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Atkins North America, Inc.
6504 Bridge Point Parkway, Suite 200
Austin, Texas 78730
Telephone: +1.512.327.6840
Fax: +1.512.327.2453
www.atkinsglobal.com/northamerica

July 18, 2012

Mr. Jeff Robinson
Air Permit Section Chief
U.S. Environmental Protection Agency, (6PD-R)
1445 Ross Ave
Dallas, TX 75202-2733

ATKINS Project No. 044167600

RE: Update to the Application for Prevention of Significant Deterioration (PSD) Permit for Greenhouse Gas Emissions – Liquefaction Plant and Pretreatment Facility
Freeport LNG Development, L.P., Brazoria County, Texas

Dear Mr. Robinson:

Freeport LNG Development, L.P., (Freeport LNG) submitted an application to the U.S. Environmental Protection Agency (EPA), Region 6 on December 20, 2011 for an Air Quality Prevention of Significant Deterioration (PSD) Permit for Greenhouse Gas (GHG) emissions to authorize the construction of a proposed Liquefaction Project in Brazoria County, Texas. The Liquefaction Project consists of two new sources - a Pretreatment Facility and a Liquefaction Plant. Because of the interdependence of the Liquefaction Plant and the Pretreatment Facility, the two plants are considered a single project for PSD permitting purposes. Accordingly, a single application for permitting of GHG emissions under the PSD Tailoring Rule was submitted to the EPA for the proposed Liquefaction Project.

On behalf of Freeport LNG, this notification is to formally update the EPA concerning a change in the preferred site of the Pretreatment Facility proposed by Freeport LNG as part of its Liquefaction Project. As originally proposed by Freeport LNG, the Pretreatment Facility was to be located at a site on County Road ("CR") 792, approximately 5 miles north of the Quintana Island Terminal ("CR 792 Site"). In conjunction with the National Environmental Policy Act (42 U.S.C. 4321) pre-filing process, a number of landowners in proximity to the CR 792 Site requested that Freeport LNG consider alternative sites for the Pretreatment Facility. As a result of its dialogue with those landowners, Freeport LNG is no longer considering locating its Pretreatment Facility on the CR 792 Site, but rather, has entered into an option agreement to purchase a new site located approximately one mile southeast of the City of Oyster Creek near CR 690 and State Highway 332 ("CR 690 Site").

In terms of emission sources, Freeport LNG is proposing to utilize essentially the same process description and equipment, production rate, and air emission sources as previously identified in the initial GHG PSD application. However, the change in location of the Pretreatment Facility has resulted in a change to the area map, site plan, and location coordinates for proposed process equipment, ancillary structures, and air emission sources. In addition, a more detailed engineering design for the Pretreatment Facility has identified the need for two additional emergency engines, Emission Point Numbers (EPN) PTFEG-3 and PTFEG-4, and associated fuel tanks. These additional engines will be identical to the two diesel-fueled, emergency engines (EPNs: PTFEG-1 and PTFEG-2) identified in the original application submittal and will have the same operational constraints.

Similarly for the Liquefaction Plant, more detailed engineering has identified the need to make changes to the configuration of the Liquefaction Plant. This adjustment will result in a change to the area map, site plan, and location coordinates for proposed process equipment, ancillary

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structures, and air emission sources. In addition, one additional diesel-fueled, emergency firewater pump engine (EPN LFWP-2) and its associated fuel tank, identical to the ones proposed in the initial application, will be needed.

Accordingly, attached to this letter is the following updated information:

- Attachment 1 – Pretreatment Facility Area Map and Plot Plan showing the updated location of proposed Pretreatment Facility relative to the surrounding area

- Attachment 2 - Liquefaction Plant Area Map and Plot Plan showing the updated location of the proposed Liquefaction Plant relative to the surrounding area

- Attachment 3 – Pages 1 of 9 and 4 of 9 of TCEQ Form PI-1, "General Application for Air Preconstruction Permit and Amendment". Section H on Page 1 of 9 has been updated to show the new location for the Pretreatment Facility. Section F on Page 4 of 9 has been revised to show the updated annual GHG emission rate (as Carbon Dioxide Equivalents) for the Liquefaction Project. The additional diesel-fueled, emergency generator and firewater pump engines will result in a slight increase in the overall GHG emissions for the project. Note the annual emission rate shown on this page is the combined total for the Liquefaction Project including the Liquefaction Plant and the Pretreatment Facility.

- Attachment 4 - Table 1(a) for the Liquefaction Plant showing updated emission point coordinates; incorporating the emissions data for the additional emergency generator and firewater pump engines. Note the firewater pump engine, identified as EPN LFWP in the initial application for the Liquefaction Plant, has been renamed EPN LFWP-1; the additional one is designated as EPN LFWP-2. In addition, the EPNs and descriptive name for the 10 process heaters proposed in the initial application have been updated in this table to reflect the current site plan designations.

- Attachment 5 – Emissions Summary Tables for the Liquefaction Project incorporating the estimate of emissions resulting from the additional diesel-fueled, emergency generator and firewater pump engines. As shown in these tabular summaries, the addition of the diesel-fueled, emergency generator and firewater pump engines will result in a slight increase in overall GHG emissions for the Liquefaction Project. Note, only the emission summary tables affected by these updates are provided.

As previously noted, Freeport LNG is proposing to utilize essentially the same process description and equipment, production rate, and air emission sources as previously identified in the initial GHG PSD application. Thus, there will be no change in the emissions profile for the emissions sources identified in the initial permit application submitted on December 20, 2011.

The evaluation of BACT for the emergency generators and firewater pumps in Section 10.6 of the initial permit application is applicable to the additional diesel-fueled, emergency generator and firewater pump engines proposed for the Pretreatment Facility and the Liquefaction Plant as the additional engines will be identical to the corresponding engines proposed in the initial application. Thus, the change in location of the Pretreatment Facility and change in configuration of the

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Liquefaction Plant do not alter the conclusions of the 5-Step, top-down BACT evaluation for the proposed equipment.

Thank you for your consideration. Should you have any questions regarding this updated information, please contact Mr. Mark Mallett, P.E., Freeport LNG Development, L.P. at (713) 333-4271 or me at (512) 342-3395 or by email: Ruben.Velasquez@atkinsglobal.com.

Sincerely,

Ruben I. Velasquez, P.E.
Senior Engineer - Air Quality
Atkins North America, Inc.

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TBPE REG. #F-474

Enclosures

cc: Mr. Mike Wilson, Director, Air Permits Division, TCEQ
Mr. Mark Mallett, P.E., Vice-President, Freeport LNG Development, L.P

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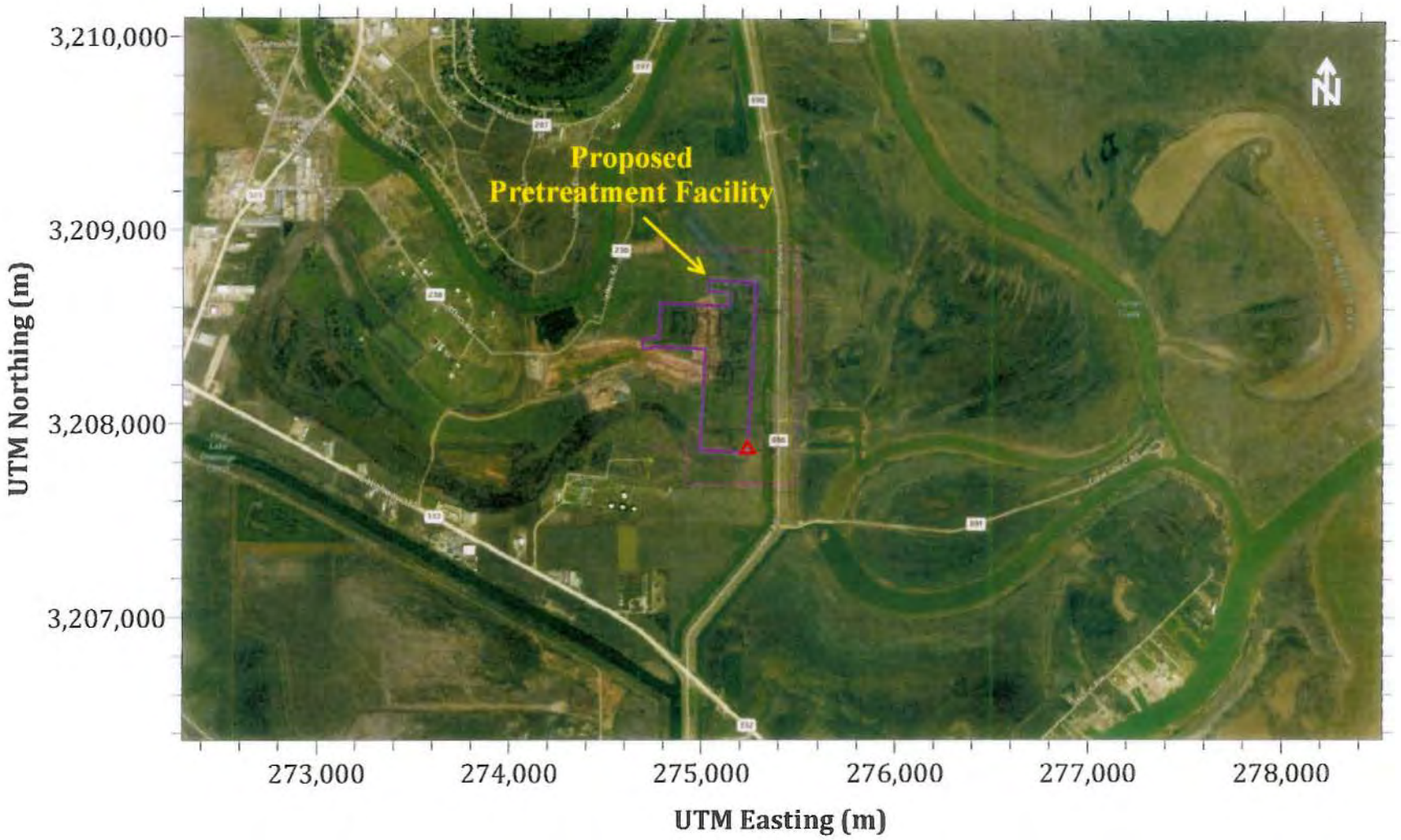
ATTACHMENT 1

Updated Area Map and Plot Plan
Pretreatment Facility

Figure 3-1: Area Map of Proposed Pretreatment Facility

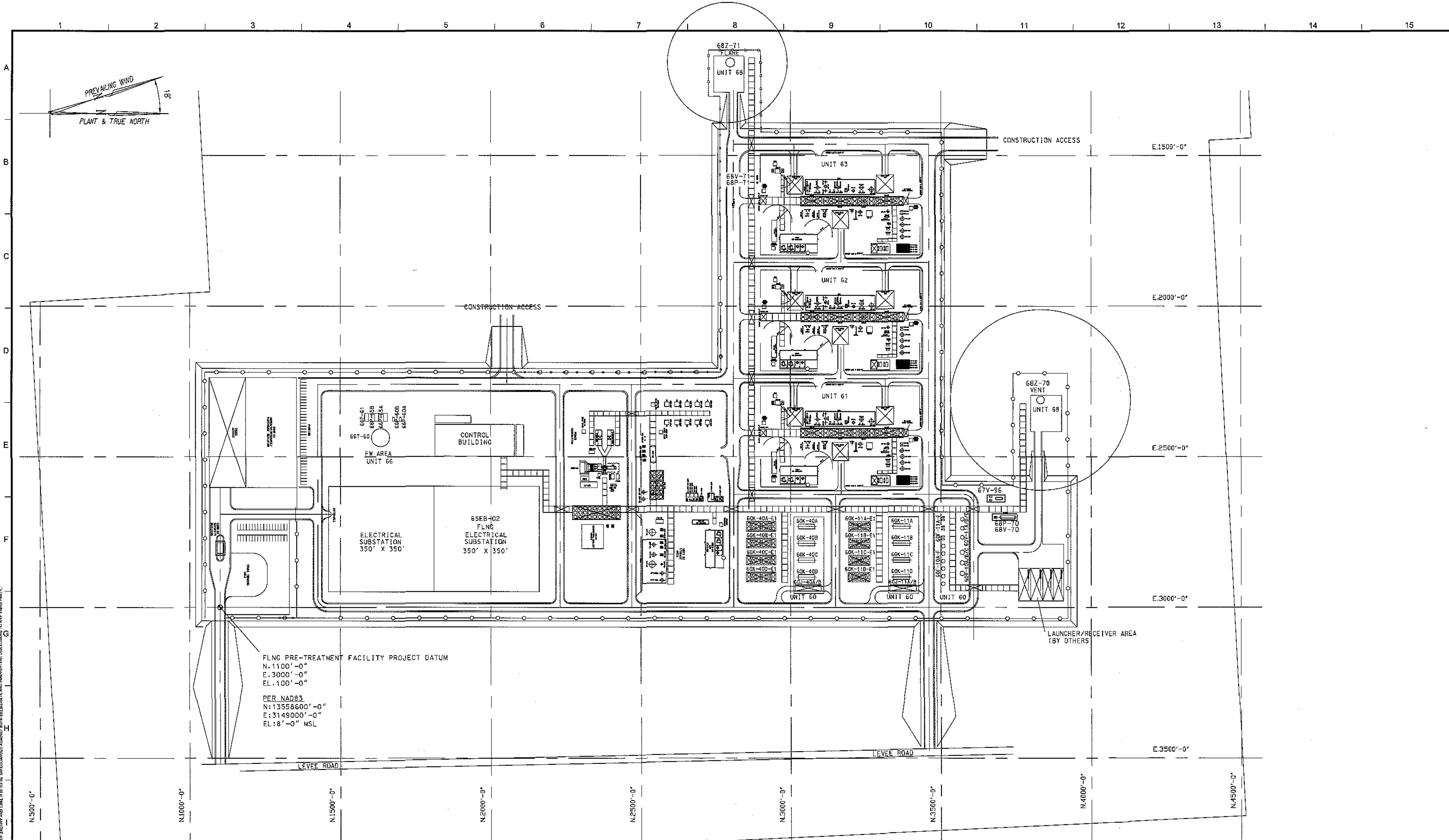


Benchmark coordinates: N - 13,558,600, E - 3,149,000 in Texas South Central, NAD83 U.S. Survey Feet.

UTM coordinates in Zone 15, NAD83 datum.

Source: Bings Hybrid Map (c) 2010 Microsoft Corporation and its data suppliers

Legend:
Fence Line



0' 50' 100' 200' 300' 400' 500'

SCALE BAR

ZACHRY | CB&I

Project	Unit	Doc Type	Eng Code	Seq No	Rev
1009	000	DW	0051	001	G

REV	DATE	BY	DESCRIPTION	CHK'D	TECH.	PROJ.	ENG	OPS	P.M.
E	31JAN12	RB	ISSUED FOR FERC SUBMITTAL	DG	AK				
D	08DEC11	MJM	REVISED SIZE AND LOCATION OF ELEC SUBSTATION						
C	14NOV11	MJM	REVISED ADDED VENT ISSUE FOR INFORMATION						
G	17MAY12	RB	ISSUED FOR FERC SUBMITTAL	DG	EK				
F	23APR12	MJM	ISSUE FOR INFORMATION - SITE RELOCATED	DG	AK				
				CONTRACTOR			FREEPORT LNG		

FILE NAME: 179811-1009-000-DW-0051-001.0001.DWG

SCALE: SEE SCALE BAR

FREEPORT LNG

FREEPORT LNG
QUINTANA, TEXAS

SITE PLAN
GRID LAYOUT TO PLANT COORDINATES
PRE-TREATMENT FACILITY

	BY	DATE
DESIGN	MJM	17AUG11
DRAWN	MJM	17AUG11

DRAWING NO.

SHEET: 1 OF 1

REV. NO. G

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ATTACHMENT 2

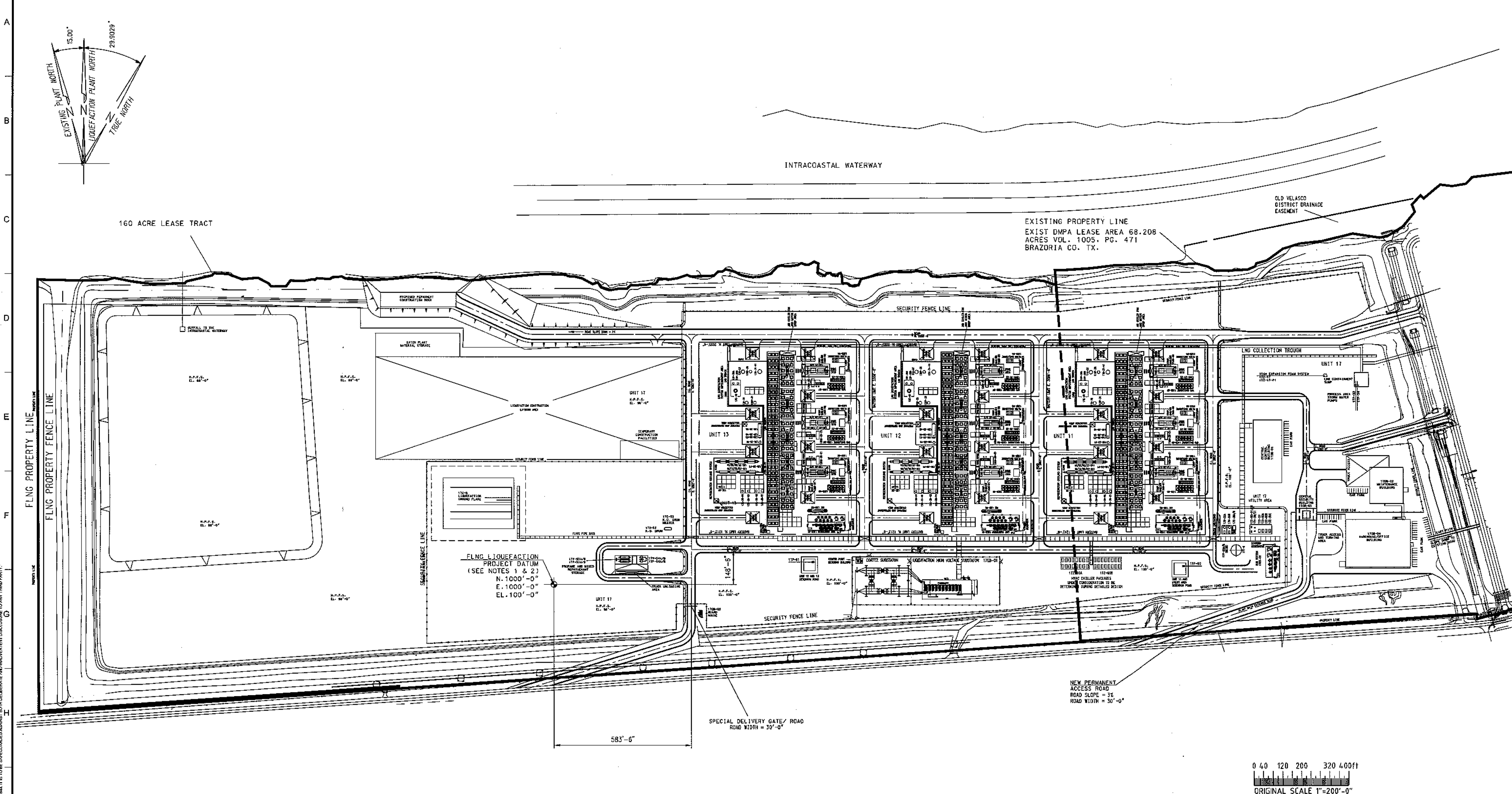
Updated Area Map and Plot Plan
Liquefaction Plant

Figure 3-2: Area Map of Proposed Liquefaction Facility

△ Benchmark coordinates: N - 13,537,500, E - 3,144,500 in Texas South Central, NAD83 U.S. Survey Feet.

UTM coordinates in Zone 15, NAD83 datum.

Source: 15R 273,961.45m E 3,203,359.83m N. Google Earth. February 15, 2010. November 14, 2011.



NOTE:

1. FOR CROSS-REFERENCE OF PROJECT DATUM POINT TO THE TEXAS SOUTH CENTRAL. NAD83 U.S. SURVEY (FEET) SEE PROJECT DRAWING 179811-1008-000-DW-0052-003.0001.
2. H.P.FINISHED SURFACE EL. 100'-0" = 26'-0" ABOVE MSL

REV	DATE	BY	DESCRIPTION	CHK'D	TECH.	PROJ.	ENG	OPS	P.M.
E	20DEC11	RB	ISSUED FOR INFORMATION	DG	RM				
D	30NOV11	RB	ISSUED FOR FERC SUBMITTAL	EK	RM				
H	16JUL12	RB	ISSUED FOR CLIENT APPROVAL	PO'S	AK				
G	08MAY12	RB	ISSUED FOR INFORMATION	DG	AK				
F	18JAN12	RB	ISSUED FOR FERC SUBMITTAL	DG	RM				
				CONTRACTOR			FREEPORT LNG		

FILE NAME: 179811-1008-DW-0051-001.0001.DWG

SCALE: 1"= 200'-0"

ZACHRY CB&I

Project	Unit	Doc Type	Eng Code	Seq No	Rev
1008	000	DW	0051	001	H

FREEPORT LNG

FREEPORT LNG
HOUSTON, TEXAS

PLOT PLAN

OVERALL LIQUEFACTION FACILITIES

	BY	DATE
DESIGN	RB	10JAN12
DRAWN	RB	10JAN12

DRAWING NO.

SHEET:

REV. NO. H

179811-1008-000-DW-0051-001.0001.DWG Last Saved: 7/17/2012 7:52 AM by posullv

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ATTACHMENT 3

Updated TCEQ Form PI-1
Page 1 of 9 and Page 4 of 9

Texas Commission on Environmental Quality
Form PI-1 General Application for
Air Preconstruction Permit and Amendment

Important Note: The agency **requires** that a Core Data Form be submitted on all incoming applications unless a Regulated Entity and Customer Reference Number have been issued *and* no core data information has changed. For more information regarding the Core Data Form, call (512) 239-5175 or go to www.tceq.texas.gov/permitting/central_registry/guidance.html.

I. Applicant Information		
A. Company or Other Legal Name: Freeport LNG Development, L.P.		
Texas Secretary of State Charter/Registration Number (*if applicable*): 0800125153		
B. Company Official Contact Name: Mr. Mark W. Mallett, P.E.		
Title: Vice President - Operations and Engineering		
Mailing Address: 333 Clay Street, Suite 5050		
City: Houston	State: TX	ZIP Code: 77002-4173
Telephone No.: (713) 980-2888	Fax No.: (713) 980-2903	E-mail Address: mmallett@freeportlng.com
C. Technical Contact Name: Mr. Ruben I. Velasquez, P.E.		
Title: Senior Engineer – Air Quality		
Company Name: Atkins North America, Inc.		
Mailing Address: 6504 Bridge Point Parkway, Suite 200		
City: Austin	State: TX	ZIP Code: 78730
Telephone No.: (512) 342-3395	Fax No.: (512) 327-2453	E-mail Address: Ruben.Velasquez@atkinsglobal.com
D. Site Name: Freeport LNG Liquefaction Project		
E. Area Name/Type of Facility: Freeport LNG Liquefaction Project		☒ Permanent ☐ Portable
F. Principal Company Product or Business: Liquefied Natural Gas		
Principal Standard Industrial Classification Code (SIC): 1321		
Principal North American Industry Classification System (NAICS): 211112		
G. Projected Start of Construction Date: January 2013		
Projected Start of Operation Date: January 2015		
H. Facility and Site Location Information (If no street address, provide clear driving directions to the site in writing.):		
Street Address: On CR 690 about 0.25 miles north of the intersection of CR 690 and CR 891 in Brazoria County, TX		
City/Town: Freeport	County: Brazoria	ZIP Code: TX
Latitude (nearest second): 28° 58' 45"	Longitude (nearest second): 95° 18' 25"	

III. Type of Permit Action Requested (continued)		
H.	Federal Operating Permit Requirements (30 TAC Chapter 122 Applicability) *(continued)*	
2.	Identify the type(s) of FOP(s) issued and/or FOP application(s) submitted/pending for the site. (check all that apply)	
GOP Issued ☐	GOP application/revision application submitted or under APD review ☐	
SOP Issued ☐	SOP application/revision application submitted or under APD review ☐	
IV. Public Notice Applicability		
A.	Is this a new permit application or a change of location application?	☒ YES ☐ NO
B.	Is this application for a concrete batch plant? If Yes, complete V.C.1 – V.C.2.	☐ YES ☒ NO
C.	Is this an application for a major modification of a PSD, nonattainment, FCAA 112(g) permit, or exceedance of a PAL permit?	☐ YES ☒ NO
D.	Is this application for a PSD or major modification of a PSD located within 100 kilometers of an affected state?	☐ YES ☒ NO
If *Yes*, list the affected state(s).		
E.	Is this a state permit amendment application? If Yes, complete IV.E.1. – IV.E.3. NO	
1.	Is there any change in character of emissions in this application?	☐ YES ☐ NO
2.	Is there a new air contaminant in this application?	☐ YES ☐ NO
3.	Do the facilities handle, load, unload, dry, manufacture, or process grain, seed, legumes, or vegetables fibers (agricultural facilities)?	☐ YES ☐ NO
F.	List the total annual emission increases associated with the application (*list* **all** *that apply and attach additional sheets as needed*)*:	
Volatile Organic Compounds (VOC):		
Sulfur Dioxide (SO_2):		
Carbon Monoxide (CO):		
Nitrogen Oxides (NO_x):		
Particulate Matter (PM):		
PM $_{10}$ microns or less (PM_{10}):		
PM $_{2.5}$ microns or less ($PM_{2.5}$):		
Lead (Pb):		
Hazardous Air Pollutants (HAPs):		
Other speciated air contaminants **not** listed above: CO_2e : 1,580,866 tpy		

***Total emissions increases for the Liquefaction Project including Liquefaction Plant and Pretreatment Facilities.**

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ATTACHMENT 4

Updated Table1(a)
Liquefaction Project

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Table 1(a) Emission Point Summary

Date:	7/18/2012	Permit No.:	TBD	Regulated Entity No.:	RN103196689/TBA
Area Name:	Freeport LNG Development, L P			Customer Reference No.:	CN601720345

Review of applications and issuance of permits will be expedited by supplying all necessary information requested on this Table

AIR CONTAMINANT DATA					
1. Emission Point			2. Component or Air Contaminant Name	3. Air Contaminant Emission Rate	
(A) EPN	(B) FIN	(C) NAME		(A) POUND PER HOUR	(B) TPY
65B-81A	65B-81A	Heating Medium Heater A	CO_2e	9945.22	--
			CO_2	9935.47	--
			N_2O	0.02	--
			CH_4	0.19	--
65B-81B	65B-81B	Heating Medium Heater B	CO_2e	9945.22	--
			CO_2	9935.47	--
			N_2O	0.02	--
			CH_4	0.19	--
65B-81C	65B-81C	Heating Medium Heater C	CO_2e	9945.22	--
			CO_2	9935.47	--
			N_2O	0.02	--
			CH_4	0.19	--
65B-81D	65B-81D	Heating Medium Heater D	CO_2e	9945.22	--
			CO_2	9935.47	--
			N_2O	0.02	--
			CH_4	0.19	--
65B-81E	65B-81E	Heating Medium Heater E	CO_2e	9945.22	--
			CO_2	9935.47	--
			N_2O	0.02	--
			CH_4	0.19	--
65B-81F	65B-81F	Heating Medium Heater F	CO_2e	9945.22	--
			CO_2	9935.47	--
			N_2O	0.02	--
			CH_4	0.19	--
65B-81G	65B-81G	Heating Medium Heater G	CO_2e	9945.22	--
			CO_2	9935.47	--
			N_2O	0.02	--
			CH_4	0.19	--
65B-81H	65B-81H	Heating Medium Heater H	CO_2e	9945.22	--
			CO_2	9935.47	--
			N_2O	0.02	--
			CH_4	0.19	--

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Table 1(a) Emission Point Summary

Date:	7/18/2012	Permit No.:	TBD	Regulated Entity No.:	RN103196689/TBA
Area Name:	Freeport LNG Development, L.P.			Customer Reference No.:	CN601720345

Review of applications and issuance of permits will be expedited by supplying all necessary information requested on this Table.

AIR CONTAMINANT DATA					
1. Emission Point			2. Component or Air Contaminant Name	3. Air Contaminant Emission Rate	
(A) EPN	(B) FIN	(C) NAME		(A) POUND PER HOUR	(B) TPY
65B-81I	65B-81I	Heating Medium Heater I	CO_2e	9945.22	--
			CO_2	9935.47	--
			N_2O	0.02	--
			CH_4	0.19	--
65B-81J	65B-81J	Heating Medium Heater J	CO_2e	9945.22	--
			CO_2	9935.47	--
			N_2O	0.02	--
			CH_4	0.19	--
TO1	AU1/TO1	Amine Unit / Thermal Oxidizer 61	CO_2e	68799.20	301340.50
			CO_2	68798.63	301337.99
			N_2O	0.00	0.005
			CH_4	0.01	0.05
TO2	AU2/TO2	Amine Unit / Thermal Oxidizer 62	CO_2e	68799.20	301340.50
			CO_2	68798.63	301337.99
			N_2O	0.00	0.005
			CH_4	0.01	0.05
TO3	AU3/TO3	Amine Unit / Thermal Oxidizer 63	CO_2e	68799.20	301340.50
			CO_2	68798.63	301337.99
			N_2O	0.00	0.005
			CH_4	0.01	0.05
CT1 (A) & CT1 (B)	CT1 (A) & CT1 (B)	Combustion Turbine	CO_2e	128468.78	562693.25
			CO_2	128342.91	562141.93
			N_2O	0.24	1.06
			CH_4	2.42	10.60
NGLFLARE	NGLFLARE	NGL Flare	CO_2e	26.84	644.21
			CO_2	26.74	641.87
			N_2O	0.00	0.01
			CH_4	0.00	0.03
PTFFWP	PTFFWP	Fire Water Pump - Pretreatment	CO_2e	755.84	37.79
			CO_2	753.30	37.67
			N_2O	0.01	0.000
			CH_4	0.03	0.002

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Table 1(a) Emission Point Summary

Date:	7/18/2012	**Permit No.:**	TBD	**Regulated Entity No.:**	RN103196689/TBA
Area Name:	Freeport LNG Development, L.P			**Customer Reference No.:**	CN601720345

Review of applications and issuance of permits will be expedited by supplying all necessary information requested on this Table

AIR CONTAMINANT DATA					
1. Emission Point			**2. Component or Air Contaminant Name**	**3. Air Contaminant Emission Rate**	
(A) EPN	**(B) FIN**	**(C) NAME**		**(A) POUND PER HOUR**	**(B) TPY**
PTFEG-1	PTFEG-1	Emergency Generator Train 61	CO_2e	864.63	43.23
			CO_2	861.73	43.09
			N_2O	0.01	0.000
			CH_4	0.03	0.002
PTFEG-2	PTFEG-2	Emergency Generator Train 62	CO_2e	864.63	43.23
			CO_2	861.73	43.09
			N_2O	0.01	0.000
			CH_4	0.03	0.002
PTFEG-3	PTFEG-3	Emergency Generator Train 63	CO_2e	864.63	43.23
			CO_2	861.73	43.09
			N_2O	0.01	0.000
			CH_4	0.03	0.002
PTFEG-4	PTFEG-4	Emergency Generator Utility Area	CO_2e	864.63	43.23
			CO_2	861.73	43.09
			N_2O	0.01	0.000
			CH_4	0.03	0.002
FUG-TREAT	FUG-TREAT	Pretreatment Fugitives	CO_2e	99.96	437.82
			CO_2	0.00	0.000
			N_2O	0.00	0.000
			CH_4	4.76	20.85
FUG-PTFSF6	FUG-PTFSF6	Pretreatment Circuit Breakers	CO_2e	13.34	58.44
			SF_6	0.001	0.002
LIQFWP-1	LIQFWP-1	Fire Water Pump 1 - Liquefaction	CO_2e	755.84	37.79
			CO_2	753.31	37.67
			N_2O	0.01	0.000
			CH_4	0.03	0.002
LIQFWP-2	LIQFWP-2	Fire Water Pump 2 - Liquefaction	CO_2e	755.84	37.79
			CO_2	753.31	37.67
			N_2O	0.01	0.000
			CH_4	0.03	0.002

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Table 1(a) Emission Point Summary

Date:	7/18/2012	Permit No.:	TBD	Regulated Entity No.:	RN103196689/TBA
Area Name:	Freeport LNG Development, L.P			Customer Reference No.:	CN601720345

Review of applications and issuance of permits will be expedited by supplying all necessary information requested on this Table.

AIR CONTAMINANT DATA					
1. Emission Point			2. Component or Air Contaminant Name	3. Air Contaminant Emission Rate	
(A) EPN	(B) FIN	(C) NAME		(A) POUND PER HOUR	(B) TPY
LIQEG-1	LIQEG-1	Emergency Generator 1 - Liquefaction	CO_2e	864.64	43.23
			CO_2	861.74	43.09
			N_2O	0.01	0.000
			CH_4	0.03	0.002
LIQEG-2	LIQEG-2	Emergency Generator 2 - Liquefaction	CO_2e	864.64	43.23
			CO_2	861.74	43.09
			N_2O	0.01	0.000
			CH_4	0.03	0.002
LIQEG-3	LIQEG-3	Emergency Generator 3 - Liquefaction	CO_2e	864.64	43.23
			CO_2	861.74	43.09
			N_2O	0.01	0.000
			CH_4	0.03	0.002
LIQEG-4	LIQEG-4	Emergency Generator 4 - Liquefaction	CO_2e	864.64	43.23
			CO_2	861.74	43.09
			N_2O	0.01	0.000
			CH_4	0.03	0.002
LIQFLARE	LIQFLARE	Ground Flare - Liquefaction	CO_2e	160.04	11523.03
			CO_2	159.89	11511.74
			N_2O	0.00	0.02
			CH_4	0.00	0.22
FUG-LIQ	FUG-LIQ	Liquefaction Fugitives	CO_2e	46.19	202.31
			CO_2	0.00	0.000
			N_2O	0.00	0.000
			CH_4	2.20	9.63
FUG-LIQSF6	FUG-LIQSF6	Liquefaction Circuit Breakers	CO_2e	77.52	339.56
			SF_6	0.003	0.014

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Table 1(a) Emission Point Summary

Date:	7/18/2012	Permit No.:	TBD	Regulated Entity No.:	RN103196689/TBA
Area Name:	Freeport LNG Development, L.P.			Customer Reference No.:	CN601720345

Review of applications and issuance of permits will be expedited by supplying all necessary information requested on this Table

AIR CONTAMINANT DATA			EMISSION POINT DISCHARGE PARAMETERS										
1. Emission Point			4. UTM Coordinates of Emission Point			5. Building Height (Ft.)	6. Height Above Ground (Ft.)	Source 7. Stack Exit Data			8. Fugitives		
EPN (A)	FIN (B)	Name (C)	Zone	East (Meters)	North (Meters)			Diameter (Ft.) (A)	Velocity (FPS) (B)	Temperature (°F) (C)	Length (Ft.) (A)	Width (Ft.) (B)	Axis Degrees (C)
65B-81A	65B-81A	Heating Medium Heater A	15	275042	3208374		50.00	4.00	81.00	500			
65B-81B	65B-81B	Heating Medium Heater B	15	275068	3208372		50.00	4.00	81.00	500			
65B-81C	65B-81C	Heating Medium Heater C	15	275041	3208364		50.00	4.00	81.00	500			
65B-81D	65B-81D	Heating Medium Heater D	15	275068	3208362		50.00	4.00	81.00	500			
65B-81E	65B-81E	Heating Medium Heater E	15	275041	3208353		50.00	4.00	81.00	500			
65B-81F	65B-81F	Heating Medium Heater F	15	275067	3208352		50.00	4.00	81.00	500			
65B-81G	65B-81G	Heating Medium Heater G	15	275040	3208343		50.00	4.00	81.00	500			
65B-81H	65B-81H	Heating Medium Heater H	15	275067	3208342		50.00	4.00	81.00	500			
65B-81I	65B-81I	Heating Medium Heater I	15	275040	3208333		50.00	4.00	81.00	500			
65B-81J	65B-81J	Heating Medium Heater J	15	275066	3208331		50.00	4.00	81.00	500			
TO1	TO1	Amine Unit / Thermal Oxidizer 61	15	275047	3208441		80.00	2.50	50.00	170			
TO2	TO2	Amine Unit / Thermal Oxidizer 62	15	274930	3208447		80.00	2.50	50.00	170			
TO3	TO3	Amine Unit / Thermal Oxidizer 63	15	274813	3208452		80.00	2.50	50.00	170			
CT1 (A)	CT1 (A)	Combustion Turbine	15	275075	3208273		80.00	14.67	35.40	431			
CT1 (B)	CT1 (B)	Combustion Turbine	15	275075	3208263		80.00	14.67	35.40	431			
NGLFLARE	NGLFLARE	NGL Flare	15	274701	3208414		110	5.75	20.00	1832			
PTFFWP	PTFFWP	Fire Water Pump - Pretreatment	15	275046	3208063		10	0.83	140.00	1,187			
PTFEG-1	PTFEG-1	Emergency Generator Train 61	15	275126	3208437		10	0.5	220	810			
PTFEG-2	PTFEG-2	Emergency Generator Train 62	15	275008	3208442		10	0.5	220	810			
PTFEG-3	PTFEG-3	Emergency Generator Train 63	15	274891	3208448		10	0.5	220	810			
PTFEG-4	PTFEG-4	Emergency Generator Utility Area	15	275168	3208379		10	0.5	220	810			
FUG-TREAT	FUG-TREAT	Pretreatment Fugitives	15	274965	3208510								
FUG-PTFSF6	FUG-PTFSF6	Pretreatment Circuit Breakers	15	274965	3208510								
LIQFWP-1	LIQFWP-1	Fire Water Pump 1 - Liquefaction	15	273883	3202675		10	0.83	140.00	1,187			
LIQFWP-2	LIQFWP-2	Fire Water Pump 2 - Liquefaction	15	273881	3202678		10	0.83	140.00	1,187			
LIQEG-1	LIQEG-1	Emergency Generator 1 - Liquefaction	15	273784	3202131		10	0.5	220	810			
LIQEG-2	LIQEG-2	Emergency Generator 2 - Liquefaction	15	273583	3202028		10	0.5	220	810			
LIQEG-3	LIQEG-3	Emergency Generator 3 - Liquefaction	15	273381	3201926		10	0.5	220	810			
LIQEG-4	LIQEG-4	Emergency Generator 4 - Liquefaction	15	273878	3202163		10	0.5	220	810			
LIQFLARE	LIQFLARE	Ground Flare - Liquefaction	15	272945	3201737		7	0.25	0.00	1832			
FUG-LIQ	FUG-LIQ	Liquefaction Fugitive	15	273451	3202097								
FUG-LIQSF6	FUG-LIQSF6	Liquefaction Circuit Breakers	15	273451	3202097								

ATKINS

ATTACHMENT 5

Updated Emissions Summary Tables - Liquefaction Project
Calculations for Additional Firewater Pump
and Emergency Generator Engines

Liquefaction Project GHG Emissions Summary
Freeport LNG Development, L.P.

EPN	Description	Annual Emissions (tons/yr)				
		CO_2	CH_4	N_2O	SF_6	CO_2e [2]
PTFFWP	Fire Water Pump - Pretreatment	37.67	0.002	0.0003	--	38
PTFEG-1	Emergency Generator Train 61	43.09	0.002	0.0003	--	43
PTFEG-2	Emergency Generator Train 62	43.09	0.002	0.0003	--	43
PTFEG-3	Emergency Generator Train 63	43.09	0.002	0.0003	--	43
PTFEG-4	Emergency Generator Utility Area	43.09	0.002	0.0003	--	43
65B-81A	Heating Medium Heater A	43,517.36	0.821	0.0821	--	43,560
65B-81B	Heating Medium Heater B	43,517.36	0.821	0.0821	--	43,560
65B-81C	Heating Medium Heater C	1,669.16	0.031	0.0031	--	1,671
65B-81D	Heating Medium Heater D	1,669.16	0.031	0.0031	--	1,671
65B-81E	Heating Medium Heater E	1,669.16	0.031	0.0031	--	1,671
65B-81F	Heating Medium Heater F	1,669.16	0.031	0.0031	--	1,671
65B-81G	Heating Medium Heater G	1,669.16	0.031	0.0031	--	1,671
65B-81H	Heating Medium Heater H	1,669.16	0.031	0.0031	--	1,671
65B-81I	Heating Medium Heater I	1,669.16	0.031	0.0031	--	1,671
65B-81J	Heating Medium Heater J	1,669.16	0.031	0.0031	--	1,671
TO1	Amine Unit / Thermal Oxidizer 61	301,337.99	0.05	4.83E-03	--	301,341
TO2	Amine Unit / Thermal Oxidizer 62	301,337.99	0.05	4.83E-03	--	301,341
TO3	Amine Unit / Thermal Oxidizer 63	301,337.99	0.05	4.83E-03	--	301,341
NGLFLARE	NGL Flare	641.87	0.029	0.0056	--	644
CT1 (A) & CT1 (B)	Combustion Turbine	562,141.93	10.602	1.0602	--	562,693
FUG-TREAT	Pretreatment Fugitives	0.00	20.848	--	--	438
FUG-PTFSF6	Pretreatment Circuit Breakers	0.00	--	--	0.002	58
LIQFWP-1	Fire Water Pump 1	37.67	0.002	0.0003	--	38
LIQFWP-2	Fire Water Pump 2	37.67	0.002	0.0003	--	38
LIQEG-1	Emergency Generator 1	43.09	0.002	0.0003	--	43
LIQEG-2	Emergency Generator 2	43.09	0.002	0.0003	--	43
LIQEG-3	Emergency Generator 3	43.09	0.002	0.0003	--	43
LIQEG-4	Emergency Generator 4	43.09	0.002	0.0003	--	43
LIQFLARE	Ground Flare	11,511.74	0.217	0.0217	--	11,523
FUG-LIQ	Fugitives Liquefaction	--	9.634	--	--	202
FUG-LIQSF6	Liquefaction Circuit Breakers	--	--	--	0.01	340
Project Totals		**1,579,155.21**	**43.39**	**1.30**	**0.017**	**1,580,866**

Pretreatment Facility GHG Summary of Emissions

EPN	Description	Annual Emissions (tons/yr)				
		CO_2	CH_4	N_2O	SF_6	CO_2e [1]
PTFFWP	Fire Water Pump - Pretreatment	37.67	1.53E-03	3.06E-04	--	38
PTFEG-1	Emergency Generator Train 61	43.09	1.75E-03	3.50E-04	--	43
PTFEG-2	Emergency Generator Train 62	43.09	1.75E-03	3.50E-04	--	43
PTFEG-3	Emergency Generator Train 63	43.09	1.75E-03	3.50E-04	--	43
PTFEG-4	Emergency Generator Utility Area	43.09	1.75E-03	3.50E-04	--	43
65B-81A	Heating Medium Heater A	43,517.36	0.82	0.08	--	43,560
65B-81B	Heating Medium Heater B	43,517.36	0.82	0.08	--	43,560
65B-81C	Heating Medium Heater C	1,669.16	0.03	3.15E-03	--	1,671
65B-81D	Heating Medium Heater D	1,669.16	0.03	3.15E-03	--	1,671
65B-81E	Heating Medium Heater E	1,669.16	0.03	3.15E-03	--	1,671
65B-81F	Heating Medium Heater F	1,669.16	0.03	3.15E-03	--	1,671
65B-81G	Heating Medium Heater G	1,669.16	0.03	3.15E-03	--	1,671
65B-81H	Heating Medium Heater H	1,669.16	0.03	3.15E-03	--	1,671
65B-81I	Heating Medium Heater I	1,669.16	0.03	3.15E-03	--	1,671
65B-81J	Heating Medium Heater J	1,669.16	0.03	3.15E-03	--	1,671
NGLFLARE	NGL Flare	641.87	0.03	5.58E-03	--	644
CT1 (A) & CT1 (B)	Combustion Turbine	562,141.93	10.60	1.06	--	562,693
TO1	Amine Unit / Thermal Oxidizer 61	301,337.99	0.05	4.83E-03	--	301,341
TO2	Amine Unit / Thermal Oxidizer 62	301,337.99	0.05	4.83E-03	--	301,341
TO3	Amine Unit / Thermal Oxidizer 63	301,337.99	0.05	4.83E-03	--	301,341
FUG-TREAT	Pretreatment Fugitives	--	20.85	--	--	438
FUG-PTFSF6	Pretreatment Circuit Breakers	--	--	--	2.45E-03	58
	Total Emissions	**1,567,395.79**	**33.53**	**1.27**	**0.002**	**1,568,552**

[1] CO_2e emissions based on GWPs for each greenhouse gas pollutant

CO_2e Annual Emission Rate (ton/yr) = CO_2 Emission Rate (ton/yr) x CO_2 GWP + CH_4 Emission Rate (ton/yr) x CH_4 GWP + N_2O Emission Rate (ton/yr) x N_2O GWP + SF_6 Emission Rate (ton/yr) x SF_6 GWP

Example CO_2e Emission Rate for PTFFWP (ton/yr) = $\frac{38 \text{ ton}}{\text{yr}} \times 1 + \frac{1.53E\text{-}03 \text{ ton}}{\text{yr}} \times 21 + \frac{3.06E\text{-}04 \text{ ton}}{\text{yr}} \times 310 = 38 \text{ ton/yr}$

Per 40 CFR 98 - *Mandatory Greenhouse Gas Reporting*, Subpart A, Table A-1. Total CO_2e emissions are calculated based on the following Global Warming Potentials

CO_2	1
CH_4	21
N_2O	310
SF_6	23,900

Liquefaction Plant GHG Summary of Emissions

EPN	Description	Annual Emissions (tons/yr) CO_2	CH_4	N_2O	SF_6	CO_2e [1]
LIQFWP-1	Fire Water Pump 1	37.67	1.53E-03	3.06E-04	--	38
LIQFWP-2	Fire Water Pump 2	37.67	1.53E-03	3.06E-04	--	38
LIQEG-1	Emergency Generator 1	43.09	1.75E-03	3.50E-04	--	43
LIQEG-2	Emergency Generator 2	43.09	1.75E-03	3.50E-04	--	43
LIQEG-3	Emergency Generator 3	43.09	1.75E-03	3.50E-04	--	43
LIQEG-4	Emergency Generator 4	43.09	1.75E-03	3.50E-04	--	43
LIQFLARE	Ground Flare	11,511.74	0.22	0.02	--	11,523
FUG-LIQ	Fugitives Liquefaction	--	9.63	--	--	202
FUG-LIQSF6	Fugitives Liquefaction	--	--	--	0.01	340
	Total Emissions	**11,759.42**	**9.86**	**0.02**	**0.01**	**12,313**

[1] CO_2e emissions based on GWPs for each greenhouse gas pollutant

CO_2e Emission Rate (ton/yr) = CO_2 Emission Rate (ton/yr) x CO_2 GWP + CH_4 Emission Rate (ton/yr) x CH_4 GWP + N_2O Emission Rate (ton/yr) x N_2O GWP + SF_6 Emission Rate (ton/yr) x SF_6 GWP

Example CO_2e Emission Rate for LIQFWP (ton/yr) = $\frac{038 \text{ lb}}{\text{hr}} \times 1 + \frac{1.53E\text{-}03 \text{ lb}}{\text{hr}} \times 21 + \frac{3.06E\text{-}04 \text{ lb}}{\text{hr}} \times 310 = 38$ ton/yr

Per 40 CFR 98 - *Mandatory Greenhouse Gas Reporting*, Subpart A, Table A-1. Total CO_2e emissions are calculated based on the following Global Warming Potentials

CO_2	1
CH_4	21
N_2O	310
SF_6	23,900

Sources of GHG Emissions

Parameter	Units	Fire Water Pump - Pretreatment	Emergency Generator Train 61	Emergency Generator Train 62	Emergency Generator Train 63	Emergency Generator Utility Area	Heating Medium Heater A	Heating Medium Heater B	Heating Medium Heater C	Heating Medium Heater D	Heating Medium Heater E	Heating Medium Heater F	Heating Medium Heater G	Heating Medium Heater H	Heating Medium Heater I	Heating Medium Heater J	Combustion Turbine
EPN		PTFEWP	PTFEG-1	PTFEG-2	PTFEG-3	PTFEG-4	65B-81A	65B-81B	65B-81C	65B-81D	65B-81E	65B-81F	65B-81G	65B-81H	65B-81I	65B-81J	CT1 (A) & CT1 (B)
Rated Capacity [1]	MMBtu/hr	4.62	5.29	5.29	5.29	5.29	85	85	85	85	85	85	85	85	85	85	1098
Hours of Operation per Year	hrs/yr	100	100	100	100	100	8,760	8,760	350	336	336	336	336	336	336	336	8,760
Natural Gas Potential Throughput [2]	scf/yr	--	--	--	--	--	724,319,066	724,319,066	27,782,101	27,782,101	27,782,101	27,782,101	27,782,101	27,782,101	27,782,101	27,782,101	9,356,498,054
Diesel Potential Throughput [2]	gal/yr	3,300	3,775	3,775	3,775	3,775	--	--	--	--	--	--	--	--	--	--	--
Natural Gas High Heat Value (HHV) [3]	MMBtu/scf	--	--	--	--	--	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
No 2 Fuel Oil High Heat Value (HHV) [3]	MMBtu/gal	0.138	0.138	0.138	0.138	0.138	--	--	--	--	--	--	--	--	--	--	

[1] Per AP-42 Table 3.3-1 Emission Factors for Uncontrolled Gasoline and Diesel Industrial Engines Brake Specific Fuel Consumption Factor = 7,000 BTU/hp-hr

[2] Natural gas throughput is based on heat capacity of the unit, hours of operation and the fuel's high heating value

[3] High heating value for No 2 Fuel Oil and Natural Gas obtained from 40 CFR Part 98, Subpart C, Table C-1

GHG Emission Factors for Diesel Fuel

Pollutant	Emission Factor	Emission Factor Units
CO_2 [1]	73.96	kg CO_2/MMBtu
CH_4 [1]	0.003	kg CH_4/MMBtu
N_2O [1]	0.0006	kg N_2O/MMBtu

[1] Emission factors from 40 CFR Part 98, Subpart C, Table C-1 for Distillate Fuel Oil No. 2

[2] Emission factors Per 40 CFR Part 98, Subpart C, Table C-2 for petroleum fuels

GHG Emission Factors for Natural Gas

Pollutant	Emission Factor	Emission Factor Units
CO_2 [1]	53.020	kg CO_2/MMBtu
CH_4 [1]	0.001	kg CH_4/MMBtu
N_2O [1]	0.0001	kg N_2O/MMBtu

[1] Emission factors from 40 CFR Part 98, Subpart C, Table C-1 for Natural Gas
Emissions Defines Per 40 CFR Part 98, Subpart C, Table C-2 for Natural Gas

GHG Potential Emission Calculations

EPN	Description	Fuel Type	Tier Used	Hourly Emissions [1,2] (lb/hr) CO_2	CH_4	N_2O	CO_2e [4]	Annual Emissions [2] (tons/yr) CO_2	CH_4	N_2O	CO_2e [4]	BACT Limit lb CO_2e/MMBtu
PTFEWP	Fire Water Pump - Pretreatment	No 2 Fuel Oil	Tier 1	753	0.03	6.11E-03	756	38	1.53E-03	3.06E-04	38	
PTFEG-1	Emergency Generator Train 61	No 2 Fuel Oil	Tier 1	862	0.03	6.99E-03	865	43	1.75E-03	3.50E-04	43	
PTFEG-2	Emergency Generator Train 62	No 2 Fuel Oil	Tier 1	862	0.03	6.99E-03	865	43	1.75E-03	3.50E-04	43	
PTFEG-3	Emergency Generator Train 63	No 2 Fuel Oil	Tier 1	862	0.03	6.99E-03	865	43	1.75E-03	3.50E-04	43	
PTFEG-4	Emergency Generator Utility Area	No 2 Fuel Oil	Tier 1	862	0.03	6.99E-03	865	43	1.75E-03	3.50E-04	43	
65B-81A	Heating Medium Heater A	Natural Gas	Tier 1	9.935	0.19	0.02	9.945	43.517	8.21E-01	8.21E-02	43.560	117.00
65B-81B	Heating Medium Heater B	Natural Gas	Tier 1	9.935	0.19	0.02	9.945	43.517	8.21E-01	8.21E-02	43.560	117.00
65B-81C	Heating Medium Heater C	Natural Gas	Tier 1	9.935	0.19	0.02	9.945	1.669	3.15E-02	3.15E-03	1.671	117.00
65B-81D	Heating Medium Heater D	Natural Gas	Tier 1	9.935	0.19	0.02	9.945	1.669	3.15E-02	3.15E-03	1.671	117.00
65B-81E	Heating Medium Heater E	Natural Gas	Tier 1	9.935	0.19	0.02	9.945	1.669	3.15E-02	3.15E-03	1.671	117.00
65B-81F	Heating Medium Heater F	Natural Gas	Tier 1	9.935	0.19	0.02	9.945	1.669	3.15E-02	3.15E-03	1.671	117.00
65B-81G	Heating Medium Heater G	Natural Gas	Tier 1	9.935	0.19	0.02	9.945	1.669	3.15E-02	3.15E-03	1.671	117.00
65B-81H	Heating Medium Heater H	Natural Gas	Tier 1	9.935	0.19	0.02	9.945	1.669	3.15E-02	3.15E-03	1.671	117.00
65B-81I	Heating Medium Heater I	Natural Gas	Tier 1	9.935	0.19	0.02	9.945	1.669	3.15E-02	3.15E-03	1.671	117.00
65B-81J	Heating Medium Heater J	Natural Gas	Tier 1	9.935	0.19	0.02	9.945	1.669	3.15E-02	3.15E-03	1.671	117.00
CT1 (A) & CT1 (B)	Combustion Turbine	Natural Gas	Tier 1	128.343	2.42	0.24	128.469	562.142	10.6	1.06	562.693	
			Total	234.897.84	4.40	0.46	232.135	662.739.93	12.50	1.25	663.390	
			Total CO_2e Emissions [4]				232.135				663.390	

[1] CO_2 emissions from No 2 Fuel Oil and Natural Gas combustion calculated per Equation C-1 and Tier 1 methodology provided in 40 CFR Part 98, Subpart C
CH_4 and N_2O emissions No 2 Fuel Oil and Natural Gas combustion calculated per Equation C-8 provided in 40 CFR Part 98, Subpart C

Hourly Emissions (lb/hr) = Emission Factor (kg/MMBtu) x Rated Capacity (MMBtu/hr) x Conversion factor (lb/kg)

Example CO_2 Hourly Emissions (lb/hr): 73.96 kg CO_2/MMBtu | 4.62 MMBtu/hr | 2.2046 lb/kg | 753 lb/hr

[2] kg to lb conversion: 2.2046 lb/kg

[3] Annual Emissions (tons/yr) = Annual Emissions (lb/hr) x Annual Operating Hours (hr/yr) x Conversion factor (lb/ton)

Example CO_2 Annual Emissions (tons/yr): 753 lb/hr | 100 hr/yr | ton/2000 lb | 38 tons/yr

[4] CO_2e emissions based on GWPs for each greenhouse gas pollutant

CO_2e Hourly Emission Rate (lb/hr) = CO_2 Emission Rate (lb/hr) x CO_2 GWP + CH_4 Emission Rate (lb/hr) x CH_4 GWP + N_2O Emission Rate (lb/hr) x N_2O GWP

Example CO_2e Hourly Emission Rate (lb/hr): 753 lb/hr | 1 | + | 0.03 lb/hr | 21 | + | 6.11E-03 lb/hr | 310 | 756 lb/hr

Per 40 CFR 98 - Mandatory Greenhouse Gas Reporting, Subpart A, Table A-1 - Total CO_2e emissions are calculated based on the following Global Warming Potentials

CO_2	1
CH_4	21
N_2O	310

Freeport LNG Development, L.P.
Liquefaction Plant GHG Emissions from Combustion Sources

Sources of GHG Emissions

Source Name	Units	Fire Water Pump 1	Fire Water Pump 2	Emergency Generator 1	Emergency Generator 2	Emergency Generator 3	Emergency Generator 4
EPN	-	LIQFWP-1	LIQFWP-2	LIQEG-1	LIQEG-2	LIQEG-3	LIQEG-4
Rated Capacity	hp	660	660	755	755	755	755
Heat Input Capacity [1]	MMBtu/hr	4.62	4.62	5.29	5.29	5.29	5.29
Hours of Operation per Year	hrs/yr	100	100	100	100	100	100
Potential Throughput [2]	gal/yr	3,300	3,300	3,775	3,775	3,775	3,775
No 2 Fuel Oil High Heat Value (HHV) [3]	MMBtu/gal	0.138	0.138	0.138	0.138	0.138	0.138

[1] Per AP-42 Table 3.3-1 Emission Factors for Uncontrolled Gasoline and Diesel Industrial Engines Brake Specific Fuel Consumption Factor = 7,000 BTU/hp-hr
1 gallon of No. 2 Fuel Oil has a heating value of 140,000 Btu
[2] High heating value for No 2 Fuel Oil obtained from 40 CFR Part 98, Subpart C, Table C-1

GHG Emission Factors for Diesel Fuel

Pollutant	Emission Factor	Emission Factor Units
CO_2 [1]	73.960	kg CO_2/MMBtu
CH_4 [2]	0.003	kg CH_4/MMBtu
N_2O [2]	0.0006	kg N_2O/MMBtu

[1] Emission factors from 40 CFR Part 98, Subpart C, Table C-1 for Distillate Fuel Oil No. 2
[2] Emission factors Per 40 CFR Part 98, Subpart C, Table C-2 for petroleum fuel

GHG Potential Emission Calculations

EPN	Description	Fuel Type	Tier Used	Hourly Emissions [1,2] (lb/hr) CO_2	CH_4	N_2O	CO_2e	Annual Emissions [4] (tons/yr) CO_2	CH_4	N_2O	CO_2e
LIQFWP-1	Fire Water Pump 1	No 2 Fuel Oil	Tier 1	753	3.06E-02	6.11E-03	756	37.67	1.53E-03	3.06E-04	37.79
LIQFWP-2	Fire Water Pump 2	No 2 Fuel Oil	Tier 1	753	3.06E-02	6.11E-03	756	37.67	1.53E-03	3.06E-04	37.79
LIQEG-1	Emergency Generator 1	No 2 Fuel Oil	Tier 1	862	3.50E-02	6.99E-03	865	43.09	1.75E-03	3.50E-04	43.23
LIQEG-2	Emergency Generator 2	No 2 Fuel Oil	Tier 1	862	3.50E-02	6.99E-03	865	43.09	1.75E-03	3.50E-04	43.23
LIQEG-3	Emergency Generator 3	No 2 Fuel Oil	Tier 1	862	3.50E-02	6.99E-03	865	43.09	1.75E-03	3.50E-04	43.23
LIQEG-4	Emergency Generator 4	No 2 Fuel Oil	Tier 1	862	3.50E-02	6.99E-03	865	43.09	1.75E-03	3.50E-04	43.23
			Total	4,953.57	0.20	0.04	4,970	247.68	1.00E-02	2.01E-03	249
			Total CO_2e Emissions [3]		-	-	4,970		-	-	249

[1] CO_2 emissions from No 2 Fuel Oil combustion calculated per Equation C-1 and Tier 1 methodology provided in 40 CFR Part 98, Subpart C
CH_4 and N_2O emissions for No 2 Fuel Oil combustion calculated per Equation C-8 provided in 40 CFR Part 98, Subpart C
Hourly Emissions (lb/hr) = Emission Factor (kg /MMBtu) x Rated Capacity (MMBtu/hr) x Conversion factor (lb/kg)

Example CO_2 Hourly Emissions (lb/hr) = 73.96 kg CO_2/MMBtu x 4.62 MMBtu/hr x 2.20462 lb/kg = 753 lb/hr

[2] kg to lb conversion: 2.20462 lb/kg
[4] Annual Emissions (tons/yr) = Annual Emissions (lb/hr) x Annual Operating Hours (hr/yr) / Conversion factor (lb/tons)

Example CO_2 Annual Emissions (tons/yr) = 753 lb/hr x 100 hr/yr x 1 ton/2000 lb = 37.67 tons/yr

[3] CO_2e emissions based on GWPs for each greenhouse gas pollutant
CO_2e Hourly Emission Rate (lb/hr) = CO_2 Emission Rate (lb/hr) x CO_2 GWP + CH_4 Emission Rate (lb/hr) x CH_4 GWP + N_2O Emission Rate (lb/hr) x N_2O GWP

Example CO_2e Hourly Emission Rate (lb/hr) = 753 lb/hr x 1 + 1.01E-03 lb/hr x 21 + 6.11E-03 lb/hr x 310 = 756 lb/hr

Per 40 CFR 98, *Mandatory Greenhouse Gas Reporting*, Subpart A, Table A-1, Total CO_2e emissions are calculated based on the following Global Warming Potentials

CO_2	1
CH_4	21
N_2O	310