(TAMPA),INC.	3	363.2	3,098.4	10.5							
0570088	HALEY, JAMES A. VETERAN'S HOSPITAL TAMPA	2	359.6	3,104.1	15.1				64.0	2.0		
0570089	ST JOSEPHS HOSPITAL	2	353.3	3,095.9	8.6				40.0	1.7	135.0	45.7
0570089	ST JOSEPHS HOSPITAL	3	353.3	3,095.9	8.6	7.30	0.92	31.90	30.0	1.0	375.0	42.0
0570089	ST JOSEPHS HOSPITAL	5	353.3	3,095.9	8.6				35.0	2.0	350.0	23.9
0570089	ST JOSEPHS HOSPITAL	6	353.3	3,095.9	8.6				35.0	2.0	350.0	23.9
0570089	ST JOSEPHS HOSPITAL	7	353.3	3,095.9	8.6				35.0	2.0	350.0	23.9
0570090	SOUTHEASTERN WIRE	1	368.2	3,094.6	11.2				14.0	3.5	116.0	31.0
0570091	TERRA ASGROW	1	388.6	3,104.6	33.9	0.45	0.06		28.0	1.5	1,800.0	23.0
0570097	W R BONSAL CO	1	363.6	3,098.1	10.4				17.0	2.3	300.0	57.0
0570097	W R BONSAL CO	3	363.6	3,098.1	10.4				55.0	2.2	77.0	2.0
0570100	FREEPORT-MCMORAN SULPHUR LLC	1	361.1	3,086.9	3.4				20.0	1.7	380.0	11.0
0570100	FREEPORT-MCMORAN SULPHUR LLC	2	361.1	3,086.9	3.4				6.0	5.1		
0570100	FREEPORT-MCMORAN SULPHUR LLC	3	361.1	3,086.9	3.4				6.0	5.0		
0570100	FREEPORT-MCMORAN SULPHUR LLC	4	361.1	3,086.9	3.4				0.0	0.0		
0570100	FREEPORT-MCMORAN SULPHUR LLC	5	361.1	3,086.9	3.4				0.0			

Table 1: FDEP Off-Site NO_x Emission Inventory

Facility ID	Company Name	EU ID	UTM Coordinates Easting (km)	UTM Coordinates Northing (km)	Distance from Project Site (km)	Allowable NO_x Emission Rates (lb/hr)	Allowable NO_x Emission Rates (g/s)	Allowable NO_x Emission Rates (tpy)	Stack Parameters Height (ft)	Stack Parameters Diameter (ft)	Stack Parameters Temperature (°F)	Stack Parameters Velocity (ft/sec)
0570100	FREEPORT-MCMORAN SULPHUR LLC	6	361.1	3,086.9	3.4				0.0	0.0		
0570100	FREEPORT-MCMORAN SULPHUR LLC	7	361.1	3,086.9	3.4				0.0	0.0		
0570100	FREEPORT-MCMORAN SULPHUR LLC	8	361.1	3,086.9	3.4				0.0	0.0		
0570100	FREEPORT-MCMORAN SULPHUR LLC	9	361.1	3,086.9	3.4				0.0	0.0		
0570100	FREEPORT-MCMORAN SULPHUR LLC	10	361.1	3,086.9	3.4							
0570119	GULF COAST METALS	3	364.7	3,093.6	7.7				28.0	1.5	1,900.0	22.0
0570119	GULF COAST METALS	4	364.7	3,093.6	7.7				25.0	0.7	1,841.0	
0570119	GULF COAST METALS	5	364.7	3,093.6	7.7			12.74				
0570127	CITY OF TAMPA	1	360.2	3,092.2	3.6	75.00	9.45	329.00	160.0	5.7	450.0	41.0
0570127	CITY OF TAMPA	2	360.2	3,092.2	3.6	75.00	9.45	329.00	160.0	5.7	450.0	41.0
0570127	CITY OF TAMPA	3	360.2	3,092.2	3.6	75.00	9.45	329.00	160.0	5.7	450.0	41.0
0570127	CITY OF TAMPA	4	360.2	3,092.2	3.6	75.00	9.45	329.00	160.0	5.7	450.0	41.0
0570127	CITY OF TAMPA	103	360.2	3,092.2	3.6	42.50	5.36	186.15	201.0	4.2	289.0	73.3
0570127	CITY OF TAMPA	104	360.2	3,092.2	3.6	42.50	5.36	186.15	201.0	4.2	289.0	73.3
0570127	CITY OF TAMPA	105	360.2	3,092.2	3.6	42.50	5.36	186.15	201.0	4.2	289.0	73.3
0570127	CITY OF TAMPA	106	360.2	3,092.2	3.6	42.50	5.36	186.15	201.0	4.2	289.0	73.3
0570136	VERLITE CO	3	363.0	3,098.1	10.1				40.0	1.0	171.0	41.0
0570136	VERLITE CO	4	363.0	3,098.1	10.1				40.0	1.0	272.0	46.0
0570141	US AIR FORCE (MACDILL AFB)	2	353.5	3,081.5	9.0			5.30	35.0	2.0	450.0	15.0
0570141	US AIR FORCE (MACDILL AFB)	4	353.5	3,081.5	9.0			5.30	35.0	2.0		
0570141	US AIR FORCE (MACDILL AFB)	5	353.5	3,081.5	9.0			5.30	35.0	2.0		
0570141	US AIR FORCE (MACDILL AFB)	11	353.5	3,081.5	9.0			48.00				
0570150	DRAVO LIME, INC.	1	362.9	3,084.7	6.2				560.0	2.0	77.0	6.0
0570160	BALL METAL BEVERAGE CONTAINER CORP.	1	362.0	3,103.2	14.6				43.0	1.7	224.0	29.4
0570160	BALL METAL BEVERAGE CONTAINER CORP.	2	362.0	3,103.2	14.6				51.0	0.1	360.0	67.0
0570160	BALL METAL BEVERAGE CONTAINER CORP.	4	362.0	3,103.2	14.6				40.0	0.5	78.0	
0570160	BALL METAL BEVERAGE CONTAINER CORP	5	362.0	3,103.2	14.6				40.0	0.7	150.0	
0570163	GRIFFIN INDUSTRIES	1	364.1	3,096.4	9.3	6.84	0.86	30.00	50.0	2.8	450.0	22.0
0570163	GRIFFIN INDUSTRIES	2	364.1	3,096.4	9.3	6.84	0.86	30.00	48.0	0.3	450.0	414.0
0570163	GRIFFIN INDUSTRIES	3	364.1	3,096.4	9.3				40.0	2.2	90.0	43.0
0570165	BAG-MOR	2	362.8	3,097.4	9.4							
0570171	SPEEDLING, INC.	1	354.1	3,062.2	27.2				25.0	1.8	325.0	63.0
0570171	SPEEDLING, INC.	2	354.1	3,062.2	27.2	1.79	0.23	7.84	25.0	1.7	350.0	85.0
0570180	FECP/CAST CRETE DIVISION	3	371.9	3,099.2	16.8				20.0	1.0	240.0	31.0
0570185	RINKER MATERIALS CORPORATION	2	363.2	3,098.1	10.2							
0570198	HILLSBOROUGH CREMATORY	1	350.8	3,096.0	10.4				20.0	1.6	1,400.0	10.0
0570216	SOUTH BAY HOSPITAL	1	365.3	3,065.1	24.9				16.0	1.0	400.0	21.0
0570224	REED MINERALS DIVISION	1	362.2	3,085.5	5.1				30.0	3.9	132.0	32.0
0570224	REED MINERALS DIVISION	2	362.2	3,085.5	5.1				30.0	5.5	92.0	32.0
0570236	WESTSHORE GLASS CORP	1	349.2	3,098.5	13.3			2.00	28.0	1.5	1,800.0	23.0
0570249	ALCOA EXTRUSIONS	2	385.6	3,097.0	28.2	1.09	0.14	3.42	29.0	2.7	325.0	32.0
0570249	ALCOA EXTRUSIONS	3	385.6	3,097.0	28.2	0.35	0.04	1.10	14.0	1.5	375.0	14.0
0570249	ALCOA EXTRUSIONS	4	385.6	3,097.0	28.2	0.92	0.12	2.86	29.0	2.7	325.0	26.0
0570249	ALCOA EXTRUSIONS	5	385.6	3,097.0	28.2	0.35	0.04	1.07	14.0	1.5	375.0	14.0
0570249	ALCOA EXTRUSIONS	6	385.6	3,097.0	28.2	0.25	0.03	0.80	14.0	1.7	375.0	8.0
0570249	ALCOA EXTRUSIONS	7	385.6	3,097.0	28.2			2.00	16.0	1.3	400.0	22.0
0570249	ALCOA EXTRUSIONS	8	385.6	3,097.0	28.2	2.39	0.30	10.16	30.0	3.0	850.0	63.0
0570249	ALCOA EXTRUSIONS	9	385.6	3,097.0	28.2	0.89	0.11	3.78	30.0	3.0	500.0	11.0
0570249	ALCOA EXTRUSIONS	10	385.6	3,097.0	28.2	0.70	0.09	0.26	16.0	1.5	350.0	5.0
0570249	ALCOA EXTRUSIONS	11	385.6	3,097.0	28.2	2.66	0.34	4.49	15.0	1.0	120.0	212.0
0570249	ALCOA EXTRUSIONS	14	385.6	3,097.0	28.2				60.0	6.5	900.0	22.0
0570249	ALCOA EXTRUSIONS	15	385.6	3,097.0	28.2				6.0	1.3	1,100.0	101.0
0570249	ALCOA EXTRUSIONS	17	385.6	3,097.0	28.2	0.37	0.05	1.63	30.0	1.9	660.0	32.0
0570249	ALCOA EXTRUSIONS	18	385.6	3,097.0	28.2	0.33	0.04	1.46	30.0	1.4	350.0	80.0
0570249	ALCOA EXTRUSIONS	19	385.6	3,097.0	28.2	0.33	0.04	1.46	30.0	1.4	350.0	80.0
0570254	TREASURE CHEST ADVERTISING	1	350.3	3,086.4	8.6				35.0	3.2	650.0	80.0
0570254	TREASURE CHEST ADVERTISING	5	350.3	3,086.4	8.6				35.0	3.2	650.0	101.3

Table [illegible] DEP Off-Site NO_x Emission Inventory

Facility ID	Company Name	EU ID	UTM Coordinates Easting (km)	UTM Coordinates Northing (km)	Distance from Project Site (km)	Allowable NO_x Emission Rates (lb/hr)	Allowable NO_x Emission Rates (g/s)	Allowable NO_x Emission Rates (tpy)	Stack Parameters Height (ft)	Stack Parameters Diameter (ft)	Stack Parameters Temperature (°F)	Stack Parameters Velocity (ft/sec)
0570260	GAYLORD CONTAINER CORPORATION	4	366.3	3,092.3	8.5							
0570261	HILLSBOROUGH CTY. RESOURCE RECOVERY FAC.	1	368.2	3,092.7	10.4	117.33	14.78	513.91	220.0	5.1	290.0	72.5
0570261	HILLSBOROUGH CTY. RESOURCE RECOVERY FAC.	1	368.2	3,092.7	10.4	58.63	7.39	256.00	220.0	5.1	290.0	72.5
0570261	HILLSBOROUGH CTY. RESOURCE RECOVERY FAC.	2	368.2	3,092.7	10.4	117.33	14.78	513.91	220.0	5.1	290.0	72.5
0570261	HILLSBOROUGH CTY. RESOURCE RECOVERY FAC.	2	368.2	3,092.7	10.4	58.63	7.39	256.00	220.0	5.1	290.0	72.5
0570261	HILLSBOROUGH CTY. RESOURCE RECOVERY FAC.	3	368.2	3,092.7	10.4	117.33	14.78	513.91	220.0	5.1	290.0	72.5
0570261	HILLSBOROUGH CTY. RESOURCE RECOVERY FAC.	3	368.2	3,092.7	10.4	58.63	7.39	256.00	220.0	5.1	290.0	72.5
0570262	CHROMALLOY CASTINGS TAMPA, CORPORATION	3	349.0	3,100.0	14.5				30.0	2.0	1,300.0	2.0
0570286	TAMPA BAY SHIPBUILDING & REPAIR CO.	5	358.0	3,089.0	0.5			188.00	10.0	0.5		148.5
0570287	COL. MET., INC.	1	350.5	3,102.2	15.4				35.0	3.5	800.0	19.0
0570290	E.A. MARIANI ASPHALT CO.	1	358.2	3,092.0	3.0				27.0	1.3	435.0	18.0
0570290	E.A. MARIANI ASPHALT CO	2	358.2	3,092.0	3.0				26.0	2.5	500.0	4.0
0570295	ASHLAND CHEMICAL COMPANY	2	348.0	3,082.7	12.3				21.0	2.0	600.0	48.0
0570296	INTERNATIONAL PETROLEUM CORP	1	389.0	3,098.0	31.8				35.0	1.0	750.0	314.0
0570296	INTERNATIONAL PETROLEUM CORP	2	389.0	3,098.0	31.8				20.0	1.3	900.0	42.0
0570296	INTERNATIONAL PETROLEUM CORP	3	389.0	3,098.0	31.8				14.0	12.0	1,600.0	
0570317	JANET & CHARLIES WOOD RECYCLING FACILITY	1	363.1	3,085.3	5.9			199.68	28.0	1.8	350.0	20.0
0570320	DART CONTAINER CORPORATION OF FLORIDA	1	384.9	3,098.2	27.9				28.0	1.8	350.0	20.0
0570320	DART CONTAINER CORPORATION OF FLORIDA	2	384.9	3,098.2	27.9				28.0	2.0	350.0	34.0
0570320	DART CONTAINER CORPORATION OF FLORIDA	3	384.9	3,098.2	27.9				15.0	0.5	100.0	76.0
0570320	DART CONTAINER CORPORATION OF FLORIDA	4	384.9	3,098.2	27.9				28.0	2.0	350.0	24.0
0570320	DART CONTAINER CORPORATION OF FLORIDA	6	384.9	3,098.2	27.9	3.53	0.44	15.45	20.0	0.8	1,400.0	13.2
0570321	MANTUA MANUFACTURING CO.	2	364.7	3,092.5	7.1	2.92	0.37		20.0	1.3	588.0	26.0
0570342	ZIPPERER'S AGAPE MORTUARY SERVICE	1	363.0	3,064.7	24.7				33.0	2.8	450.0	19.0
0570370	PARADISE, INC.	1	388.5	3,099.0	31.6				33.0	2.8	450.0	19.0
0570370	PARADISE, INC.	2	388.5	3,099.0	31.6				32.0	2.1	450.0	41.0
0570370	PARADISE, INC.	3	388.5	3,099.0	31.6				37.0	1.3	450.0	40.2
0570370	PARADISE, INC.	4	388.5	3,099.0	31.6	0.80	0.10	3.49	43.0	3.7	80.0	48.5
0570370	PARADISE, INC.	5	388.5	3,099.0	31.6				75.0	3.0	216.0	82.8
0570373	CITY OF TAMPA-DEPT OF SANITARY SEWERS	1	364.0	3,089.5	5.5				75.0	5.0	216.0	29.0
0570373	CITY OF TAMPA-DEPT OF SANITARY SEWERS	2	364.0	3,089.5	5.5				34.0	5.0	78.0	41.0
0570373	CITY OF TAMPA-DEPT OF SANITARY SEWERS	3	364.0	3,089.5	5.5				34.0	5.0	78.0	41.0
0570373	CITY OF TAMPA-DEPT OF SANITARY SEWERS	4	364.0	3,089.5	5.5							
0570373	CITY OF TAMPA-DEPT OF SANITARY SEWERS	12	364.0	3,089.5	5.5							
0570378	HILLSBOROUGH RESOURCE RECOVERY, INC	1	362.8	3,088.3	4.3							
0570378	HILLSBOROUGH RESOURCE RECOVERY, INC	2	362.8	3,088.3	4.3				25.0	0.7	70.0	21.0
0570408	PRODICA LLC	1	358.4	3,088.4	0.6				17.0	3.7	150.0	27.0
0570408	PRODICA LLC	2	358.4	3,088.4	0.6							
0570409	CONIGLIO CONSTRUCTION AND DEMOLITION DEB	1	368.9	3,104.2	18.4	40.00	5.04	48.64				
0570412	VULCANICA COMPANY	1	359.1	3,086.9	2.2							
0570412	VULCANICA COMPANY	2	359.1	3,086.9	2.2							
0570412	VULCANICA COMPANY	3	359.1	3,086.9	2.2							
0570412	VULCANICA COMPANY	4	359.1	3,086.9	2.2							
0570417	INTERNATIONAL PAPER, OFFICE 8-213	2	391.7	3,099.3	34.7			0.13				
0570417	INTERNATIONAL PAPER, OFFICE 8-213	5	391.7	3,099.3	34.7							
0570417	INTERNATIONAL PAPER, OFFICE 8-213	6	391.7	3,099.3	34.7	0.13	0.02	0.56				
0570431	FLORIDA MORTUARY	1	357.3	3,098.1	9.2						77.0	
0570434	TRANSFER-ONE, INC	1	362.4	3,093.2	5.7							
0570436	BAY CITY SAND, INC.	1	362.8	3,096.1	8.3				33.0	1.5		
0570437	NEWSPAPER PRINTING COMPANY	2	350.5	3,085.5	8.8			14.40	14.0	2.0	837.0	147.0
0570438	FLORIDA GAS TRANSMISSION COMPANY	1	391.9	3,106.6	37.7			14.40	14.0	2.0	837.0	147.0
0570438	FLORIDA GAS TRANSMISSION COMPANY	1	391.9	3,106.6	37.7			14.40	14.0	2.0	837.0	147.0
0570438	FLORIDA GAS TRANSMISSION COMPANY	2	391.9	3,106.6	37.7	3.95	0.50	17.30	20.0	2.0	837.0	147.0
0570438	FLORIDA GAS TRANSMISSION COMPANY	3	391.9	3,106.6	37.7			127.00				
0570442	GULF MARINE REPAIR CORPORATION	3	360.3	3,091.9	3.4							
0570455	PASCO TERMINALS, INC.	1	359.1	3,087.0	2.1			17.97	37.0			
0570459	BAUSCH&LOMB PHARMACEUTICALS	2	366.4	3,105.7	18.5							

Table 1. FDEP Off-Site NO_x Emission Inventory

Facility ID	Company Name	EU ID	UTM Coordinates Easting (km)	UTM Coordinates Northing (km)	Distance from Project Site (km)	Allowable NO_x Emission Rates (lb/hr)	(g/s)	(tpy)	Stack Parameters Height (ft)	Diameter (ft)	Temperature (°F)	Velocity (ft/sec)
0570460	JAMES HARDIE BUILDING PRODUCTS INC.	4	387.1	3,089.5	28.6	2.97	0.37	12.50	30.0	2.0		
0570460	JAMES HARDIE BUILDING PRODUCTS INC.	12	387.1	3,089.5	28.6							
0570460	JAMES HARDIE BUILDING PRODUCTS INC.	15	387.1	3,089.5	28.6							
0570460	JAMES HARDIE BUILDING PRODUCTS INC.	16	387.1	3,089.5	28.6							
0570460	JAMES HARDIE BUILDING PRODUCTS INC.	17	387.1	3,089.5	28.6							
0570460	JAMES HARDIE BUILDING PRODUCTS INC.	18	387.1	3,089.5	28.6							
0570461	BLACKLIDGE EMULSIONS INCORPORATED	3	359.5	3,093.2	4.3			3.69	20.0		320.0	
0570461	BLACKLIDGE EMULSIONS INCORPORATED	4	359.5	3,093.2	4.3			0.11				
0570480	UNIVERSITY OF SOUTH FLORIDA (USF)	1	360.8	3,104.8	15.9				65.0	4.7		
0570480	UNIVERSITY OF SOUTH FLORIDA (USF)	2	360.8	3,104.8	15.9				65.0	4.7		
0570480	UNIVERSITY OF SOUTH FLORIDA (USF)	3	360.8	3,104.8	15.9				65.0	4.7		
0570480	UNIVERSITY OF SOUTH FLORIDA (USF)	5	360.8	3,104.8	15.9							
0570854	HILLSBOROUGH COUNTY SOLID WASTE MGT. DE.	2	383.0	3,073.0	29.3							
0571029	WILLAMETTE INDUSTRIES INC	2	391.2	3,095.9	33.4							
0571118	UNIVERSITY COMMUNITY HOSPITAL	1	360.3	3,105.4	16.4							
0571118	UNIVERSITY COMMUNITY HOSPITAL	2	360.3	3,105.4	16.4							
0571118	UNIVERSITY COMMUNITY HOSPITAL	3	360.3	3,105.4	16.4							
0571118	UNIVERSITY COMMUNITY HOSPITAL	5	360.3	3,105.4	16.4							
0571118	UNIVERSITY COMMUNITY HOSPITAL	6	360.3	3,105.4	16.4							
0571128	SOUTH FLORIDA BAPTIST HOSPITAL	1	388.0	3,099.3	31.2							
0571130	BRANDON REGIONAL MEDICAL CENTER	1	374.5	3,090.5	16.1				29.0	2.0	500.0	
0571147	SMITHFIELD FOODS, INC.	1	389.6	3,099.4	32.8				21.0	2.5	400.0	22.1
0571147	SMITHFIELD FOODS, INC.	2	389.6	3,099.4	32.8				21.0	1.5	400.0	40.6
0571147	SMITHFIELD FOODS, INC.	3	389.6	3,099.4	32.8							
0571151	WEYERHAEUSER COMPANY	2	362.8	3,098.3	10.2			12.50	34.0	2.0		
0571205	STOROPACK, INC.	1	363.4	3,093.2	6.4							
0571209	APAC-FLORIDA, INC.	2	359.9	3,088.1	1.6							
0571217	SEA 3 OF FLORIDA, INC.	3	360.1	3,087.1	2.5			20.55				
0571242	NATIONAL GYPSUM	1	364.7	3,075.6	14.8			9.60	98.0	3.8	350.0	28.2
0571242	NATIONAL GYPSUM	2	364.7	3,075.6	14.8				98.0	3.8	350.0	28.2
0571242	NATIONAL GYPSUM	3	364.7	3,075.6	14.8				98.0	3.8	350.0	28.2
0571242	NATIONAL GYPSUM	4	364.7	3,075.6	14.8				98.0	3.8	350.0	28.2
0571242	NATIONAL GYPSUM	5	364.7	3,075.6	14.8							
0810001	COASTAL FUELS MARKETING, INC.	1	348.0	3,057.7	33.0	4.62	0.58	20.24	25.0	1.8	375.0	28.0
0810001	COASTAL FUELS MARKETING, INC.	2	348.0	3,057.7	33.0	4.62	0.58	20.24	25.0	1.8	375.0	28.0
0810001	COASTAL FUELS MARKETING, INC.	3	348.0	3,057.7	33.0	0.34	0.04	1.49	22.0	1.0	510.0	56.0
0810001	COASTAL FUELS MARKETING, INC.	4	348.0	3,057.7	33.0	0.34	0.04	1.49	22.0	1.0	510.0	56.0
0810001	COASTAL FUELS MARKETING, INC.	5	348.0	3,057.7	33.0	0.34	0.04	1.49	22.0	1.0	510.0	56.7
0810002	PINEY POINT PHOSPHATES, INC.	1	349.7	3,057.3	32.9	10.00	1.26	43.80	200.0	7.8	147.0	33.5
0810002	PINEY POINT PHOSPHATES, INC.	6	349.7	3,057.3	32.9				200.0	7.0	97.0	52.0
0810002	PINEY POINT PHOSPHATES, INC.	14	349.7	3,057.3	32.9							
0810003	GATOR ASPHALT PAVING INC	1	348.7	3,037.5	52.5				29.0	1.9	185.0	177.0
0810007	TROPICANA PRODUCTS, INC.	1	348.1	3,041.0	49.2				95.0	3.0	140.0	70.0
0810007	TROPICANA PRODUCTS, INC.	2	348.1	3,041.0	49.2				95.0	3.0	140.0	70.0
0810007	TROPICANA PRODUCTS, INC.	3	348.1	3,041.0	49.2				95.0	3.2	140.0	62.0
0810007	TROPICANA PRODUCTS, INC.	11	348.1	3,041.0	49.2	32.00	4.03	138.00	71.0	6.3	441.0	25.0
0810007	TROPICANA PRODUCTS, INC.	12	348.1	3,041.0	49.2	96.70	12.18	423.60	71.0	6.3	536.0	39.0
0810007	TROPICANA PRODUCTS, INC.	14	348.1	3,041.0	49.2	91.00	11.47	391.00	103.0	6.3	489.0	22.0
0810007	TROPICANA PRODUCTS, INC.	15	348.1	3,041.0	49.2	31.40	3.96	80.20	80.0	7.0	540.0	24.0
0810007	TROPICANA PRODUCTS, INC.	15	348.1	3,041.0	49.2	15.70	1.98	68.90	80.0	7.0	540.0	24.0
0810007	TROPICANA PRODUCTS, INC.	16	348.1	3,041.0	49.2	73.00	9.20	314.50	80.0	12.0	268.0	54.0
0810007	TROPICANA PRODUCTS, INC.	21	348.1	3,041.0	49.2	1.13	0.14	4.29	40.0	1.7	300.0	16.0
0810007	TROPICANA PRODUCTS, INC.	22	348.1	3,041.0	49.2	2.42	0.30	1.06	35.0	5.0	1,000.0	15.0
0810007	TROPICANA PRODUCTS, INC.	23	348.1	3,041.0	49.2	2.51	0.32	11.00	27.0	2.0	475.0	31.7
0810010	FLORIDA POWER & LIGHT COMPANY	1	367.3	3,054.2	36.0	2,595.00	326.97	11,366.10	499.0	26.2	325.0	82.5
0810010	FLORIDA POWER & LIGHT COMPANY	2	367.3	3,054.2	36.0	2,595.00	326.97	11,366.10	499.0	26.2	325.0	82.5
0810010	FLORIDA POWER & LIGHT COMPANY	3	367.3	3,054.2	36.0				16.0	1.2	710.0	158.7

Table 1: FDEP Off-Site NO_x Emission Inventory

Facility ID	Company Name	EU ID	UTM Coordinates Easting (km)	UTM Coordinates Northing (km)	Distance from Project Site (km)	Allowable NO_x Emission Rates (lb/hr)	(g/s)	(tpy)	Stack Parameters Height (ft)	Diameter (ft)	Temperature (°F)	Velocity (ft/sec)
0810018	BISHOP ANIMAL SHELTER SPCA	2	340.1	3,040.7	51.7				10.0	1.5	750.0	12.0
0810024	FLORIDA POWER & LIGHT COMPANY	1	347.5	3,056.6	34.2	5.43	0.68	16.74	20.0	3.3	650.0	8.9
0810024	FLORIDA POWER & LIGHT COMPANY	2	347.5	3,056.6	34.2	5.43	0.68	16.74	20.0	3.3	650.0	8.9
0810039	TOALE BROTHERS FUNERAL HOME	1	348.2	3,036.9	53.2				16.0	1.3	700.0	25.0
0810045	MANATEE COUNTY ANIMAL CONTROL	2	341.8	3,046.2	46.0	0.21	0.03	0.33	20.0	1.5	850.0	8.0
0810063	AJAX PAVING INDUSTRIES, INC.	1	347.9	3,056.3	34.4				34.0	2.3	300.0	332.9
0810063	AJAX PAVING INDUSTRIES, INC.	2	347.9	3,056.3	34.4							
0810067	ATLAS-TRANSOIL, INC.	1	349.7	3,058.0	32.3				35.0	5.0	1,500.0	42.1
0810069	PALMETTO FUNERAL HOME AND CREMATORY	1	345.4	3,044.7	46.2			0.20	20.0	1.5	1,000.0	32.0
0810079	BENZ RESEARCH & DEVELOPMENT CORP.	1	348.4	3,034.4	55.6			0.51				
0810085	BELSPUR OAKS PET CREMATORY	1	348.7	3,034.8	55.1	0.05	0.01	0.08	24.0	1.0	797.0	30.0
0810085	BELSPUR OAKS PET CREMATORY	2	348.7	3,034.8	55.1	0.17	0.02	0.74				
0810087	GRIFFITH-CLINE FUNERAL HOME- MANASOTA CH	1	346.5	3,036.8	53.6							
0810164	FLOWERS BAKING COMPANY OF BRADENTON INC.	1	350.1	3,034.6	55.1	0.66	0.08	2.89	37.0	1.5	270.0	20.8
0810164	FLOWERS BAKING COMPANY OF BRADENTON INC.	2	350.1	3,034.6	55.1	0.55	0.07	2.41	30.0	0.8	340.0	63.0
0810174	JEFFERSON SMURFIT CORP/BRADENTON CONTAIN	1	348.0	3,040.9	49.3				30.0	2.5	470.0	19.4
0810180	FAMILY CREST MANAGEMENT SERVICES INC	1	354.2	3,040.9	48.3							
1010002	PASCO BEVERAGE COMPANY	5	383.5	3,139.2	56.1	22.80	2.87	89.40	53.0	4.0	350.0	2.0
1010002	PASCO BEVERAGE COMPANY	6	383.5	3,139.2	56.1	12.00	1.51	52.56	53.0	4.4	350.0	1.0
1010002	PASCO BEVERAGE COMPANY	7	383.5	3,139.2	56.1	32.40	4.08	89.40	56.0	5.9	400.0	1.0
1010002	PASCO BEVERAGE COMPANY	26	383.5	3,139.2	56.1	0.13	0.02	0.58	54.0	1.5	450.0	47.0
1010002	PASCO BEVERAGE COMPANY	34	383.5	3,139.2	56.1	0.13	0.02	0.58	54.0	1.3	450.0	95.0
1010017	FLORIDA POWER CORP.	1	324.4	3,118.7	45.2				499.0	24.0	320.0	62.0
1010017	FLORIDA POWER CORP.	2	324.4	3,118.7	45.2				499.0	24.0	320.0	62.0
1010026	HCA NEW PORT RICHEY HOSPITAL	1	333.4	3,133.0	50.6	0.06	0.01		36.0	1.0	520.0	12.0
1010026	HCA NEW PORT RICHEY HOSPITAL	2	333.4	3,133.0	50.6	0.06	0.01		36.0	1.0	520.0	12.0
1010027	R.E. PURCELL CONST. CO., INC.	4	340.6	3,119.2	35.1				32.0	4.0	320.0	96.8
1010027	R.E. PURCELL CONST. CO., INC.	5	340.6	3,119.2	35.1							
1010027	R.E. PURCELL CONST. CO., INC.	6	340.6	3,119.2	35.1							
1010028	OVERSTREET PAVING CO	1	355.9	3,143.7	54.7	18.75	2.36	37.50	30.0	4.3	275.0	58.5
1010028	OVERSTREET PAVING CO	2	355.9	3,143.7	54.7	0.14	0.02	0.61				
1010041	APAC - FLORIDA, INC. -TAMPA DIVISIONON	1	340.7	3,119.5	35.3				35.0	4.2	300.0	87.0
1010042	SCI FUNERAL SERVICES OF FLORIDA	2	335.0	3,136.5	53.0	1.19	0.15	8.83	24.0	1.6	1,099.0	21.0
1010043	OAKCREST PET CEMETARY	1	359.4	3,119.7	30.7				15.0	1.7	600.0	18.0
1010045	FUNERAL SERVICES ACQUISITION GROUP, INC.	1	383.3	3,133.6	51.0				15.0	1.7	600.0	18.0
1010051	PASCO COUNTY ANIMAL CONTROL	1	353.7	3,122.1	33.4							
1010056	PASCO COUNTY (OWNER)	1	348.8	3,138.8	50.7	90.00	11.34	394.20	275.0	10.0	250.0	51.0
1010056	PASCO COUNTY (OWNER)	2	348.8	3,138.8	50.7	90.00	11.34	394.20	275.0	10.0	250.0	51.0
1010056	PASCO COUNTY (OWNER)	3	348.8	3,138.8	50.7	90.00	11.34	394.20	275.0	10.0	250.0	51.0
1010056	PASCO COUNTY (OWNER)	5	348.8	3,138.8	50.7	0.30	0.04	1.32	50.0	1.3	330.0	37.0
1010064	SUNBELT PUBLISHING CO.	1	333.3	3,133.0	50.7							
1010070	CHAMPEAU STORAGE & RECYCLING	1	343.5	3,118.3	32.9				167.0	33.3	1,700.0	
1010071	PASCO COGEN LIMITED	1	385.1	3,139.0	56.6	42.75	5.39	202.25	275.0	4.8	310.0	
1010071	PASCO COGEN LIMITED	2	385.1	3,139.0	56.6	42.50	5.36	202.35	275.0	4.8	299.0	
1010327	COASTAL LANDFILL DISPOSAL, INC.	1	341.5	3,143.2	56.8							
1010360	M.K.G. CARE, INC.	1	331.7	3,123.1	43.4				15.0	1.5	600.0	12.7
1010364	B & T REBUILDERS	1	333.9	3,129.9	47.7				17.0	0.7	1,400.0	26.0
1010365	TRINITY MEMORIAL CEMETARY INC	1	340.7	3,119.1	34.9				15.0	1.5	600.0	15.1
1010373	IPS AVON PARK CORP.	1	347.0	3,139.0	51.3	351.00	44.23	252.00				
1010373	IPS AVON PARK CORP.	1	347.0	3,139.0	51.3	64.10	8.08	252.00				
1010373	IPS AVON PARK CORP.	2	347.0	3,139.0	51.3	351.00	44.23	252.00				
1010373	IPS AVON PARK CORP.	2	347.0	3,139.0	51.3	64.10	8.08	252.00				
1010373	IPS AVON PARK CORP.	3	347.0	3,139.0	51.3	351.00	44.23	252.00				
1010373	IPS AVON PARK CORP.	3	347.0	3,139.0	51.3	64.10	8.08	252.00				
1030004	APAC - FLORIDA, INC. -TAMPA DIVISION	1	334.3	3,085.6	24.4				40.0	4.0	290.0	
1030011	FLORIDA POWER CORPORATION	1	342.4	3,082.6	17.3	329.90	41.57	1,444.80	300.0	9.0	312.0	119.0
1030011	FLORIDA POWER CORPORATION	2	342.4	3,082.6	17.3	368.70	46.46	1,614.80	300.0	9.0	305.0	102.0

Table 1: FDEP Off-Site NO_x Emission Inventory

Facility ID	Company Name	EU ID	UTM Coordinates Easting (km)	UTM Coordinates Northing (km)	Distance from Project Site (km)	Allowable NO_x Emission Rates (lb/hr)	Allowable NO_x Emission Rates (g/s)	Allowable NO_x Emission Rates (tpy)	Stack Parameters Height (ft)	Stack Parameters Diameter (ft)	Stack Parameters Temperature (°F)	Stack Parameters Velocity (ft/sec)
1030011	FLORIDA POWER CORPORATION	3	342.4	3,082.6	17.3	619.20	78.02	4,818.00	300.0	11.0	275.0	113.0
1030011	FLORIDA POWER CORPORATION	4	342.4	3,082.6	17.3	2.20	0.28	9.64	30.0	3.0	515.0	17.0
1030011	FLORIDA POWER CORPORATION	5	342.4	3,082.6	17.3				45.0	17.3	930.0	73.0
1030011	FLORIDA POWER CORPORATION	6	342.4	3,082.6	17.3				45.0	17.3	930.0	73.0
1030011	FLORIDA POWER CORPORATION	7	342.4	3,082.6	17.3				45.0	17.3	930.0	73.0
1030011	FLORIDA POWER CORPORATION	8	342.4	3,082.6	17.3				45.0	17.3	930.0	73.0
1030012	FLORIDA POWER CORPORATION	1	336.5	3,098.4	23.9	383.70	48.35	1,680.00	174.0	12.5	312.0	27.0
1030012	FLORIDA POWER CORPORATION	2	336.5	3,098.4	23.9	366.00	46.12	1,603.20	174.0	12.5	310.0	27.0
1030012	FLORIDA POWER CORPORATION	3	336.5	3,098.4	23.9	383.70	48.35	1,680.00	174.0	12.5	301.0	24.0
1030012	FLORIDA POWER CORPORATION	4	336.5	3,098.4	23.9	273.37	34.44	1,197.36	55.0	15.1	850.0	93.1
1030012	FLORIDA POWER CORPORATION	5	336.5	3,098.4	23.9	273.37	34.44	1,197.36	56.0	15.1	850.0	93.1
1030012	FLORIDA POWER CORPORATION	6	336.5	3,098.4	23.9	304.69	38.39	1,334.56	55.0	15.1	850.0	93.1
1030012	FLORIDA POWER CORPORATION	7	336.5	3,098.4	23.9	304.69	38.39	1,334.56	55.0	15.1	850.0	93.1
1030012	FLORIDA POWER CORPORATION	8	336.5	3,098.4	23.9							
1030012	FLORIDA POWER CORPORATION	9	336.5	3,098.4	23.9							
1030012	FLORIDA POWER CORPORATION	11	336.5	3,098.4	23.9							
1030013	FLORIDA POWER CORPORATION	1	338.8	3,071.3	26.5	225.08	28.36		40.0	22.9	900.0	21.0
1030013	FLORIDA POWER CORPORATION	2	338.8	3,071.3	26.5	231.46	29.16		40.0	22.9	900.0	21.0
1030013	FLORIDA POWER CORPORATION	3	338.8	3,071.3	26.5	213.56	26.91		40.0	22.9	900.0	21.0
1030013	FLORIDA POWER CORPORATION	4	338.8	3,071.3	26.5	206.11	25.97		40.0	22.9	900.0	21.0
1030017	CEMETERY MANAGEMENT, INC.	4	331.3	3,086.3	27.3				20.0	2.0	900.0	10.0
1030017	CEMETERY MANAGEMENT, INC.	5	331.3	3,086.3	27.3				15.0	1.5	600.0	15.1
1030018	PINELLAS COUNTY ANIMAL SERVICES	2	321.8	3,085.9	36.8				18.0	1.5	1,000.0	34.0
1030020	SPCA OF PINELLAS COUNTY	1	326.3	3,086.2	32.3	0.35	0.04	0.16	30.0	1.0	1,200.0	63.0
1030026	OVERSTREET PAVING COMPANY, INC.	1	326.2	3,086.9	32.4	18.95	2.39	38.38	30.0	10.0	275.0	16.6
1030026	OVERSTREET PAVING COMPANY, INC.	2	326.2	3,086.9	32.4	0.20	0.03	0.88				
1030035	DIRECTORS SERVICES, INC.	1	337.3	3,077.3	24.2				30.0	1.6	700.0	8.0
1030035	DIRECTORS SERVICES, INC.	2	337.3	3,077.3	24.2				20.0	1.5	900.0	24.0
1030037	EWELL INDUSTRIES, INC.	1	337.6	3,102.7	25.0				70.0	2.0	78.0	15.0
1030044	SUNCOAST PAVING, INC.	1	326.0	3,116.7	42.7				30.0	3.0	147.0	45.0
1030045	EWELL INDUSTRIES, INC.	1	330.7	3,087.4	27.9				40.0	1.0	87.0	63.0
1030045	EWELL INDUSTRIES, INC.	2	330.7	3,087.4	27.9				40.0	1.0	77.0	18.0
1030045	EWELL INDUSTRIES, INC.	3	330.7	3,087.4	27.9				70.0	1.0	77.0	18.0
1030045	EWELL INDUSTRIES, INC.	4	330.7	3,087.4	27.9				20.0	2.0	78.0	35.8
1030045	EWELL INDUSTRIES, INC.	5	330.7	3,087.4	27.9				15.0	1.0	77.0	
1030047	NATIONAL CREMATION SOCIETY	2	329.1	3,088.9	29.4	0.34	0.04	1.47	18.0	1.7	800.0	30.0
1030054	THE MINUTE MAID COMPANY	1	324.3	3,100.7	36.1				50.0	1.0	160.0	15.9
1030054	THE MINUTE MAID COMPANY	4	324.3	3,100.7	36.1	0.46	0.06	6.00	150.0	11.0	230.0	
1030054	THE MINUTE MAID COMPANY	5	324.3	3,100.7	36.1				32.0	2.0	350.0	13.0
1030060	LARGO WASTEWATER TREATMENT PLANT	1	332.4	3,087.9	26.1				65.0	3.1	275.0	44.8
1030061	ACRE IRON & METAL	3	329.7	3,082.1	29.6				40.0	5.0	77.0	38.0
1030070	MORTON PLANT MEASE HEALTH CARE	2	324.7	3,099.7	35.5	1.44	0.18	6.31			350.0	
1030075	ON CALL CREMATORY	4	331.0	3,081.1	28.6			0.74	16.0	1.7	1,136.0	15.8
1030078	FLORIDA ROCK INDUSTRIES	1	335.5	3,102.6	26.7				25.0	1.0	78.0	175.0
1030091	MORTON PLANT MEASE HEALTH CARE	5	322.6	3,093.1	36.1	1.64	0.21	5.97	20.0	2.0	350.0	41.0
1030091	MORTON PLANT MEASE HEALTH CARE	6	322.6	3,093.1	36.1	1.64	0.21	5.97	20.0	2.0	350.0	41.0
1030091	MORTON PLANT MEASE HEALTH CARE	7	322.6	3,093.1	36.1	20.20	2.54	22.12				
1030095	BAYFRONT MEDICAL CENTER	2	338.1	3,071.8	26.7				35.0	2.0	140.0	135.0
1030098	ESSILOR OF AMERICA, INC.	1	327.5	3,077.8	33.0				21.0	1.2	80.0	33.7
1030112	R P SCHERER NORTH AMERICA	6	335.3	3,087.7	23.2				15.0	1.0	350.0	
1030112	R P SCHERER NORTH AMERICA	7	335.3	3,087.7	23.2				20.0	1.0	320.0	
1030113	DAVIS CONCRETE, INC.	1	324.2	3,100.4	36.1				42.0	2.6	77.0	13.0
1030113	DAVIS CONCRETE, INC.	2	324.2	3,100.4	36.1				42.0	2.6	77.0	13.0
1030114	METAL INDUSTRIES, INC.	1	336.7	3,101.0	24.9			12.12	35.0	4.9	800.0	1.0
1030117	PINELLAS CO. BOARD OF CO. COMMISSIONERS	1	335.2	3,084.1	23.8				161.0	7.8	449.0	88.0
1030117	PINELLAS CO. BOARD OF CO. COMMISSIONERS	2	335.2	3,084.1	23.8				161.0	7.8	449.0	88.0
1030117	PINELLAS CO. BOARD OF CO. COMMISSIONERS	3	335.2	3,084.1	23.8	205.30	25.87	899.20	165.0	9.0	450.0	90.0

Table 4-1 DEP Off-Site NO_x Emission Inventory

Facility ID	Company Name	EU ID	UTM Coordinates Easting (km)	UTM Coordinates Northing (km)	Distance from Project Site (km)	Allowable NO_x Emission Rates (lb/hr)	(g/s)	(tpy)	Stack Parameters Height (ft)	Diameter (ft)	Temperature (°F)	Velocity (ft/sec)
1030118	SCHNELLER INC., FLORIDA DIVISION	3	332.5	3,079.2	27.8				25.0	2.8	749.0	30.9
1030119	FILM TECHNOLOGIES INT, INC	1	335.6	3,071.9	28.6				34.0	2.0	255.0	57.0
1030119	FILM TECHNOLOGIES INT, INC	2	335.6	3,071.9	28.6				34.0	2.0	255.0	57.0
1030127	METAL CULVERTS	1	329.1	3,089.1	29.4				20.0	1.0	325.0	63.0
1030129	PINELLAS MEMORIAL PET CEMETERY	1	329.9	3,081.6	29.6	0.60	0.08	0.54	15.0	1.5	1,800.0	16.5
1030129	PINELLAS MEMORIAL PET CEMETERY	2	329.9	3,081.6	29.6	0.31	0.04	0.32	15.0	1.5	950.0	16.5
1030131	E JAMES REECE FUNERAL HOME	1	322.9	3,080.3	36.7				18.0	1.5	1,000.0	27.0
1030132	COOPER COIL COATING, INC.	1	334.0	3,086.9	24.6	2.10	0.26	9.20	41.0	3.6	800.0	17.0
1030132	COOPER COIL COATING, INC.	2	334.0	3,086.9	24.6	1.96	0.25	8.58	40.0	3.0	818.0	31.5
1030136	REFLECTION PET FUNERAL HOME	1	335.3	3,079.1	25.2				17.0	1.1	900.0	27.0
1030140	METAL INDUSTRIES INC.	6	328.8	3,116.4	40.4				28.0	3.0	77.0	41.3
1030147	SONNY GLASBRENNER, INC.	1	334.3	3,085.6	24.4							
1030147	SONNY GLASBRENNER, INC.	2	334.3	3,085.6	24.4							
1030147	SONNY GLASBRENNER, INC.	3	334.3	3,085.6	24.4	27.40	3.45	42.80	15.0	0.7		248.9
1030148	SUN N FUN PRINTING CO.,INC.	2	332.7	3,085.2	26.1				12.0	25.7	650.0	0.1
1030148	SUN N FUN PRINTING CO.,INC.	3	332.7	3,085.2	26.1				35.0	5.3		
1030153	HOWCO ENVIRONMENTAL SERVICES, INC.	3	333.1	3,071.5	30.9				25.0	0.3	190.0	
1030157	HEATH AND COMPANY, L.L.C.	5	336.9	3,102.3	25.4				30.0	1.0	160.0	6.4
1030165	JACOBSEN MANUFACTURING, INC.	1	332.9	3,097.3	26.9							
1030166	IRWIN YACHT & MARINE CORP.	1	332.6	3,086.0	26.1							
1030172	WATKINS YACHT, INC.	1	332.6	3,085.6	26.1						85.0	
1030175	GAGNE WALLCOVERINGS	1	327.6	3,096.8	31.9				25.0	2.0	650.0	8.3
1030180	INTERPRINT, INC.	1	335.0	3,085.0	23.8				30.0	1.6	350.0	38.0
1030192	R.R. DONNELLEY & SONS COMPANY	1	329.9	3,071.1	33.8				40.0	3.0	130.0	38.6
1030210	MEDICO ENVIRONMENTAL SERVICES, INC.	1	331.3	3,086.3	27.3			8.65				
1030214	LIFE-LIKE PRODUCTS INC	2	330.3	3,084.8	28.5	0.38	0.05	1.66	16.0	1.7	689.0	24.0
1030217	ABC CREMATORY (PREV PARKLAWN MEM GARDEN)	1	328.2	3,101.4	32.7				40.0	2.0	75.0	1.6
1030218	M C GRAPHICS, INC., MODERN GRAPHIC ARTS	3	337.2	3,083.2	22.1							
1030227	CITY OF CLEARWATER	1	332.3	3,101.2	28.9							
1030228	CITY OF CLEARWATER	1	324.0	3,096.2	35.2							
1030229	CITY OF CLEARWATER	1	332.4	3,101.7	29.0							
1030230	CITY OF DUNEDIN	1	324.2	3,100.9	36.3							
1030231	CITY OF LARGO	1	332.3	3,087.9	26.2							
1030232	PINELLAS COUNTY GOVERNMENT	1	317.8	3,084.8	40.9							
1030233	PINELLAS COUNTY GOVERNMENT	1	326.9	3,114.1	40.3							
1030234	PINELLAS COUNTY GOVERNMENT	1	328.4	3,078.8	31.8							
1030235	CITY OF ST. PETERSBURG	1	339.6	3,071.8	25.6							
1030236	CITY OF ST. PETERSBURG	1	340.5	3,079.0	20.6							
1030237	CITY OF ST. PETERSBURG	1	328.4	3,075.4	33.0							
1030238	CITY OF ST. PETERSBURG	1	333.7	3,066.9	33.2				40.0	1.2	500.0	33.0
1030240	VAL-PAK DIRECT MARKETING SYSTEMS, INC.	1	326.4	3,084.2	32.5							
1030248	NEW YORK DRY CLEANERS & TAILORS	1	327.1	3,115.0	40.8							
1030282	ANDERSON-MCQUEEN COMPANY	1	327.9	3,076.8	33.0							
1030288	BAYCARE SERVICES INC	1	333.1	3,084.4	25.8	1.64	0.21	7.17				
1030288	BAYCARE SERVICES INC	2	333.1	3,084.4	25.8	1.64	0.21	7.17				
1030443	LORAD CHEMICAL CORPORATION	2	336.5	3,074.2	26.5			2.41	25.0	0.7	100.0	
1050003	LAKELAND ELECTRIC & WATER UTILITIES	3	408.9	3,102.5	52.2	154.00	19.40	674.00	165.0	10.0	340.0	21.0
1050003	LAKELAND ELECTRIC & WATER UTILITIES	4	408.9	3,102.5	52.2	331.00	41.71	1,448.00	165.0	10.0	340.0	22.0
1050003	LAKELAND ELECTRIC & WATER UTILITIES	5	408.9	3,102.5	52.2	145.90	18.38	639.00	31.0	11.8	800.0	101.0
1050003	LAKELAND ELECTRIC & WATER UTILITIES	6	408.9	3,102.5	52.2	145.90	18.38	639.00	31.0	11.8	800.0	101.0
1050003	LAKELAND ELECTRIC & WATER UTILITIES	8	408.9	3,102.5	52.2	176.00	22.18	425.00	155.0	16.0	481.0	85.7
1050003	LAKELAND ELECTRIC & WATER UTILITIES	8	408.9	3,102.5	52.2	176.00	22.18	244.00	155.0	16.0	481.0	85.7
1050003	LAKELAND ELECTRIC & WATER UTILITIES	9	408.9	3,102.5	52.2							
1050003	LAKELAND ELECTRIC & WATER UTILITIES	10	408.9	3,102.5	52.2							
1050004	LAKELAND ELECTRIC & WATER UTILITIES	1	409.0	3,106.2	53.3	529.00	66.65	2,317.00	150.0	9.0	277.0	81.2
1050004	LAKELAND ELECTRIC & WATER UTILITIES	2	409.0	3,106.2	53.3	86.80	10.94	380.18	20.0	2.6	715.0	77.0
1050004	LAKELAND ELECTRIC & WATER UTILITIES	3	409.0	3,106.2	53.3	86.80	10.94	380.18	20.0	2.6	715.0	77.0

Facility ID	Company Name	EU ID	UTM Coordinates Easting (km)	UTM Coordinates Northing (km)	Distance from Project Site (km)	Allowable NO_x Emission Rates (lb/hr)	Allowable NO_x Emission Rates (g/s)	Allowable NO_x Emission Rates (tpy)	Stack Parameters Height (ft)	Stack Parameters Diameter (ft)	Stack Parameters Temperature (°F)	Stack Parameters Velocity (ft/sec)
1050004	LAKELAND ELECTRIC & WATER UTILITIES	4	409.0	3,106.2	53.3	223.36	28.14	978.32	35.0	13.5	900.0	79.5
1050004	LAKELAND ELECTRIC & WATER UTILITIES	5	409.0	3,106.2	53.3	236.90	29.85	1,037.60	157.0	10.5	277.0	73.2
1050004	LAKELAND ELECTRIC & WATER UTILITIES	5	409.0	3,106.2	53.3	334.50	42.15	1,465.10	157.0	10.5	277.0	73.2
1050004	LAKELAND ELECTRIC & WATER UTILITIES	5	409.0	3,106.2	53.3	334.50	42.15	1,465.10	157.0	10.5	277.0	73.2
1050004	LAKELAND ELECTRIC & WATER UTILITIES	6	409.0	3,106.2	53.3	728.00	91.73	3,188.60	250.0	18.0	167.0	82.6
1050004	LAKELAND ELECTRIC & WATER UTILITIES	6	409.0	3,106.2	53.3	2,548.00	321.05	11,160.20	250.0	18.0	167.0	82.6
1050004	LAKELAND ELECTRIC & WATER UTILITIES	6	409.0	3,106.2	53.3	1,092.00	137.59	4,782.96	250.0	18.0	167.0	82.6
1050004	LAKELAND ELECTRIC & WATER UTILITIES	8	409.0	3,106.2	53.3							
1050004	LAKELAND ELECTRIC & WATER UTILITIES	9	409.0	3,106.2	53.3							
1050004	LAKELAND ELECTRIC & WATER UTILITIES	10	409.0	3,106.2	53.3							
1050004	LAKELAND ELECTRIC & WATER UTILITIES	11	409.0	3,106.2	53.3							
1050004	LAKELAND ELECTRIC & WATER UTILITIES	12	409.0	3,106.2	53.3							
1050004	LAKELAND ELECTRIC & WATER UTILITIES	13	409.0	3,106.2	53.3							
1050004	LAKELAND ELECTRIC & WATER UTILITIES	20	409.0	3,106.2	53.3							
1050004	LAKELAND ELECTRIC & WATER UTILITIES	28	409.0	3,106.2	53.3	237.00	29.86	1,038.00	85.0	28.0	1,095.0	82.7
1050004	LAKELAND ELECTRIC & WATER UTILITIES	28	409.0	3,106.2	53.3	413.00	52.04	1,809.00	85.0	28.0	1,095.0	82.7
1050004	LAKELAND ELECTRIC & WATER UTILITIES		409.0	3,106.2	53.3	529.00	66.65	2,317.00	150.0	9.0	277.0	
1050009	FLORIDA TILE INDUSTRIES, INC.	2	405.4	3,102.4	48.8	0.12	0.02	0.53	30.0	2.0	160.0	
1050009	FLORIDA TILE INDUSTRIES, INC.	10	405.4	3,102.4	48.8	0.10	0.01	0.40	40.0	2.0	150.0	1.0
1050009	FLORIDA TILE INDUSTRIES, INC.	18	405.4	3,102.4	48.8				20.0	0.4	70.0	321.0
1050009	FLORIDA TILE INDUSTRIES, INC.	19	405.4	3,102.4	48.8				88.0	3.4	176.0	90.0
1050009	FLORIDA TILE INDUSTRIES, INC.	25	405.4	3,102.4	48.8				20.0	0.4	70.0	2.0
1050009	FLORIDA TILE INDUSTRIES, INC.	26	405.4	3,102.4	48.8				38.0	2.7	482.0	
1050009	FLORIDA TILE INDUSTRIES, INC.	33	405.4	3,102.4	48.8				30.0	0.5	150.0	2.0
1050009	FLORIDA TILE INDUSTRIES, INC.	34	405.4	3,102.4	48.8				30.0	0.5	150.0	2.0
1050009	FLORIDA TILE INDUSTRIES, INC.	40	405.4	3,102.4	48.8	0.27	0.03	1.18	30.0	1.6	482.0	13.0
1050009	FLORIDA TILE INDUSTRIES, INC.	43	405.4	3,102.4	48.8				26.0	1.5	220.0	41.7
1050009	FLORIDA TILE INDUSTRIES, INC.	44	405.4	3,102.4	48.8				39.0	2.0	513.0	48.9
1050009	FLORIDA TILE INDUSTRIES, INC.	46	405.4	3,102.4	48.8				33.0	1.0	120.0	59.4
1050009	FLORIDA TILE INDUSTRIES, INC.	47	405.4	3,102.4	48.8				33.0	1.0	120.0	59.4
1050009	FLORIDA TILE INDUSTRIES, INC.	51	405.4	3,102.4	48.8							
1050009	FLORIDA TILE INDUSTRIES, INC.	52	405.4	3,102.4	48.8							
1050009	FLORIDA TILE INDUSTRIES, INC.	53	405.4	3,102.4	48.8							
1050009	FLORIDA TILE INDUSTRIES, INC.	54	405.4	3,102.4	48.8							
1050009	FLORIDA TILE INDUSTRIES, INC.	55	405.4	3,102.4	48.8							
1050009	FLORIDA TILE INDUSTRIES, INC.	56	405.4	3,102.4	48.8							
1050009	FLORIDA TILE INDUSTRIES, INC.	57	405.4	3,102.4	48.8							
1050009	FLORIDA TILE INDUSTRIES, INC.	58	405.4	3,102.4	48.8							
1050009	FLORIDA TILE INDUSTRIES, INC.	59	405.4	3,102.4	48.8							
1050009	FLORIDA TILE INDUSTRIES, INC.	60	405.4	3,102.4	48.8							
1050015	FLORIDA JUICE PARTNERS, LTD.	1	399.0	3,101.8	42.5	7.47	0.94		90.0	3.0	140.0	24.0
1050015	FLORIDA JUICE PARTNERS, LTD.	2	399.0	3,101.8	42.5	2.38	0.30		33.0	2.0	345.0	17.0
1050015	FLORIDA JUICE PARTNERS, LTD.	3	399.0	3,101.8	42.5	2.38	0.30		34.0	3.0	345.0	30.0
1050021	ASHLAND SPECIALTY CHEMICAL COMPANY	1	411.1	3,085.9	52.7	0.18	0.02		8.0	1.3	600.0	3.0
1050021	ASHLAND SPECIALTY CHEMICAL COMPANY	6	411.1	3,085.9	52.7				30.0	2.0		
1050032	NORTH LAKELAND RECYCLING, INC.	1	404.4	3,112.5	51.5				25.0	1.1	450.0	8.0
1050034	IMC-AGRICO CO. (CFMO)	2	398.2	3,075.7	41.9				60.0	2.5	110.0	64.0
1050034	IMC-AGRICO CO. (CFMO)	3	398.2	3,075.7	41.9				58.0	1.9	100.0	49.0
1050034	IMC-AGRICO CO. (CFMO)	4	398.2	3,075.7	41.9				70.0	7.0	165.0	47.0
1050034	IMC-AGRICO CO. (CFMO)	8	398.2	3,075.7	41.9				26.0	1.0	400.0	23.5
1050034	IMC-AGRICO CO. (CFMO)	11	398.2	3,075.7	41.9				76.0	6.5	250.0	56.8
1050034	IMC-AGRICO CO. (CFMO)	12	398.2	3,075.7	41.9				55.0	9.3	155.0	29.0
1050046	CARGILL FERTILIZER, INC.	1	409.8	3,086.6	51.3				99.0	7.5	135.0	53.0
1050046	CARGILL FERTILIZER, INC.	12	409.8	3,086.6	51.3	13.00	1.64	57.00	200.0	6.8	180.0	61.0
1050046	CARGILL FERTILIZER, INC.	21	409.8	3,086.6	51.3				140.0	10.9	132.0	53.0
1050046	CARGILL FERTILIZER, INC.	32	409.8	3,086.6	51.3	13.00	1.64	57.00	200.0	6.8	180.0	61.0
1050046	CARGILL FERTILIZER, INC.	33	409.8	3,086.6	51.3	13.00	1.64	57.00	200.0	6.8	180.0	61.0

Table [illegible] DEP Off-Site NO_x Emission Inventory

Facility ID	Company Name	EU ID	UTM Coordinates Easting (km)	UTM Coordinates Northing (km)	Distance from Project Site (km)	Allowable NO_x Emission Rates (lb/hr)	Allowable NO_x Emission Rates (g/s)	Allowable NO_x Emission Rates (tpy)	Stack Parameters Height (ft)	Stack Parameters Diameter (ft)	Stack Parameters Temperature (°F)	Stack Parameters Velocity (ft/sec)
1050046	CARGILL FERTILIZER, INC.	45	409.8	3,086.6	51.3				20.0	1.0	200.0	57.0
1050046	CARGILL FERTILIZER, INC.	46	409.8	3,086.6	51.3				34.0	1.0	200.0	
1050046	CARGILL FERTILIZER, INC.	47	409.8	3,086.6	51.3				31.0	2.0	200.0	
1050046	CARGILL FERTILIZER, INC.	50	409.8	3,086.6	51.3				40.0	1.0		57.0
1050046	CARGILL FERTILIZER, INC.	51	409.8	3,086.6	51.3				31.0	3.5	410.0	20.0
1050046	CARGILL FERTILIZER, INC.	53	409.8	3,086.6	51.3							
1050047	AGRIFOS, L.L.C.	1	398.7	3,085.3	40.4	35.80	4.51	156.80	80.0	7.5	160.0	41.0
1050047	AGRIFOS, L.L.C.	2	398.7	3,085.3	40.4	35.20	4.44	154.20	80.0	7.5	160.0	41.0
1050047	AGRIFOS, L.L.C.	15	398.7	3,085.3	40.4							
1050048	MULBERRY PHOSPHATES, INC.	2	406.8	3,085.1	48.5				200.0	7.0	200.0	32.0
1050048	MULBERRY PHOSPHATES, INC.	5	406.8	3,085.1	48.5	11.00	1.39	18.40	102.0	8.8	110.0	26.0
1050048	MULBERRY PHOSPHATES, INC.	9	406.8	3,085.1	48.5	23.93	3.02	104.81	45.0	3.7	80.0	8.0
1050048	MULBERRY PHOSPHATES, INC.	24	406.8	3,085.1	48.5							
1050048	MULBERRY PHOSPHATES, INC.	38	406.8	3,085.1	48.5				131.0	7.0	130.0	79.0
1050050	U S AGRI-CHEMICALS CORP.	38	413.2	3,086.3	54.8							
1050050	U S AGRI-CHEMICALS CORP.	40	413.2	3,086.3	54.8				206.0	7.0	140.0	21.0
1050052	CF INDUSTRIES, INC.	6	408.3	3,082.5	50.2				36.0	2.5	600.0	44.0
1050052	CF INDUSTRIES, INC.	21	408.3	3,082.5	50.2							
1050052	CF INDUSTRIES, INC.	36	408.3	3,082.5	50.2				100.0	7.5	170.0	28.0
1050053	FARMLAND HYDRO, L.P.	3	410.3	3,079.7	52.6				100.0	7.5	180.0	34.7
1050053	FARMLAND HYDRO, L.P.	4	410.3	3,079.7	52.6				150.0	8.0	180.0	37.8
1050053	FARMLAND HYDRO, L.P.	5	410.3	3,079.7	52.6	11.90	1.50	52.20	129.0	7.5	129.0	40.0
1050053	FARMLAND HYDRO, L.P.	7	410.3	3,079.7	52.6				65.0	1.0	120.0	14.0
1050053	FARMLAND HYDRO, L.P.	9	410.3	3,079.7	52.6	29.10	3.67	64.80	60.0	0.8	81.0	1.0
1050053	FARMLAND HYDRO, L.P.	14	410.3	3,079.7	52.6				60.0	1.3	80.0	2.0
1050053	FARMLAND HYDRO, L.P.	15	410.3	3,079.7	52.6				100.0	3.5	98.0	51.0
1050053	FARMLAND HYDRO, L.P.	16	410.3	3,079.7	52.6				100.0	3.5	105.0	51.0
1050053	FARMLAND HYDRO, L.P.	17	410.3	3,079.7	52.6				95.0	5.5	630.0	11.0
1050053	FARMLAND HYDRO, L.P.	28	410.3	3,079.7	52.6	11.00	1.39		129.0	7.5	108.0	43.0
1050053	FARMLAND HYDRO, L.P.	29	410.3	3,079.7	52.6	7.20	0.91	31.30	40.0	2.0	200.0	
1050053	FARMLAND HYDRO, L.P.	30	410.3	3,079.7	52.6				40.0	2.0	200.0	
1050053	FARMLAND HYDRO, L.P.	31	410.3	3,079.7	52.6				40.0	2.0	200.0	
1050053	FARMLAND HYDRO, L.P.	32	410.3	3,079.7	52.6				40.0	0.7	200.0	1.0
1050053	FARMLAND HYDRO, L.P.	33	410.3	3,079.7	52.6				10.0	0.8	200.0	54.0
1050053	FARMLAND HYDRO, L.P.	34	410.3	3,079.7	52.6				40.0	2.0	200.0	
1050053	FARMLAND HYDRO, L.P.	35	410.3	3,079.7	52.6				10.0	0.5	200.0	1.0
1050053	FARMLAND HYDRO, L.P.	36	410.3	3,079.7	52.6				150.0	9.0	180.0	34.8
1050053	FARMLAND HYDRO, L.P.	38	410.3	3,079.7	52.6	13.80	1.74	60.00	35.0	4.8	430.0	51.0
1050055	IMC-AGRICO CO.(SO. PIERCE)	1	407.5	3,071.4	52.1	17.64	2.22		88.0	3.0	94.0	30.0
1050055	IMC-AGRICO CO.(SO. PIERCE)	3	407.5	3,071.4	52.1				144.0	9.0	170.0	41.1
1050055	IMC-AGRICO CO.(SO. PIERCE)	4	407.5	3,071.4	52.1	15.00	1.89	65.70	144.0	9.0	170.0	41.1
1050055	IMC-AGRICO CO.(SO. PIERCE)	5	407.5	3,071.4	52.1	15.00	1.89	65.70	140.0	9.0	110.0	36.0
1050055	IMC-AGRICO CO.(SO. PIERCE)	23	407.5	3,071.4	52.1				24.0	1.0	200.0	
1050055	IMC-AGRICO CO.(SO. PIERCE)	30	407.5	3,071.4	52.1				24.0	1.2	200.0	
1050055	IMC-AGRICO CO.(SO. PIERCE)	31	407.5	3,071.4	52.1				24.0	1.0	200.0	
1050055	IMC-AGRICO CO.(SO. PIERCE)	32	407.5	3,071.4	52.1				24.0	1.0	200.0	
1050055	IMC-AGRICO CO.(SO. PIERCE)	33	407.5	3,071.4	52.1				24.0	1.0	200.0	
1050055	IMC-AGRICO CO.(SO. PIERCE)	34	407.5	3,071.4	52.1				24.0	1.0	200.0	
1050055	IMC-AGRICO CO.(SO. PIERCE)	35	407.5	3,071.4	52.1				24.0	1.0	200.0	
1050055	IMC-AGRICO CO.(SO. PIERCE)	36	407.5	3,071.4	52.1				24.0	1.0	200.0	
1050055	IMC-AGRICO CO.(SO. PIERCE)	37	407.5	3,071.4	52.1				24.0	1.0	200.0	
1050055	IMC-AGRICO CO.(SO. PIERCE)	38	407.5	3,071.4	52.1				24.0	1.0	200.0	
1050055	IMC-AGRICO CO.(SO. PIERCE)	39	407.5	3,071.4	52.1				24.0	1.0	200.0	
1050055	IMC-AGRICO CO.(SO. PIERCE)	40	407.5	3,071.4	52.1				24.0	1.0	200.0	
1050055	IMC-AGRICO CO.(SO. PIERCE)	41	407.5	3,071.4	52.1				24.0	1.0	200.0	
1050055	IMC-AGRICO CO.(SO. PIERCE)	42	407.5	3,071.4	52.1				24.0	1.0	200.0	
1050055	IMC-AGRICO CO.(SO. PIERCE)	43	407.5	3,071.4	52.1							

Facility ID	Company Name	EU ID	UTM Coordinates Easting (km)	UTM Coordinates Northing (km)	Distance from Project Site (km)	Allowable NO_x Emission Rates (lb/hr)	Allowable NO_x Emission Rates (g/s)	Allowable NO_x Emission Rates (tpy)	Stack Parameters Height (ft)	Stack Parameters Diameter (ft)	Stack Parameters Temperature (°F)	Stack Parameters Velocity (ft/sec)
1050055	IMC-AGRICO CO.(SO. PIERCE)	44	407.5	3,071.4	52.1				24.0	1.0	200.0	
1050055	IMC-AGRICO CO.(SO. PIERCE)	45	407.5	3,071.4	52.1				24.0	1.0	200.0	
1050056	IMC-AGRICO CO.(PRAIRIE)	4	402.9	3,087.0	44.4	14.03	1.77	61.47	70.0	4.4	184.0	51.0
1050057	IMC-AGRICO CO.(NICHOLS)	2	398.4	3,084.2	40.2				52.0	2.5	120.0	66.0
1050057	IMC-AGRICO CO.(NICHOLS)	3	398.4	3,084.2	40.2				80.0	3.5	130.0	78.0
1050057	IMC-AGRICO CO.(NICHOLS)	5	398.4	3,084.2	40.2	12.50	1.58	54.80	150.0	7.5	170.0	33.0
1050057	IMC-AGRICO CO.(NICHOLS)	12	398.4	3,084.2	40.2				81.0	7.5	130.0	12.0
1050057	IMC-AGRICO CO.(NICHOLS)	15	398.4	3,084.2	40.2				27.0	2.0	500.0	45.0
1050057	IMC-AGRICO CO.(NICHOLS)	16	398.4	3,084.2	40.2				39.0	3.2	500.0	29.0
1050057	IMC-AGRICO CO.(NICHOLS)	20	398.4	3,084.2	40.2				25.0	0.2	90.0	
1050057	IMC-AGRICO CO.(NICHOLS)	21	398.4	3,084.2	40.2				6.0	0.8		
1050057	IMC-AGRICO CO.(NICHOLS)	22	398.4	3,084.2	40.2				6.0	0.8		
1050057	IMC-AGRICO CO.(NICHOLS)	23	398.4	3,084.2	40.2				6.0	0.8		
1050059	IMC-AGRICO CO.(NEW WALES)	2	396.7	3,079.4	39.4	14.50	1.83	63.50	200.0	8.5	170.0	50.0
1050059	IMC-AGRICO CO.(NEW WALES)	3	396.7	3,079.4	39.4	14.50	1.83	63.50	200.0	8.5	170.0	50.0
1050059	IMC-AGRICO CO.(NEW WALES)	4	396.7	3,079.4	39.4	14.50	1.83	63.50	200.0	8.5	170.0	50.0
1050059	IMC-AGRICO CO.(NEW WALES)	9	396.7	3,079.4	39.4	11.70	1.47		133.0	7.0	105.0	49.0
1050059	IMC-AGRICO CO.(NEW WALES)	10	396.7	3,079.4	39.4	15.90	2.00		133.0	6.0	125.0	83.1
1050059	IMC-AGRICO CO.(NEW WALES)	13	396.7	3,079.4	39.4	27.60	3.48	120.80	85.0	3.0	555.0	193.3
1050059	IMC-AGRICO CO.(NEW WALES)	27	396.7	3,079.4	39.4				172.0	8.0	130.0	66.3
1050059	IMC-AGRICO CO.(NEW WALES)	32	396.7	3,079.4	39.4				86.0	1.5	220.0	258.0
1050059	IMC-AGRICO CO.(NEW WALES)	33	396.7	3,079.4	39.4				86.0	1.5	274.0	225.0
1050059	IMC-AGRICO CO.(NEW WALES)	36	396.7	3,079.4	39.4				172.0	4.5	105.0	52.0
1050059	IMC-AGRICO CO.(NEW WALES)	42	396.7	3,079.4	39.4	14.50	1.83	63.50	199.0	8.5	170.0	50.0
1050059	IMC-AGRICO CO.(NEW WALES)	44	396.7	3,079.4	39.4	14.50	1.83	63.50	199.0	8.5	170.0	50.0
1050059	IMC-AGRICO CO.(NEW WALES)	45	396.7	3,079.4	39.4	12.60	1.59	55.20	171.0	6.0	110.0	58.0
1050059	IMC-AGRICO CO.(NEW WALES)	46	396.7	3,079.4	39.4	12.60	1.59	55.20	171.0	6.0	110.0	58.0
1050059	IMC-AGRICO CO.(NEW WALES)	50	396.7	3,079.4	39.4				100.0	1.8	102.0	37.0
1050059	IMC-AGRICO CO.(NEW WALES)	62	396.7	3,079.4	39.4				40.0	2.0	240.0	
1050059	IMC-AGRICO CO.(NEW WALES)	63	396.7	3,079.4	39.4				40.0	2.0	240.0	
1050059	IMC-AGRICO CO.(NEW WALES)	64	396.7	3,079.4	39.4				40.0	2.0	240.0	
1050059	IMC-AGRICO CO.(NEW WALES)	65	396.7	3,079.4	39.4				40.0	2.0	240.0	
1050059	IMC-AGRICO CO.(NEW WALES)	66	396.7	3,079.4	39.4				40.0	2.0	240.0	
1050059	IMC-AGRICO CO.(NEW WALES)	67	396.7	3,079.4	39.4							
1050059	IMC-AGRICO CO.(NEW WALES)	68	396.7	3,079.4	39.4				25.0	0.1	90.0	
1050059	IMC-AGRICO CO.(NEW WALES)	69	396.7	3,079.4	39.4				25.0	0.1	90.0	
1050059	IMC-AGRICO CO.(NEW WALES)	74	396.7	3,079.4	39.4				172.0	4.5	105.0	70.2
1050081	QUIKRETE OF FLORIDA, INC.(PRE-MIX INDUS)	6	412.8	3,099.0	55.2				18.0	1.8	230.0	249.5
1050095	LAKELAND REGIONAL MEDICAL CENTER	2	406.4	3,104.3	50.3				120.0	1.1	220.0	88.9
1050097	CUSTOM CHEMICALS CORPORATION	1	408.0	3,085.5	49.6	0.36	0.05		35.0	0.7	100.0	732.0
1050097	CUSTOM CHEMICALS CORPORATION	2	408.0	3,085.5	49.6				20.0	1.2	350.0	278.0
1050097	CUSTOM CHEMICALS CORPORATION	3	408.0	3,085.5	49.6				15.0	1.2	350.0	279.0
1050099	AOC, L.L.C.	1	401.0	3,108.5	46.7				10.0	2.0	1,600.0	12.0
1050099	AOC, L.L.C.	2	401.0	3,108.5	46.7			39.45	40.0	4.9	160.0	45.1
1050099	AOC, L.L.C.	3	401.0	3,108.5	46.7			7.02				
1050100	SHELL EPOXY RESINS LLC	1	410.7	3,098.9	53.1	28.19	3.55		25.0	2.0	350.0	600.0
1050100	SHELL EPOXY RESINS LLC	2	410.7	3,098.9	53.1	28.19	3.55		30.0	2.0	350.0	374.0
1050100	SHELL EPOXY RESINS LLC	5	410.7	3,098.9	53.1	0.21	0.03	0.94	35.0	1.1	900.0	25.0
1050100	SHELL EPOXY RESINS LLC	6	410.7	3,098.9	53.1	28.19	3.55		35.0	1.5	350.0	13.0
1050100	SHELL EPOXY RESINS LLC	7	410.7	3,098.9	53.1	28.19	3.55		35.0	1.5	350.0	16.0
1050100	SHELL EPOXY RESINS LLC	8	410.7	3,098.9	53.1				21.0	2.0	800.0	27.0
1050127	JUICE BOWL PRODUCTS	1	409.4	3,099.9	52.0	24.95	3.14		45.0	4.0	350.0	3.0
1050134	HEATH FUNERAL CHAPEL	1	407.1	3,101.9	50.3	0.30	0.04	0.55	15.0	1.7	1,175.0	8.0
1050139	MAXPAK CORPORATION	3	402.0	3,102.0	45.4				50.0	2.0	78.0	4.0
1050146	PAVEX CORPORATION	1	413.0	3,086.2	54.6	19.28	2.43	24.10	40.0	4.0		56.4
1050148	ABB SERVICE, INC.	1	404.9	3,084.1	46.7	0.42	0.05		28.0	1.3	1,400.0	33.0
1050151	CENTRAL FLORIDA HOT-MIX, INC.	2	412.5	3,097.7	54.7				25.0	2.1	250.0	216.0

Table [illegible] FDEP Off-Site NO_x Emission Inventory

Facility ID	Company Name	EU ID	UTM Coordinates Easting (km)	UTM Coordinates Northing (km)	Distance from Project Site (km)	Allowable NO_x Emission Rates (lb/hr)	(g/s)	(tpy)	Stack Parameters Height (ft)	Diameter (ft)	Temperature (°F)	Velocity (ft/sec)
1050151	CENTRAL FLORIDA HOT-MIX, INC.	3	412.5	3,097.7	54.7				32.0	2.4	214.0	94.8
1050174	PEPPERIDGE FARM, INC	9	403.3	3,104.8	47.5	1.23	0.15	5.40				
1050174	PEPPERIDGE FARM, INC	10	403.3	3,104.8	47.5			5.40				
1050174	PEPPERIDGE FARM, INC	11	403.3	3,104.8	47.5			5.40				
1050174	PEPPERIDGE FARM, INC	12	403.3	3,104.8	47.5			5.40				
1050174	PEPPERIDGE FARM, INC	13	403.3	3,104.8	47.5			3.83				
1050174	PEPPERIDGE FARM, INC	14	403.3	3,104.8	47.5			3.83				
1050182	GEOLOGIC RECOVERY SYSTEMS	1	401.8	3,085.8	43.4	25.90	3.26	69.80	26.0	2.7	1,500.0	98.0
1050192	CARPENTER CO., INSULATION DIVISION	1	412.5	3,098.4	54.8				31.0	3.6	120.0	31.0
1050194	WOOD WASTE RECYCLING, INC.	1	399.0	3,101.5	42.4							
1050196	O. K. WEST & SON	1	411.5	3,098.2	53.8				23.0	1.0	800.0	32.0
1050200	J. H. HULL, INC.	1	399.1	3,070.6	44.6				35.0	2.0		
1050210	AMERICOAT CORPORATION	3	411.4	3,096.7	53.4							
1050210	AMERICOAT CORPORATION	21	411.4	3,096.7	53.4							
1050212	FLORIDA GAS TRANSMISSION COMPANY	1	412.2	3,086.1	53.8				11.0	1.5	837.0	262.0
1050215	WOOD MULCH PRODUCTS, INC.	1	413.0	3,099.0	55.4							
1050220	MACLAN CORPORATION	1	410.9	3,099.6	53.4				13.0	1.0	72.0	16.0
1050227	CENTRAL FLORIDA CREMATORY OF POLK CO.	1	405.0	3,106.5	49.7				24.0	1.7	1,100.0	18.0
1050228	SADLER DRUM COMPANY	2	396.2	3,089.3	37.7							
1050233	TAMPA ELECTRIC COMPANY	1	402.5	3,067.4	49.0	311.00	39.19	2,908.30	150.0	19.0	340.0	75.8
1050233	TAMPA ELECTRIC COMPANY	1	402.5	3,067.4	49.0	664.20	83.69	2,908.30	150.0	19.0	340.0	75.8
1050233	TAMPA ELECTRIC COMPANY											

Table [illegible] Modeled FDEP Off-Site NO_x Emission Inventory

Facility ID	Company Name	EU ID	Modeled (Y/N)	UTM Coordinates Easting (km)	UTM Coordinates Northing (km)	Distance from Project AOI (km)	20D Rule (tpy)	Allowable NO_x Emission Rates (lb/hr)	Allowable NO_x Emission Rates (g/s)	Allowable NO_x Emission Rates (tpy)	Stack Parameters Height (ft)	Stack Parameters Diameter (ft)	Stack Parameters Temperature (°F)	Stack Parameters Velocity (ft/sec)
0490015	HARDEE POWER PARTNERS,LTD	1		404.8	3,057.4	54.4		215.90	27.20	945.60	90.0	14.5	236.0	77.5
0490015	HARDEE POWER PARTNERS,LTD	1		404.8	3,057.4	54.4		383.80	48.36	1,681.00	90.0	14.5	236.0	77.5
0490015	HARDEE POWER PARTNERS,LTD	2		404.8	3,057.4	54.4		215.90	27.20	945.60	90.0	14.5	245.0	75.8
0490015	HARDEE POWER PARTNERS,LTD	2		404.8	3,057.4	54.4		383.80	48.36	1,681.00	90.0	14.5	245.0	75.8
0490015	HARDEE POWER PARTNERS,LTD	3		404.8	3,057.4	54.4		215.90	27.20	945.60	75.0	17.9	986.0	94.3
0490015	HARDEE POWER PARTNERS,LTD	3		404.8	3,057.4	54.4		383.80	48.36	1,681.00	75.0	17.9	986.0	94.3
0490015	HARDEE POWER PARTNERS,LTD	5		404.8	3,057.4	54.4		32.00	4.03	140.16	85.0	14.8	999.0	142.0
0490015	HARDEE POWER PARTNERS,LTD	5		404.8	3,057.4	54.4		167.00	21.04	73.15	85.0	14.8	999.0	142.0
	TOTALS		Y				1,087.31			8,093.11				
0490043	IPS AVON PARK CORPORATION	1		408.8	3,044.5	65.4		351.00	44.23	252.00	60.0	22.0	1,113.0	116.0
0490043	IPS AVON PARK CORPORATION	1		408.8	3,044.5	65.4		64.10	8.08	252.00	60.0	22.0	1,113.0	116.0
0490043	IPS AVON PARK CORPORATION	2		408.8	3,044.5	65.4		351.00	44.23	252.00	60.0	22.0	1,113.0	116.0
0490043	IPS AVON PARK CORPORATION	2		408.8	3,044.5	65.4		64.10	8.08	252.00	60.0	22.0	1,113.0	116.0
0490043	IPS AVON PARK CORPORATION	3		408.8	3,044.5	65.4		351.00	44.23	252.00	60.0	22.0	1,113.0	116.0
0490043	IPS AVON PARK CORPORATION	3		408.8	3,044.5	65.4		64.10	8.08	252.00	60.0	22.0	1,113.0	116.0
0490043	IPS AVON PARK CORPORATION	4		408.8	3,044.5	65.4		351.00	44.23	252.00	60.0	22.0	1,113.0	116.0
0490043	IPS AVON PARK CORPORATION	4		408.8	3,044.5	65.4		64.10	8.08	252.00	60.0	22.0	1,113.0	116.0
	TOTALS		Y				1,308.69			2,016.00				
0570001	JOHNSON CONTROLS BATTERY GROUP, INC	37		359.9	3,102.5	11.8				1.99				
0570001	JOHNSON CONTROLS BATTERY GROUP, INC	38		359.9	3,102.5	11.8				1.10				
0570001	JOHNSON CONTROLS BATTERY GROUP, INC	41		359.9	3,102.5	11.8				0.10	40.0	0.4	600.0	15.9
0570001	JOHNSON CONTROLS BATTERY GROUP, INC	44		359.9	3,102.5	11.8				1.10				
	TOTALS		N				236.85			4.29				
0570003	CF INDUSTRIES, INC.	1	N	362.8	3,098.4	8.6	172.14			12.70	25.0	2.5	500.0	26.0
0570005	CF INDUSTRIES, INC., PLANT CITY PHOSP	1	N	388.0	3,116.0	38.3	785.30	0.47	0.06	694.00	25.0	3.5	550.0	58.0
0570006	YUENGLING BREWING CO.	1	N	362.0	3,103.2	12.9	257.90	5.60	0.71	50.08	90.0	6.5	275.0	7.0
0570008	CARGILL FERTILIZER, INC.	43		362.9	3,082.5	6.2		50.90	6.41	223.00	20.0	4.0	420.0	52.0
0570008	CARGILL FERTILIZER, INC.	55		362.9	3,082.5	6.2		20.00	2.52	87.60	133.0	7.0	108.0	50.0
0570008	CARGILL FERTILIZER, INC.	78		362.9	3,082.5	6.2		6.50	0.82	28.42	125.0	6.0	108.0	50.0
0570008	CARGILL FERTILIZER, INC.	100		362.9	3,082.5	6.2		3.71	0.47	15.96	70.0	2.5	170.0	64.5
0570008	CARGILL FERTILIZER, INC.	101		362.9	3,082.5	6.2		3.71	0.47	15.96	70.0	2.5	170.0	64.5
0570008	CARGILL FERTILIZER, INC.	103		362.9	3,082.5	6.2		6.50	0.82	28.42	70.0	2.5	170.0	64.5
	TOTALS		Y				123.37			399.36				
0570021	INTERNATIONAL SHIP REPAIR & MARINE SERV.	1	Y	358.0	3,092.8	2.1	41.03			89.00			77.0	
0570022	MARATHON ASHLAND PETROLEUM LLC	5	N	362.2	3,087.2	2.4	48.40			2.60	10.0	1.5	580.0	21.2
0570028	NATIONAL GYPSUM COMPANY	21		348.8	3,082.7	9.9		0.84	0.11	3.67	42.0	1.1	350.0	59.0
0570028	NATIONAL GYPSUM COMPANY	22		348.8	3,082.7	9.9		0.84	0.11	3.67	42.0	1.1	350.0	62.0
0570028	NATIONAL GYPSUM COMPANY	24		348.8	3,082.7	9.9		0.84	0.11	3.67	42.0	1.1	350.0	61.0
0570028	NATIONAL GYPSUM COMPANY	28		348.8	3,082.7	9.9		2.10	0.26	9.00	42.0	1.1	350.0	71.0
0570028	NATIONAL GYPSUM COMPANY	29		348.8	3,082.7	9.9		2.10	0.26	9.00	42.0	1.1	350.0	71.0
0570028	NATIONAL GYPSUM COMPANY	30		348.8	3,082.7	9.9		2.10	0.26	9.00	42.0	1.1	350.0	71.0
0570028	NATIONAL GYPSUM COMPANY	31		348.8	3,082.7	9.9		2.10	0.26	9.00	42.0	1.1	350.0	71.0
0570028	NATIONAL GYPSUM COMPANY	34		348.8	3,082.7	9.9		11.90	1.50	5.00	47.0	2.5	309.0	67.0
0570028	NATIONAL GYPSUM COMPANY	36		348.8	3,082.7	9.9		2.18	0.27	9.55	64.0	3.5	185.0	40.0
0570028	NATIONAL GYPSUM COMPANY	47		348.8	3,082.7	9.9		7.50	0.95	31.50	35.0	2.8	300.0	64.0
0570028	NATIONAL GYPSUM COMPANY	102		348.8	3,082.7	9.9		2.08	0.26	9.11	90.0	3.9	200.0	44.7
0570028	NATIONAL GYPSUM COMPANY	103		348.8	3,082.7	9.9		2.08	0.26	9.11	90.0	3.0	200.0	75.5
0570028	NATIONAL GYPSUM COMPANY	104		348.8	3,082.7	9.9		2.08	0.26	9.11	90.0	3.0	200.0	75.5
	TOTALS		N				197.39			120.39				
0570029	NITRAM, INC.	7		362.5	3,089.0	2.3		103.10	12.99	294.00	55.0	2.5	250.0	121.0
0570029	NITRAM, INC.	13		362.5	3,089.0	2.3		1.74	0.22	7.61	9.0	1.7	260.0	24.0
	TOTALS		Y				45.64			301.61				
0570038	TAMPA ELECTRIC COMPANY	1		358.0	3,091.0	0.3		121.00	15.25	530.00	280.0	11.3	356.0	82.0
0570038	TAMPA ELECTRIC COMPANY	2		358.0	3,091.0	0.3		121.00	15.25	530.00	280.0	11.3	356.0	82.0
0570038	TAMPA ELECTRIC COMPANY	3		358.0	3,091.0	0.3		167.00	21.04	731.00	280.0	12.0	341.0	82.7
0570038	TAMPA ELECTRIC COMPANY	4		358.0	3,091.0	0.3		167.00	21.04	731.00	280.0	12.0	341.0	82.7

Table [illegible] Modeled FDEP Off-Site NO_x Emission Inventory

Facility ID	Company Name	EU ID	Modeled (Y/N)	UTM Coordinates Easting (km)	UTM Coordinates Northing (km)	Distance from Project AOI (km)	20D Rule (tpy)	Allowable NO_x Emission Rates (lb/hr)	(g/s)	(tpy)	Stack Parameters Height (ft)	Diameter (ft)	Temperature (°F)	Velocity (ft/sec)
0570038	TAMPA ELECTRIC COMPANY	5		358.0	3,091.0	0.3		243.00	30.62	1,064.00	280.0	11.3	356.0	82.0
0570038	TAMPA ELECTRIC COMPANY	6		358.0	3,091.0	0.3		222.00	27.97	972.00	280.0	9.4	329.0	75.2
	TOTALS		Y				6.71			4,658.00				
0570039	TAMPA ELECTRIC COMPANY	1		361.9	3,075.0	12.7		6,171.00	777.55	27,029.00	490.0	24.0	294.0	115.9
0570039	TAMPA ELECTRIC COMPANY	2		361.9	3,075.0	12.7		6,191.00	780.07	27,118.00	490.0	24.0	125.0	87.6
0570039	TAMPA ELECTRIC COMPANY	3		361.9	3,075.0	12.7		2,881.00	363.01	12,619.00	499.0	24.0	279.0	47.0
0570039	TAMPA ELECTRIC COMPANY	4		361.9	3,075.0	12.7		2,598.00	327.35	11,379.00	499.0	24.0	156.0	59.0
0570039	TAMPA ELECTRIC COMPANY	5		361.9	3,075.0	12.7		447.00	56.32	1,958.00	75.0	14.0	928.0	61.0
0570039	TAMPA ELECTRIC COMPANY	6		361.9	3,075.0	12.7		447.50	56.39	1,960.00	75.0	14.0	928.0	61.0
0570039	TAMPA ELECTRIC COMPANY	7		361.9	3,075.0	12.7		126.00	16.13	561.00	35.0	11.0	1,010.0	91.9
	TOTALS		Y				254.66			82,624.00				
0570040	TAMPA ELECTRIC COMPANY	1		360.0	3,087.5	0.4		1,839.00	231.71	8,055.00	315.0	10.0	289.0	94.0
0570040	TAMPA ELECTRIC COMPANY	2		360.0	3,087.5	0.4		1,898.00	239.15	8,314.00	315.0	10.0	298.0	101.0
0570040	TAMPA ELECTRIC COMPANY	3		360.0	3,087.5	0.4		2,401.00	302.53	10,518.00	315.0	10.6	298.0	126.0
0570040	TAMPA ELECTRIC COMPANY	4		360.0	3,087.5	0.4		2,638.00	332.39	11,555.00	315.0	10.0	309.0	75.0
0570040	TAMPA ELECTRIC COMPANY	5		360.0	3,087.5	0.4		3,454.00	435.20	15,128.00	315.0	14.6	303.0	76.0
0570040	TAMPA ELECTRIC COMPANY	6		360.0	3,087.5	0.4		5,698.00	717.95	24,957.00	315.0	17.6	320.0	81.0
0570040	TAMPA ELECTRIC COMPANY	7		360.0	3,087.5	0.4		126.00	16.13	561.00	35.0	11.0	1,010.0	92.6
	TOTALS		Y				8.72			79,088.00				
0570054	SCRAP-ALL, INC.	2	N	359.4	3,093.1	2.5	49.35	0.74	0.09	30.00	38.0	0.7	435.0	51.0
0570061	TAMPA ARMATURE WORKS	1		365.6	3,091.7	5.9				11.38	20.0	2.1	1,200.0	
0570061	TAMPA ARMATURE WORKS	2		365.6	3,091.7	5.9		1.28	0.16	2.00	18.0	0.8	400.0	33.0
0570061	TAMPA ARMATURE WORKS	6		365.6	3,091.7	5.9		0.31	0.04	1.36	27.0	1.7	1,400.0	19.4
	TOTALS		N				117.56			14.74				
0570075	CORONET INDUSTRIES, INC.	1		393.8	3,096.3	34.3		5.50	0.69	23.44	100.0	4.5	149.0	39.0
0570075	CORONET INDUSTRIES, INC.	5		393.8	3,096.3	34.3		46.80	5.90	65.70	150.0	5.8	104.0	60.0
0570075	CORONET INDUSTRIES, INC.	22		393.8	3,096.3	34.3		23.40	2.95	83.00	152.0	5.8	80.0	39.0
	TOTALS		N				686.66			172.14				
0570076	DELTA ASPHALT	1		372.1	3,105.4	19.6		54.00	6.80	154.00	28.0	3.8	300.0	80.0
0570076	DELTA ASPHALT	100		372.1	3,105.4	19.6		18.75	2.36	37.50				
0570076	DELTA ASPHALT	101		372.1	3,105.4	19.6				0.86				
	TOTALS		N				391.56			192.36				
0570077	VERLITE COMPANY	1	N	360.2	3,093.0	2.6	52.33	0.76	0.10	3.00	50.0	2.0	230.0	28.0
0570089	ST JOSEPHS HOSPITAL	3	N	353.3	3,095.9	6.9	138.44	7.30	0.92	31.90	30.0	1.0	375.0	42.0
0570119	GULF COAST METALS	5	N	364.7	3,093.6	6.0	119.92			12.74				
0570127	CITY OF TAMPA	1		360.2	3,092.2	1.9		75.00	9.45	329.00	160.0	5.7	450.0	41.0
0570127	CITY OF TAMPA	2		360.2	3,092.2	1.9		75.00	9.45	329.00	160.0	5.7	450.0	41.0
0570127	CITY OF TAMPA	3		360.2	3,092.2	1.9		75.00	9.45	329.00	160.0	5.7	450.0	41.0
0570127	CITY OF TAMPA	4		360.2	3,092.2	1.9		75.00	9.45	329.00	160.0	5.7	450.0	41.0
0570127	CITY OF TAMPA	103		360.2	3,092.2	1.9		42.50	5.36	186.15	201.0	4.2	289.0	73.3
0570127	CITY OF TAMPA	104		360.2	3,092.2	1.9		42.50	5.36	186.15	201.0	4.2	289.0	73.3
0570127	CITY OF TAMPA	105		360.2	3,092.2	1.9		42.50	5.36	186.15	201.0	4.2	289.0	73.3
0570127	CITY OF TAMPA	106		360.2	3,092.2	1.9		42.50	5.36	186.15	201.0	4.2	289.0	73.3
	TOTALS		Y				38.06			2,060.60				
0570141	US AIR FORCE (MACDILL AFB)	2		353.5	3,081.5	7.3				5.30	35.0	2.0	450.0	15.0
0570141	US AIR FORCE (MACDILL AFB)	4		353.5	3,081.5	7.3				5.30	35.0	2.0		
0570141	US AIR FORCE (MACDILL AFB)	5		353.5	3,081.5	7.3				5.30	35.0	2.0		
0570141	US AIR FORCE (MACDILL AFB)	11		353.5	3,081.5	7.3				48.00				
	TOTALS		N				146.85			63.90				
0570163	GRIFFIN INDUSTRIES	1		364.1	3,096.4	7.6		6.84	0.86	30.00	50.0	2.8	450.0	22.0
0570163	GRIFFIN INDUSTRIES	2		364.1	3,096.4	7.6		6.84	0.86	30.00	48.0	0.3	450.0	414.0
	TOTALS		N				161.04			60.00				
0570171	SPEEDLING, INC.	2	N	354.1	3,062.2	25.5	509.78	1.79	0.23	7.84	25.0	1.7	350.0	85.0
0570236	WESTSHORE GLASS CORP	1	N	349.2	3,098.5	11.6	231.59			2.00	28.0	1.5	1,800.0	23.0
0570249	ALCOA EXTRUSIONS	2		385.6	3,097.0	26.5		1.09	0.14	3.42	29.0	2.7	325.0	32.0
0570249	ALCOA EXTRUSIONS	3		385.6	3,097.0	26.5		0.35	0.04	1.10	14.0	1.5	375.0	14.0

Table [illegible]odeled FDEP Off-Site NO$_x$ Emission Inventory

Facility ID	Company Name	EU ID	Modeled (Y/N)	UTM Coordinates Easting (km)	UTM Coordinates Northing (km)	Distance from Project AOI (km)	200 Rule (tpy)	Allowable NO$_x$ Emission Rates (lb/hr)	Allowable NO$_x$ Emission Rates (g/s)	Allowable NO$_x$ Emission Rates (tpy)	Stack Parameters Height (ft)	Stack Parameters Diameter (ft)	Stack Parameters Temperature (°F)	Stack Parameters Velocity (ft/sec)
0570249	ALCOA EXTRUSIONS	4		385.6	3,097.0	26.5		0.92	0.12	2.86	29.0	2.7	325.0	26.0
0570249	ALCOA EXTRUSIONS	5		385.6	3,097.0	26.5		0.35	0.04	1.07	14.0	1.5	375.0	14.0
0570249	ALCOA EXTRUSIONS	6		385.6	3,097.0	26.5		0.25	0.03	0.80	14.0	1.7	375.0	8.0
0570249	ALCOA EXTRUSIONS	7		385.6	3,097.0	26.5				2.00	16.0	1.3	400.0	22.0
0570249	ALCOA EXTRUSIONS	8		385.6	3,097.0	26.5		2.39	0.30	10.16	30.0	3.0	850.0	63.0
0570249	ALCOA EXTRUSIONS	9		385.6	3,097.0	26.5		0.89	0.11	3.78	30.0	3.0	500.0	11.0
0570249	ALCOA EXTRUSIONS	10		385.6	3,097.0	26.5		0.70	0.09	0.26	16.0	1.5	350.0	5.0
0570249	ALCOA EXTRUSIONS	11		385.6	3,097.0	26.5		2.86	0.34	4.49	15.0	1.0	120.0	212.0
0570249	ALCOA EXTRUSIONS	17		385.6	3,097.0	26.5		0.37	0.05	1.63	30.0	1.9	660.0	32.0
0570249	ALCOA EXTRUSIONS	18		385.6	3,097.0	26.5		0.33	0.04	1.46	30.0	1.4	350.0	80.0
0570249	ALCOA EXTRUSIONS	19		385.6	3,097.0	26.5		0.33	0.04	1.46	30.0	1.4	350.0	80.0
	TOTALS		N				530.80			34.49				
0570261	HILLSBOROUGH CTY. RESOURCE RECOVERY FAC.	1		368.2	3,092.7	8.7		117.33	14.78	513.91	220.0	5.1	290.0	72.5
0570261	HILLSBOROUGH CTY. RESOURCE RECOVERY FAC.	1		368.2	3,092.7	8.7		58.63	7.39	256.00	220.0	5.1	290.0	72.5
0570261	HILLSBOROUGH CTY. RESOURCE RECOVERY FAC.	2		368.2	3,092.7	8.7		117.33	14.78	513.91	220.0	5.1	290.0	72.5
0570261	HILLSBOROUGH CTY. RESOURCE RECOVERY FAC.	2		368.2	3,092.7	8.7		58.63	7.39	256.00	220.0	5.1	290.0	72.5
0570261	HILLSBOROUGH CTY. RESOURCE RECOVERY FAC.	3		368.2	3,092.7	8.7		117.33	14.78	513.91	220.0	5.1	290.0	72.5
0570261	HILLSBOROUGH CTY. RESOURCE RECOVERY FAC.	3		368.2	3,092.7	8.7		58.63	7.39	256.00	220.0	5.1	290.0	72.5
	TOTALS		Y				173.27			2,309.73				
0570286	TAMPA BAY SHIPBUILDING & REPAIR CO.	5	Y	358.0	3,089.0	-1.2	-23.82			188.00	10.0	0.5	350.0	148.5
0570317	JANET & CHARLIES WOOD RECYCLING FACILITY	1	Y	363.1	3,085.3	4.2	84.30			199.68	14.0	12.0	1,800.0	50.0
0570320	DART CONTAINER CORPORATION OF FLORIDA	6	N	384.9	3,098.2	26.2	524.79	3.53	0.44	15.45	28.0	2.0	350.0	24.0
0570370	PARADISE, INC.	4	N	388.5	3,099.0	29.9	598.11	0.80	0.10	3.49	37.0	1.3	450.0	40.2
0570409	CONIGLIO CONSTRUCTION AND DEMOLITION DEB	1	N	388.9	3,104.2	16.7	333.78	40.00	5.04	48.64				
0570417	INTERNATIONAL PAPER, OFFICE 8-213	2		391.7	3,099.3	33.0				0.13				
0570417	INTERNATIONAL PAPER, OFFICE 8-213	8		391.7	3,099.3	33.0		0.13	0.02	0.56				
	TOTALS		N				660.89			0.69				
0570438	FLORIDA GAS TRANSMISSION COMPANY	1		391.9	3,106.6	36.0				14.40	14.0	2.0	837.0	147.0
0570438	FLORIDA GAS TRANSMISSION COMPANY	1		391.9	3,106.6	36.0				14.40	14.0	2.0	837.0	147.0
0570438	FLORIDA GAS TRANSMISSION COMPANY	2		391.9	3,106.6	36.0				14.40	14.0	2.0	837.0	147.0
0570438	FLORIDA GAS TRANSMISSION COMPANY	3		391.9	3,106.6	36.0		3.95	0.50	17.30	20.0	2.0	837.0	147.0
	TOTALS		N				720.65			60.50				
0570442	GULF MARINE REPAIR CORPORATION	3	Y	360.3	3,091.9	1.7	33.68			127.00				
0570459	BAUSCH&LOMB PHARMACEUTICALS	2	N	366.4	3,105.7	16.8	335.44			17.97	37.0			
0570460	JAMES HARDIE BUILDING PRODUCTS INC.	4	N	387.1	3,089.5	26.9	537.12	2.97	0.37	12.50	30.0	2.0		
0570461	BLACKLIDGE EMULSIONS INCORPORATED	3		359.5	3,093.2	2.6				3.69	20.0		320.0	
0570461	BLACKLIDGE EMULSIONS INCORPORATED	4		359.5	3,093.2	2.6				0.11				
	TOTALS		N				61.75			3.80				
0571151	WEYERHAEUSER COMPANY	2	N	362.8	3,098.3	8.5	170.32			12.50	34.0	2.0		
0571217	SEA 3 OF FLORIDA, INC.	3	Y	360.1	3,087.1	0.8	16.02			20.55				
0571242	NATIONAL GYPSUM	1	N	364.7	3,075.6	13.1	261.21			9.60	98.0	3.8	350.0	28.2
0810001	COASTAL FUELS MARKETING, INC.	1		348.0	3,057.7	31.3		4.62	0.58	20.24	25.0	1.8	375.0	28.0
0810001	COASTAL FUELS MARKETING, INC.	2		348.0	3,057.7	31.3		4.62	0.58	20.24	25.0	1.8	375.0	28.0
0810001	COASTAL FUELS MARKETING, INC.	3		348.0	3,057.7	31.3		0.34	0.04	1.49	22.0	1.0	510.0	56.0
0810001	COASTAL FUELS MARKETING, INC.	4		348.0	3,057.7	31.3		0.34	0.04	1.49	22.0	1.0	510.0	56.0
0810001	COASTAL FUELS MARKETING, INC.	5		348.0	3,057.7	31.3		0.34	0.04	1.49	22.0	1.0	510.0	56.7
	TOTALS		N				626.51			44.95				
0810002	PINEY POINT PHOSPHATES, INC.	1	N	349.7	3,057.3	31.2	624.08	10.00	1.26	43.80	200.0	7.8	147.0	33.5
0810007	TROPICANA PRODUCTS, INC.	11		348.1	3,041.0	47.5		32.00	4.03	138.00	71.0	6.3	441.0	25.0
0810007	TROPICANA PRODUCTS, INC.	12		348.1	3,041.0	47.5		96.70	12.18	423.60	71.0	6.3	536.0	39.0
0810007	TROPICANA PRODUCTS, INC.	14		348.1	3,041.0	47.5		91.00	11.47	391.00	103.0	6.3	489.0	22.0
0810007	TROPICANA PRODUCTS, INC.	15		348.1	3,041.0	47.5		31.40	3.96	80.20	80.0	7.0	540.0	24.0
0810007	TROPICANA PRODUCTS, INC.	15		348.1	3,041.0	47.5		15.70	1.98	68.90	80.0	7.0	540.0	24.0
0810007	TROPICANA PRODUCTS, INC.	16		348.1	3,041.0	47.5		73.00	9.20	314.50	80.0	12.0	268.0	54.0
0810007	TROPICANA PRODUCTS, INC.	21		348.1	3,041.0	47.5		1.13	0.14	4.29	40.0	1.7	300.0	16.0
0810007	TROPICANA PRODUCTS, INC.	22		348.1	3,041.0	47.5		2.42	0.30	1.06	35.0	5.0	1,000.0	15.0

Table [illegible] Modeled FDEP Off-Site NO_x Emission Inventory

Facility ID	Company Name	EU ID	Modeled (Y/N)	UTM Coordinates Easting (km)	UTM Coordinates Northing (km)	Distance from Project AOI (km)	20D Rule (tpy)	Allowable NO_x Emission Rates (lb/hr)	(g/s)	(tpy)	Stack Parameters Height (ft)	Diameter (ft)	Temperature (°F)	Velocity (ft/sec)
0810007	TROPICANA PRODUCTS, INC.	23		348.1	3,041.0	47.5		2.51	0.32	11.00	27.0	2.0	475.0	31.7
	TOTALS		Y				949.57			1,432.58				
0810010	FLORIDA POWER & LIGHT COMPANY	1		367.3	3,054.2	34.3		2,595.00	326.97	11,366.10	499.0	26.2	325.0	82.5
0810010	FLORIDA POWER & LIGHT COMPANY	2		367.3	3,054.2	34.3		2,595.00	326.97	11,366.10	499.0	26.2	325.0	82.5
0810024	FLORIDA POWER & LIGHT COMPANY	1		347.5	3,056.6	32.5		5.43	0.68	16.74	20.0	3.3	850.0	8.9
0810024	FLORIDA POWER & LIGHT COMPANY	2		347.5	3,056.6	32.5		5.43	0.68	16.74	20.0	3.3	850.0	8.9
	TOTALS		Y				685.16			22,765.68				
0810045	MANATEE COUNTY ANIMAL CONTROL	2	N	341.6	3,046.2	44.3	885.45	0.21	0.03	0.33	20.0	1.5	850.0	8.0
0810069	PALMETTO FUNERAL HOME AND CREMATORY	1	N	345.4	3,044.7	44.5	890.53			0.20	20.0	1.5	1,000.0	32.0
0810079	BENZ RESEARCH & DEVELOPMENT CORP.	1	N	348.4	3,034.4	53.9	1,077.13			0.51				
0810085	BELSPUR OAKS PET CREMATORY	1		348.7	3,034.8	53.4		0.05	0.01	0.08	24.0	1.0	797.0	30.0
0810085	BELSPUR OAKS PET CREMATORY	2		348.7	3,034.8	53.4		0.17	0.02	0.74				
	TOTALS		N				1,068.16			0.82				
0810164	FLOWERS BAKING COMPANY OF BRADENTON INC.	1		350.1	3,034.6	53.4		0.66	0.08	2.89	37.0	1.5	270.0	20.8
0810164	FLOWERS BAKING COMPANY OF BRADENTON INC.	2		350.1	3,034.6	53.4		0.55	0.07	2.41	30.0	0.8	340.0	63.0
	TOTALS		N				1,067.60			5.30				
1010002	PASCO BEVERAGE COMPANY	5		383.5	3,139.2	54.4		22.80	2.87	89.40	53.0	4.0	350.0	2.0
1010002	PASCO BEVERAGE COMPANY	6		383.5	3,139.2	54.4		12.00	1.51	52.56	53.0	4.4	350.0	1.0
1010002	PASCO BEVERAGE COMPANY	7		383.5	3,139.2	54.4		32.40	4.08	89.40	56.0	5.9	400.0	1.0
1010002	PASCO BEVERAGE COMPANY	26		383.5	3,139.2	54.4		0.13	0.02	0.58	54.0	1.5	450.0	47.0
1010002	PASCO BEVERAGE COMPANY	34		383.5	3,139.2	54.4		0.13	0.02	0.58	54.0	1.3	450.0	95.0
	TOTALS		N				1,087.02			232.53				
1010028	OVERSTREET PAVING CO	1		355.9	3,143.7	53.0		18.75	2.36	37.50	30.0	4.3	275.0	58.5
1010028	OVERSTREET PAVING CO	2		355.9	3,143.7	53.0		0.14	0.02	0.61				
	TOTALS		N				1,060.66			38.11				
1010042	SCI FUNERAL SERVICES OF FLORIDA	2	N	335.0	3,136.5	51.3	1,025.82	1.19	0.15	8.83	24.0	1.6	1,099.0	21.0
1010056	PASCO COUNTY (OWNER)	1		348.8	3,138.8	49.0		90.00	11.34	394.20	275.0	10.0	250.0	51.0
1010056	PASCO COUNTY (OWNER)	2		348.8	3,138.8	49.0		90.00	11.34	394.20	275.0	10.0	250.0	51.0
1010056	PASCO COUNTY (OWNER)	3		348.8	3,138.8	49.0		90.00	11.34	394.20	275.0	10.0	250.0	51.0
1010056	PASCO COUNTY (OWNER)	5		348.8	3,138.8	49.0		0.30	0.04	1.32	50.0	1.3	330.0	37.0
	TOTALS		Y				979.55			1,183.92				
1010071	PASCO COGEN LIMITED	1		385.1	3,139.0	54.9		42.75	5.39	202.25	275.0	4.8	310.0	
1010071	PASCO COGEN LIMITED	2		385.1	3,139.0	54.9		42.50	5.36	202.35	275.0	4.8	299.0	
	TOTALS		N				1,097.74			404.60				
1010373	IPS AVON PARK CORP.	1		347.0	3,139.0	49.6		351.00	44.23	252.00	60.0	22.0	1,113.0	116.0
1010373	IPS AVON PARK CORP.	1		347.0	3,139.0	49.6		64.10	8.08	252.00	60.0	22.0	1,113.0	116.0
1010373	IPS AVON PARK CORP.	2		347.0	3,139.0	49.6		351.00	44.23	252.00	60.0	22.0	1,113.0	116.0
1010373	IPS AVON PARK CORP.	2		347.0	3,139.0	49.6		64.10	8.08	252.00	60.0	22.0	1,113.0	116.0
1010373	IPS AVON PARK CORP.	3		347.0	3,139.0	49.6		351.00	44.23	252.00	60.0	22.0	1,113.0	116.0
1010373	IPS AVON PARK CORP.	3		347.0	3,139.0	49.6		64.10	8.08	252.00	60.0	22.0	1,113.0	116.0
	TOTALS		Y				991.58			1,512.00				
1030011	FLORIDA POWER CORPORATION	1		342.4	3,082.6	15.6		329.90	41.57	1,444.80	300.0	9.0	312.0	119.0
1030011	FLORIDA POWER CORPORATION	2		342.4	3,082.6	15.6		368.70	46.46	1,614.80	300.0	9.0	305.0	102.0
1030011	FLORIDA POWER CORPORATION	3		342.4	3,082.6	15.6		619.20	78.02	4,818.00	300.0	11.0	275.0	113.0
1030011	FLORIDA POWER CORPORATION	4		342.4	3,082.6	15.6		2.20	0.28	9.84	30.0	3.0	515.0	17.0
	TOTALS		Y				312.88			7,887.24				
1030012	FLORIDA POWER CORPORATION	1		336.5	3,098.4	22.2		383.70	48.35	1,680.00	174.0	12.5	312.0	27.0
1030012	FLORIDA POWER CORPORATION	2		336.5	3,098.4	22.2		366.00	46.12	1,603.20	174.0	12.5	310.0	27.0
1030012	FLORIDA POWER CORPORATION	3		336.5	3,098.4	22.2		383.70	48.35	1,680.00	174.0	12.5	301.0	24.0
1030012	FLORIDA POWER CORPORATION	4		336.5	3,098.4	22.2		273.37	34.44	1,197.36	55.0	15.1	850.0	93.1
1030012	FLORIDA POWER CORPORATION	5		336.5	3,098.4	22.2		273.37	34.44	1,197.36	56.0	15.1	850.0	93.1
1030012	FLORIDA POWER CORPORATION	6		336.5	3,098.4	22.2		304.69	38.39	1,334.56	55.0	15.1	850.0	93.1
1030012	FLORIDA POWER CORPORATION	7		336.5	3,098.4	22.2		304.69	38.39	1,334.56	55.0	15.1	850.0	93.1
	TOTALS		Y				444.41			10,027.04				
1030020	SPCA OF PINELLAS COUNTY	1	N	326.3	3,086.2	30.8	612.65	0.35	0.04	0.16	30.0	1.0	1,200.0	83.0

Table [redacted] Modeled FDEP Off-Site NO_x Emission Inventory

Facility ID	Company Name	EU ID	Modeled (Y/N)	UTM Coordinates Easting (km)	UTM Coordinates Northing (km)	Distance from Project AOI (km)	20D Rule (tpy)	Allowable NO_x Emission Rates (lb/hr)	Allowable NO_x Emission Rates (g/s)	Allowable NO_x Emission Rates (tpy)	Stack Parameters Height (ft)	Stack Parameters Diameter (ft)	Stack Parameters Temperature (°F)	Stack Parameters Velocity (ft/sec)
1030026	OVERSTREET PAVING COMPANY, INC.	1		326.2	3,086.9	30.7		18.95	2.39	38.38	30.0	10.0	275.0	16.6
1030026	OVERSTREET PAVING COMPANY, INC.	2		326.2	3,086.9	30.7		0.20	0.03	0.88				
	TOTALS		N				613.87			39.26				
1030047	NATIONAL CREMATION SOCIETY	2	N	329.1	3,088.9	27.7	554.17	0.34	0.04	1.47	18.0	1.7	800.0	30.0
1030054	THE MINUTE MAID COMPANY	4	N	324.3	3,100.7	34.4	668.89	0.46	0.06	8.00	150.0	11.0	230.0	
1030070	MORTON PLANT MEASE HEALTH CARE	2	N	324.7	3,099.7	33.8	675.05	1.44	0.18	6.31			350.0	
1030075	ON CALL CREMATORY	4	N	331.0	3,081.1	26.9	538.56			0.74	16.0	1.7	1,136.0	15.8
1030091	MORTON PLANT MEASE HEALTH CARE	5		322.6	3,093.1	34.4		1.64	0.21	5.97	20.0	2.0	350.0	41.0
1030091	MORTON PLANT MEASE HEALTH CARE	6		322.6	3,093.1	34.4		1.64	0.21	5.97	20.0	2.0	350.0	41.0
1030091	MORTON PLANT MEASE HEALTH CARE	7		322.6	3,093.1	34.4		20.20	2.54	22.12				
	TOTALS		N				688.77			34.05				
1030114	METAL INDUSTRIES, INC.	1	N	336.7	3,101.0	23.2	463.56			12.12	35.0	4.9	800.0	1.0
1030117	PINELLAS CO. BOARD OF CO. COMMISSIONERS	3	Y	335.2	3,084.1	22.1	442.48	205.30	25.87	899.20	165.0	9.0	450.0	90.0
1030129	PINELLAS MEMORIAL PET CEMETERY	1		329.9	3,081.6	27.9		0.60	0.08	0.54	15.0	1.5	1,800.0	16.5
1030129	PINELLAS MEMORIAL PET CEMETERY	2		329.9	3,081.6	27.9		0.31	0.04	0.32	15.0	1.5	950.0	16.5
	TOTALS		N				557.14			0.86				
1030132	COOPER COIL COATING, INC.	1		334.0	3,086.9	22.9		2.10	0.26	9.20	41.0	3.6	800.0	17.0
1030132	COOPER COIL COATING, INC.	2		334.0	3,086.9	22.9		1.96	0.25	8.58	40.0	3.0	818.0	31.5
	TOTALS		N				458.25			17.78				
1030147	SONNY GLASBRENNER, INC.	3	N	334.3	3,085.6	22.7	455.00	27.40	3.45	42.80	15.0	0.7		248.9
1030214	LIFE-LIKE PRODUCTS INC	2	N	330.3	3,084.8	26.8	536.47			8.65				
1030217	ABC CREMATORY (PREV PARKLAWN MEM GARDEN)	1	N	328.2	3,101.4	31.0	620.72	0.38	0.05	1.66	16.0	1.7	689.0	24.0
1030288	BAYCARE SERVICES INC	1		333.1	3,084.4	24.1		1.64	0.21	7.17				
1030288	BAYCARE SERVICES INC	2		333.1	3,084.4	24.1		1.64	0.21	7.17				
	TOTALS		N				482.53			14.34				
1030443	LORAD CHEMICAL CORPORATION	2	N	336.5	3,074.2	24.8	496.78			2.41	25.0	0.7	100.0	
1050003	LAKELAND ELECTRIC & WATER UTILITIES	3		408.9	3,102.5	50.5		154.00	19.40	674.00	165.0	10.0	340.0	21.0
1050003	LAKELAND ELECTRIC & WATER UTILITIES	4		408.9	3,102.5	50.5		331.00	41.71	1,448.00	165.0	10.0	340.0	22.0
1050003	LAKELAND ELECTRIC & WATER UTILITIES	5		408.9	3,102.5	50.5		145.90	18.38	639.00	31.0	11.8	800.0	101.0
1050003	LAKELAND ELECTRIC & WATER UTILITIES	6		408.9	3,102.5	50.5		145.90	18.38	639.00	31.0	11.8	800.0	101.0
1050003	LAKELAND ELECTRIC & WATER UTILITIES	8		408.9	3,102.5	50.5		176.00	22.18	425.00	155.0	16.0	481.0	85.7
1050003	LAKELAND ELECTRIC & WATER UTILITIES	8		408.9	3,102.5	50.5		176.00	22.18	244.00	155.0	16.0	481.0	85.7
	TOTALS		Y				1,009.22			4,069.00				
1050004	LAKELAND ELECTRIC & WATER UTILITIES	1		409.0	3,106.2	51.6		529.00	66.65	2,317.00	150.0	9.0	277.0	81.2
1050004	LAKELAND ELECTRIC & WATER UTILITIES	2		409.0	3,106.2	51.6		86.80	10.94	380.18	20.0	2.6	715.0	77.0
1050004	LAKELAND ELECTRIC & WATER UTILITIES	3		409.0	3,106.2	51.6		86.80	10.94	380.18	20.0	2.6	715.0	77.0
1050004	LAKELAND ELECTRIC & WATER UTILITIES	4		409.0	3,106.2	51.6		223.36	28.14	978.32	35.0	13.5	900.0	79.5
1050004	LAKELAND ELECTRIC & WATER UTILITIES	5		409.0	3,106.2	51.6		236.90	29.85	1,037.60	157.0	10.5	277.0	73.2
1050004	LAKELAND ELECTRIC & WATER UTILITIES	5		409.0	3,106.2	51.6		334.50	42.15	1,465.10	157.0	10.5	277.0	73.2
1050004	LAKELAND ELECTRIC & WATER UTILITIES	5		409.0	3,106.2	51.6		334.50	42.15	1,465.10	157.0	10.5	277.0	73.2
1050004	LAKELAND ELECTRIC & WATER UTILITIES	6		409.0	3,106.2	51.6		726.00	91.73	3,188.60	250.0	18.0	167.0	82.6
1050004	LAKELAND ELECTRIC & WATER UTILITIES	6		409.0	3,106.2	51.6		2,548.00	321.05	11,160.20	250.0	18.0	167.0	82.6
1050004	LAKELAND ELECTRIC & WATER UTILITIES	6		409.0	3,106.2	51.6		1,092.00	137.59	4,782.96	250.0	18.0	167.0	82.6
1050004	LAKELAND ELECTRIC & WATER UTILITIES	28		409.0	3,106.2	51.6		237.00	29.86	1,036.00	85.0	28.0	1,095.0	82.7
1050004	LAKELAND ELECTRIC & WATER UTILITIES	28		409.0	3,106.2	51.6		413.00	52.04	1,809.00	85.0	28.0	1,095.0	82.7
1050004	LAKELAND ELECTRIC & WATER UTILITIES	1		409.0	3,106.2	51.6		529.00	66.65	2,317.00	150.0	9.0	277.0	81.2
	TOTALS		Y				1,032.63			32,319.24				
1050009	FLORIDA TILE INDUSTRIES, INC.	2		405.4	3,102.4	47.1		0.12	0.02	0.53	30.0	2.0	160.0	
1050009	FLORIDA TILE INDUSTRIES, INC.	10		405.4	3,102.4	47.1		0.10	0.01	0.40	40.0	2.0	150.0	1.0
1050009	FLORIDA TILE INDUSTRIES, INC.	40		405.4	3,102.4	47.1		0.27	0.03	1.18	30.0	1.6	482.0	13.0
	TOTALS		N				941.22			2.11				
1050046	CARGILL FERTILIZER, INC.	12		409.8	3,086.6	49.6		13.00	1.64	57.00	200.0	6.8	180.0	61.0
1050046	CARGILL FERTILIZER, INC.	32		409.8	3,086.6	49.6		13.00	1.64	57.00	200.0	6.8	180.0	61.0
1050046	CARGILL FERTILIZER, INC.	33		409.8	3,086.6	49.6		13.00	1.64	57.00	200.0	6.8	180.0	61.0
	TOTALS		N				992.98			171.00				

Modeled FDEP Off-Site NO_x Emission Inventory

Facility ID	Company Name	EU ID	Modeled (Y/N)	UTM Coordinates Easting (km)	UTM Coordinates Northing (km)	Distance from Project AOI (km)	20D Rule (tpy)	Allowable NO_x Emission Rates (lb/hr)	Allowable NO_x Emission Rates (g/s)	Allowable NO_x Emission Rates (tpy)	Stack Parameters Height (ft)	Stack Parameters Diameter (ft)	Stack Parameters Temperature (°F)	Stack Parameters Velocity (ft/sec)
1050047	AGRIFOS, L.L.C.	1		398.7	3,085.3	38.7		35.80	4.51	156.80	80.0	7.5	160.0	41.0
1050047	AGRIFOS, L.L.C.	2		398.7	3,085.3	38.7		35.20	4.44	154.20	80.0	7.5	160.0	41.0
	TOTALS		N				773.29			311.00				
1050048	MULBERRY PHOSPHATES, INC.	5		406.8	3,085.1	46.8		11.00	1.39	18.40	102.0	8.8	110.0	26.0
1050048	MULBERRY PHOSPHATES, INC.	9		406.8	3,085.1	46.8		23.93	3.02	104.81	45.0	3.7	80.0	8.0
	TOTALS		N				935.03			123.21				
1050053	FARMLAND HYDRO, L.P.	5		410.3	3,079.7	50.9		11.90	1.50	52.20	150.0	8.0	180.0	37.8
1050053	FARMLAND HYDRO, L.P.	9		410.3	3,079.7	50.9		29.10	3.67	64.80	65.0	1.0	120.0	14.0
1050053	FARMLAND HYDRO, L.P.	29		410.3	3,079.7	50.9		7.20	0.91	31.30	129.0	7.5	108.0	43.0
1050053	FARMLAND HYDRO, L.P.	38		410.3	3,079.7	50.9		13.80	1.74	60.00	150.0	9.0	180.0	34.8
	TOTALS		N				1,018.50			208.30				
1050055	IMC-AGRICO CO.(SO. PIERCE)	4		407.5	3,071.4	50.4		15.00	1.89	65.70	144.0	9.0	170.0	41.1
1050055	IMC-AGRICO CO.(SO. PIERCE)	5		407.5	3,071.4	50.4		15.00	1.89	65.70	144.0	9.0	170.0	41.1
	TOTALS		N				1,007.34			131.40				
1050056	IMC-AGRICO CO.(PRAIRIE)	4	N	402.9	3,087.0	42.7	854.76	14.03	1.77	61.47	70.0	4.4	184.0	51.0
1050057	IMC-AGRICO CO.(NICHOLS)	5	N	398.4	3,084.2	38.5	769.66	12.50	1.58	54.80	150.0	7.5	170.0	33.0
1050059	IMC-AGRICO CO.(NEW WALES)	2		396.7	3,079.4	37.7		14.50	1.83	63.50	200.0	8.5	170.0	50.0
1050059	IMC-AGRICO CO.(NEW WALES)	3		396.7	3,079.4	37.7		14.50	1.83	63.50	200.0	8.5	170.0	50.0
1050059	IMC-AGRICO CO.(NEW WALES)	4		396.7	3,079.4	37.7		14.50	1.83	63.50	200.0	8.5	170.0	50.0
1050059	IMC-AGRICO CO.(NEW WALES)	13		396.7	3,079.4	37.7		27.60	3.48	120.80	85.0	3.0	555.0	193.3
1050059	IMC-AGRICO CO.(NEW WALES)	42		396.7	3,079.4	37.7		14.50	1.83	63.50	199.0	8.5	170.0	50.0
1050059	IMC-AGRICO CO.(NEW WALES)	44		396.7	3,079.4	37.7		14.50	1.83	63.50	199.0	8.5	170.0	50.0
1050059	IMC-AGRICO CO.(NEW WALES)	45		396.7	3,079.4	37.7		12.60	1.59	55.20	171.0	6.0	110.0	58.0
1050059	IMC-AGRICO CO.(NEW WALES)	46		396.7	3,079.4	37.7		12.60	1.59	55.20	171.0	6.0	110.0	58.0
	TOTALS		N				753.74			648.70				
1050099	AOC, L.L.C.	2		401.0	3,108.5	45.0				39.45	40.0	4.9	160.0	45.1
1050099	AOC, L.L.C.	3		401.0	3,108.5	45.0				7.02				
	TOTALS		N				900.81			46.47				
1050100	SHELL EPOXY RESINS LLC	5	N	410.7	3,096.9	51.4	1,028.34	0.21	0.03	0.94	35.0	1.1	900.0	25.0
1050134	HEATH FUNERAL CHAPEL	1	N	407.1	3,101.9	48.6	971.35	0.30	0.04	0.55	15.0	1.7	1,175.0	8.0
1050146	PAVEX CORPORATION	1	N	413.0	3,088.2	52.9	1,057.30	19.28	2.43	24.10	40.0	4.0		58.4
1050174	PEPPERIDGE FARM, INC	9		403.3	3,104.8	45.8		1.23	0.15	5.40				
1050174	PEPPERIDGE FARM, INC	10		403.3	3,104.8	45.8				5.40				
1050174	PEPPERIDGE FARM, INC	11		403.3	3,104.8	45.8				5.40				
1050174	PEPPERIDGE FARM, INC	12		403.3	3,104.8	45.8				5.40				
1050174	PEPPERIDGE FARM, INC	13		403.3	3,104.8	45.8				3.83				
1050174	PEPPERIDGE FARM, INC	14		403.3	3,104.8	45.8				3.83				
	TOTALS		N				915.74			29.26				
1050182	GEOLOGIC RECOVERY SYSTEMS	1	N	401.8	3,085.8	41.7	834.24	25.90	3.26	69.80	26.0	2.7	1,500.0	98.0
1050233	TAMPA ELECTRIC COMPANY	1		402.5	3,067.4	47.3		311.00	39.19	2,908.30	150.0	19.0	340.0	75.8
1050233	TAMPA ELECTRIC COMPANY	1		402.5	3,067.4	47.3		664.20	83.69	2,908.30	150.0	19.0	340.0	75.8
1050233	TAMPA ELECTRIC COMPANY	1		402.5	3,067.4	47.3		220.25	27.75	1,032.90	150.0	19.0	340.0	75.8
1050233	TAMPA ELECTRIC COMPANY	3		402.5	3,067.4	47.3		12.00	1.51	18.00	75.0	3.7	375.0	43.0
1050233	TAMPA ELECTRIC COMPANY	9		402.5	3,067.4	47.3		73.50	9.26	270.30	114.0	28.9	1,098.0	62.2
1050233	TAMPA ELECTRIC COMPANY	10		402.5	3,067.4	47.3		73.50	9.26	270.30	114.0	28.9	1,098.0	62.2
	TOTALS		Y				945.97			7,408.10				
1050240	INTERNATIONAL BEVERAGE SYSTEMS, INC.	1	N	398.0	3,097.0	38.6	771.76	1.16	0.15	5.08				
1050257	PANDA-KATHLEEN, L.P.	1		398.7	3,101.5	40.3		53.00	6.68	232.00	150.0	17.5	219.0	47.0
1050257	PANDA-KATHLEEN, L.P.	1		398.7	3,101.5	40.3		168.00	21.17	42.00	150.0	17.5	219.0	47.0
1050257	PANDA-KATHLEEN, L.P.	1		398.7	3,101.5	40.3		53.00	6.68	232.00	150.0	17.5	219.0	47.0
1050257	PANDA-KATHLEEN, L.P.	1		398.7	3,101.5	40.3		171.00	21.55	43.00	150.0	17.5	219.0	47.0
	TOTALS		N				806.39			549.00				
1050319	CLARK ENVIRONMENTAL INC	1	N	401.2	3,086.6	41.1	821.21	5.20	0.66	15.10	21.0	3.4	1,300.0	102.2
7770037	APAC - FLORIDA, INC. - TAMPA DIVISION	2	N	392.6	3,097.3	33.4	667.81	0.07	0.01	0.15	8.0	1.0		
7770262	ANGELO'S RECYCLED MATERIALS	2	N	393.9	3,084.8	23.3	465.38	27.40	3.45	42.80	9.0	0.2		

T[redacted] Modeled FDEP Off-Site NO_x Emission Inventory

Facility ID	Company Name	EU ID	Modeled (Y/N)	UTM Coordinates Easting (km)	UTM Coordinates Northing (km)	Distance from Project AOI (km)	20D Rule (tpy)	Allowable NO_x Emission Rates (lb/hr)	Allowable NO_x Emission Rates (g/s)	Allowable NO_x Emission Rates (tpy)	Stack Parameters Height (ft)	Stack Parameters Diameter (ft)	Stack Parameters Temperature (°F)	Stack Parameters Velocity (ft/sec)
7771101	WOODRUFF AND SONS INC	2	N	364.3	3,093.2	5.5	109.00	5.44	0.68	5.85	10.0	0.5		
7775048	SONNY GLASBRENNER, INC.	2	N	334.3	3,085.6	22.7	455.00			23.70	15.0	1.0	750.0	112.5
7775052	WOODRUFF & SONS, INC.	2		363.6	3,092.3	4.4		5.44	0.68	5.85	10.0	0.5		
7775053	WOODRUFF & SONS, INC.	2		363.6	3,092.3	4.4		5.44	0.68	5.85				
7775054	WOODRUFF & SONS, INC.	2		363.6	3,092.3	4.4		4.83	0.61	3.93				
	TOTALS		N				87.39			15.23				
7775055	WOODRUFF & SONS, INC.	2	N	363.7	3,034.3	53.3	1,066.53	4.83	0.61	3.93				

Source: FDEP, 2000.
ECT, 2000.