



**Freeport LNG Development, L.P.
FLNG Liquefaction, LLC
FLNG Liquefaction 2, LLC
FLNG Liquefaction 3, LLC**

Docket No. CP20-455-000

**FREEPORT LNG
NOBLE GAS PROJECT**

Environmental Assessment

December 2020

ENVIRONMENTAL ASSESSMENT - FREEPORT LNG NOBLE GAS PROJECT

TABLE OF CONTENTS [NEEDS RENUMBERING]

TABLE OF CONTENTS..... i

A. PROPOSED ACTION1

1. Introduction.....1

2. Purpose and Need2

3. Scope of this Environmental Assessment.....2

4. Cooperating Agencies.....5

5. Public Review and Comment.....5

6. Project Description.....5

7. Non-jurisdictional Facilities.....7

8. Construction, Operation, and Maintenance Procedures.....8

9. Construction Schedule.....8

10. Future Plans and Abandonment.....8

11. Land Requirements9

12. Consultation, Approvals, and Permits.....9

B. ENVIRONMENTAL ANALYSIS11

1. Geology.....11

2. Soil Resources.....14

3. Biological Resources – Water Resources; Vegetation; Wildlife; Threatened, Endangered,
and Other Special Status Species.....14

4. Land Use15

5. Cultural Resources16

6. Reliability and Safety.....19

7. Air Quality and Noise24

8. Cumulative Impacts.....29

C. ALTERNATIVES30

1. Evaluation Process31

2. No-Action Alternative32

3. Alternatives Conclusion.....32

D. CONCLUSIONS AND RECOMMENDATIONS.....33

E. LIST OF PREPARERS.....38

FIGURES

Figure 1 – Regional Project Map..... 3

Figure 2 - Location Map and Plot Plan.....4

TABLES

Table 1 – Permits, Approvals, and Consultations for the Project.....10

Table 2 – General Conformity Analysis for Project and Non-Jurisdictional Helium Plant
Construction and Operation26

Table 3 – Helium Plant Emissions.....27

ACRONYMS AND ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
APE	Area of potential effect
AQCR	Air quality control region
ASME	American Society of Mechanical Engineers
BOG	boil-off gas
CFR	Code of Federal Regulations
CH ₄	methane
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalents
dB	decibels
dBA	decibels on the A-weighted scale
EA	Environmental Assessment
EI	Environmental Inspector
EIS	Environmental Impact Statement
ESD	emergency shutdown
FERC or Commission	Federal Energy Regulatory Commission
GHG	greenhouse gas
HAPs	hazardous air pollutants
HG-AQCR	Metropolitan Houston-Galveston Intrastate AQCR
L _d	daytime sound level
L _{dn}	day-night sound level
L _{eq}	equivalent sound level
LNG	liquefied natural gas
L _n	night sound level
N ₂ O	nitrous oxide
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association Standard
NHPA	National Historic Preservation Act
NOI	<i>Notice of Intent to Prepare an Environmental Assessment for the Planned Freeport LNG Noble Gas Project and Request for Comments on Environmental Issues</i>
NO _x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NSA	noise sensitive area
O ₃	ozone
OEP	Commission's Office of Energy Projects
Order	Commission's Order Granting Authorization
P&IDs	pipng and instrumentation diagrams
PM ₁₀	Particulate matter with an aerodynamic diameter less than 10 micrometers
PM _{2.5}	Particulate matter with an aerodynamic diameter less than 2.5 micrometers
Project-specific Plan	Freeport LNG Upland Erosion Control, Revegetation & Maintenance Plan
Project-specific Procedures	Freeport LNG Wetland & Waterbody Construction & Mitigation Procedures
PSA vessel	pressure swing adsorption vessel

ACRONYMS AND ABBREVIATIONS

SIMOPS Plan	Simultaneous Operations Plan
SHPO	State Historic Preservation Office of Texas
SO ₂	sulfur dioxide
SPCC Plan	Spill Prevention, Control, and Countermeasure Plan
Terminal	Freeport LNG Terminal
Train 4	Train 4 liquefaction train and support facilities
UDP	Unanticipated Discovery Plan
USDOT	U.S. Department of Transportation
VOC	olatile organic compound

A. PROPOSED ACTION

1. Introduction

The staff of the Federal Energy Regulatory Commission (FERC or Commission) prepared this Environmental Assessment (EA) to assess the environmental impacts associated with the construction and operation of facilities proposed by Freeport LNG Development, L.P.; FLNG Liquefaction, LLC; FLNG Liquefaction 2, LLC; and FLNG Liquefaction 3, LLC (collectively referred to as Freeport LNG). We¹ prepared this EA in compliance with the requirements of the National Environmental Policy Act (NEPA); the Council on Environmental Quality's regulations for implementing NEPA (Title 40 Code of Federal Regulations, Parts 1500-1508 [40 CFR 1500-1508])²; and the Commission's regulations at 18 CFR 380.

Freeport LNG has filed an application with the FERC for authorization under Section 3 of the Natural Gas Act to modify Freeport LNG's Pretreatment Facility to allow for the extraction of helium from the compressed boil-off gas (BOG) pipeline. These modifications include a tie-into the existing BOG pipeline that currently provides fuel gas for the Pretreatment Facility, firewater system, and a nitrogen utility unit at Freeport LNG's Pretreatment Facility to support the extraction of helium from the BOG line. These tie-ins, along with a non-jurisdictional helium extraction and purification plant (Helium Plant) and associated non-jurisdictional electric supply tie-in, are referred to collectively as the Noble Gas Project (Project). The general location of the Pretreatment Facility is identified in Figure 1.

1.1 Freeport LNG Terminal History

The existing Freeport LNG Terminal (Terminal), referred to as the Phase I Project, was originally authorized by the FERC as a liquefied natural gas (LNG) import and regasification facility in Docket No. CP03-75-000 on June 18, 2004. The Commission's Order Granting Authorization (Order) authorized Freeport LNG Development to site, construct, and operate an LNG import terminal, as well as a 9.6-mile-long, 36-inch-diameter, send-out pipeline and meter facilities. The Environmental Impact Statement (EIS) for the Phase I Project was issued in May 2004. Construction was initiated in January 2005 and completed in June 2008.

An expansion of the capacity of the import Terminal (Phase II Project) was authorized by the FERC in Docket No. CP05-361-000 in an Order issued September 26, 2006. This Order authorized Freeport LNG Development to site, construct, and operate the Phase II Project, which included an additional LNG carrier berth, additional vaporizers, and an additional LNG storage tank. The EA for the Phase II Project was issued in June 2006.

¹ "We," "us," and "our" refer to the environmental staff of the FERC's Office of Energy Projects.

² On July 16, 2020, the Council on Environmental Quality issued a final rule, *Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act* (Final Rule, 85 Fed. Reg. 43,304), which was effective as of September 14, 2020; however, the NEPA review of this project was in process at that time and was prepared pursuant to the 1978 regulations.

The Phase II Project was delayed, and Freeport LNG filed a modification of the Phase II Project facilities, which was authorized as the Phase II Modification Project in Docket No. CP12-29-000, concurrent with the addition of natural gas liquefaction facilities as the Liquefaction Project in Docket No. CP12-509-000 for export of LNG. The Phase II Modification Project included an additional LNG carrier berth and an additional LNG storage tank; the originally authorized additional vaporizers were deleted from the modified project. The Liquefaction Project included three liquefaction trains (Trains 1 through 3) at the Terminal and a natural gas Pretreatment Facility with three pretreatment units (Units 1 through 3) located about 2.5 miles north of the Terminal. The Pretreatment Facility is where the current Project is proposed (Figure 1). The Order authorizing the Phase II Modification Project and Liquefaction Project was issued July 30, 2014; these projects are currently in operation.

The Train 4 Project, under Docket CP17-470-000, added additional liquefaction capacity to the existing Terminal and expanded the Pretreatment Facility. It modified certain components of the previously-authorized facilities and added natural gas pipeline capacity. The Train 4 Project also added a jurisdictional 1.5-mile-long, 42-inch-diameter pipeline between the existing Stratton Ridge Meter Station, the Pretreatment Facility, and the Terminal. The Train 4 Project did not increase the frequency or size of LNG carriers calling on the Terminal beyond what was previously authorized in the Import Expansion project, but did increase from 250 to 325 LNG carriers over that analyzed for the Liquefaction Project. Construction of the Train 4 Project has yet to commence.

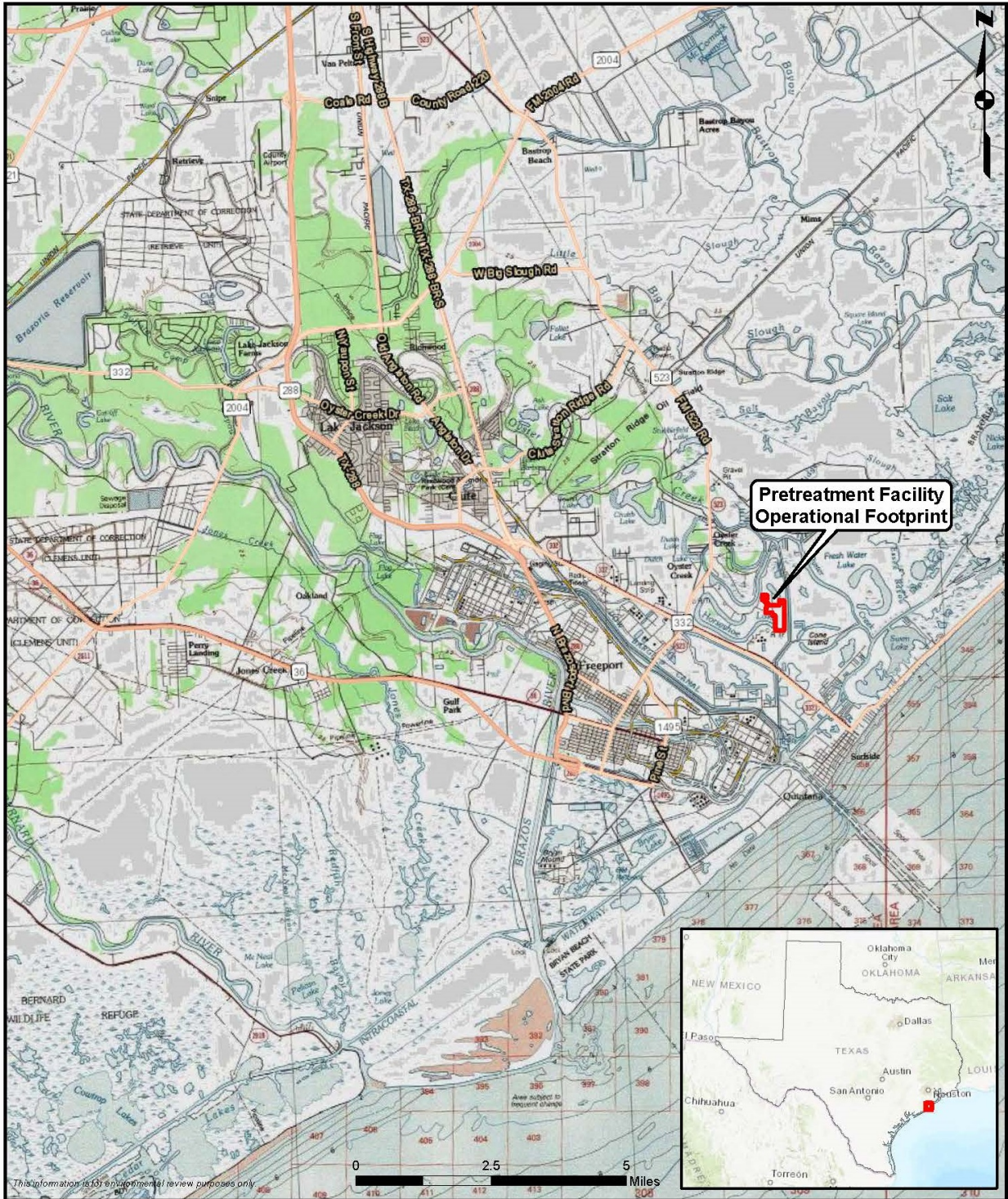
2. Purpose and Need

While the Project is not required for liquefaction or export of natural gas, several tie-ins into the FERC-regulated components would be required to operate the Project (i.e., to facilitate the extraction of helium from the BOG pipeline). Under Section 3 of the Natural Gas Act, the FERC considers as part of its decision to authorize natural gas facilities, all factors bearing on the public interest. Specifically, regarding whether to authorize natural gas facilities involved in importation or exportation, the FERC shall authorize the proposal unless it finds that the proposed facilities would not be consistent with the public interest.

3. Scope of this Environmental Assessment

Our principal objectives in preparing this EA are to:

- identify and assess potential impacts on the natural and human environment that would result from the implementation of the proposed actions;
- describe and evaluate reasonable alternatives to the proposed actions that would avoid or minimize adverse effects on the environment; and
- identify and recommend specific mitigation measures, as necessary, to minimize the environmental impacts



This information is for informational review purposes only.


 Pretreatment Facility
Operational Footprint



Figure 1
Freeport LNG - Noble Gas Project
Regional Project Map - Topographic
Brazoria County, Texas



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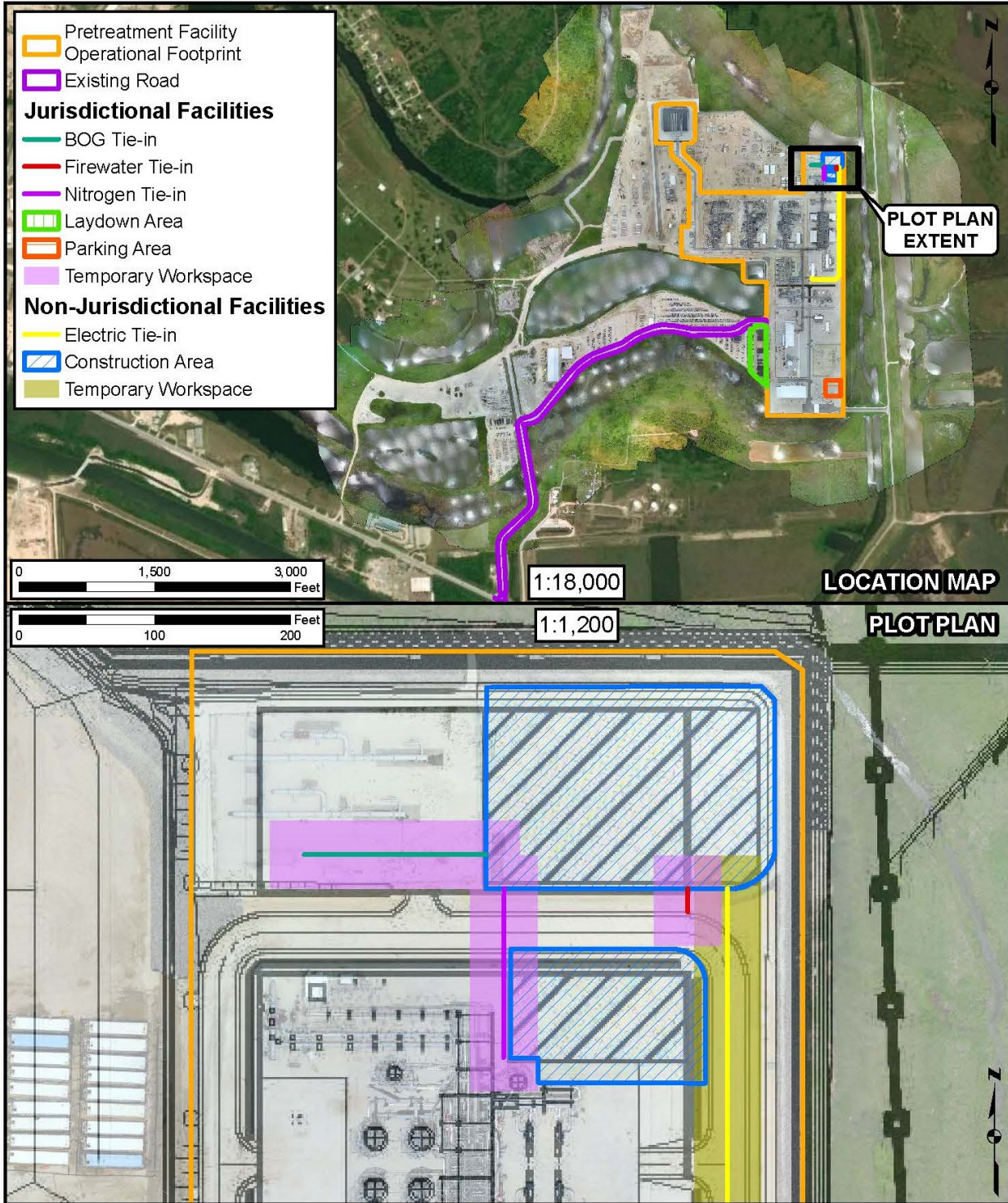


Figure 2
Freeport LNG - Noble Gas Project
Proposed Facilities - Location Map and Plot Plan
 Brazoria County, Texas



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The topics considered in this EA include alternatives; geology; soils; groundwater; surface waters; wetlands; vegetation; wildlife and aquatic resources; special status species; land use, recreation, special interest areas, and visual resources; socioeconomics (including transportation and traffic); cultural resources; air quality; noise; reliability and safety; and cumulative impacts. The EA describes the affected environment as it currently exists, discusses the environmental consequences of the Project, and discusses any feasible alternatives. The EA also presents our recommended mitigation measures.

The Commission bases its decisions on economic issues, including need, and environmental impacts. Approval would be granted if, after consideration of both environmental and non-environmental issues, the Commission finds that the Project is in the public interest.

4. Cooperating Agencies

FERC is the lead federal agency for authorizing the siting of LNG facilities under Section 3 of the Natural Gas Act, and the lead federal agency for preparation of this EA. No other agencies elected to become cooperating agencies for the preparation of this EA.

5. Public Review and Comment

On July 16, 2020, we issued a *Notice of Intent to Prepare an Environmental Assessment for the Planned Freeport LNG Noble Gas Project and Request for Comments on Environmental Issues* (NOI). The NOI was mailed to interested parties, including federal, state, and local officials; agency representatives; conservation organizations; Native American tribes; local libraries and newspapers; and property owners in the area. During the 30-day comment period, we received no comments.

6. Project Description

The proposed Project would be located entirely within the footprint of the Pretreatment Facility, adjacent to the existing facility and within areas previously disturbed by the Liquefaction or Train 4 Projects.

The jurisdictional Project components include:

- a tie-in to the compressed BOG pipeline with supply and return lines;
- a tie-in to the Pretreatment Facility firewater pump and distribution system from the existing firewater header; and
- a tie-in to the gaseous nitrogen supply header from the Pretreatment Facility nitrogen header.

The compressed BOG pipeline, nitrogen supply header, and firewater pump and distribution tie-ins are all located within the Pretreatment Facility fence line. The Helium Plant and Electrical Tie-in are also located within the Pretreatment Facility fence line and share workspace with the proposed Project facilities, but are not under FERC jurisdiction. The locations of the jurisdictional and non-jurisdictional components can be seen in Figure 2.

7. Non-jurisdictional Facilities

Projects may have associated facilities not under the jurisdiction of the FERC. Non-jurisdictional facilities may be integral to a proposed project or they may merely be associated as a minor, non-integral component of the jurisdictional facilities. The Helium Plant and Electrical-Tie-in components are principle elements of Freeport's Noble Gas Project; however, they are outside of FERC's jurisdictional authority. Our practice is to disclose, available information describing the impacts of non-jurisdictional facilities and connected actions in our environmental reviews; as such, we disclose the environmental impacts associated with the Helium Plant and Electrical-Tie-in components in this EA.

The purpose of the Helium Plant is to enable the extraction of helium from Freeport LNG's existing compressed BOG pipeline as a separate product stream for commercial purposes. Helium is a finite resource, and is included in the U.S. Department of the Interior's May 2018 Final List of Critical Minerals (83 Fed. Reg. 23,295 and 82 Fed. Reg. 60,835).

Helium capture associated with natural gas liquefaction allows for a higher concentration of helium than is found in the source gas. By tying into Freeport LNG's existing BOG line, helium can be extracted from the compressed BOG with no complex integration with or disruption of LNG operations. The Project would capture a finite resource that would otherwise be lost during use as a fuel source, and allow it to be used for a more beneficial purpose.

The non-jurisdictional Project components include:

- electrical power for helium extraction, tied in to existing spare circuits;
- electrical power and essential bus power for the Project operator's console;
- a control system in the Pretreatment Facility's control building;
- an analyzer building;
- spare storage space;
- a pressure swing adsorption (PSA) vessel;
- a crude helium mixing tank;
- a power distribution center;
- a feed membrane skid;
- a PSA switch valve skid;
- a rinse compressor;
- an auxiliary, membrane compressor, and purification membrane skid;
- a residue gas surge tank;
- residue gas compressors;
- a residue gas compressor carbon bed skid;
- a tube trailer loading compressor skid;
- a tube trailer; and
- a fan cooler.

Freeport LNG's Engineering, Procurement, and Construction Contractor would construct the Helium Plant connected to Freeport LNG's Pretreatment Facility. Freeport LNG would own and operate the Helium Plant. The Helium Plant would be co-located, although separated by a

unit fence, at the Pretreatment Facility on approximately 1 acre of land. It would use existing on-site infrastructure for water and sanitary waste services. The Helium Plant does not require a connection to the local electric utility, CenterPoint Energy, for electrical service. The Helium Plant would use the existing spare electrical breakers within the Pretreatment Facility.

Construction of the non-jurisdictional Helium Plant is scheduled to occur over a period of approximately 11 months, between May 2021 and March 2022. The expected environmental impacts of the non-jurisdictional facilities are described under each resource in section B.

8. Construction, Operation, and Maintenance Procedures

All Project facilities would be designed, installed, tested, operated, and maintained in accordance with applicable laws, regulations, and standards that are intended to prevent facility accidents and failures, ensure public safety, and protect the environment. . Additional information on these measures is in section B.7.

Freeport LNG would follow the applicable portions of its Project-specific Plan (accession number: 20170629-5285, based on the *FERC Upland Erosion Control, Revegetation & Maintenance Plan* [FERC, 2013a]), its Project-specific Procedures (accession number: 20170629-5285, based on the *FERC Wetland & Waterbody Construction & Mitigation Procedures* [FERC, 2013b] with requested alternative measures), and the Project-specific Erosion & Sedimentation Control Plan during construction to ensure that ground disturbance and site stabilization activities are managed in an environmentally sensitive manner.

Freeport LNG intends to incorporate the Project into the Liquefaction Project's National Pollutant Discharge Elimination System (NPDES) Permit; Stormwater Pollution Prevention Plan; and Spill Prevention, Control, and Countermeasure Plan (SPCC Plan). These plans were previously filed with FERC as part of the Liquefaction Project and were found to be acceptable.

For the purposes of quality assurance and compliance with mitigation measures, other applicable regulatory requirements, and Project specifications, Freeport LNG would be represented by one onsite Chief Inspector (CI). One or more craft inspectors and three Environmental Inspectors (EI) would assist the CI. The CI, craft inspectors, and EIs currently employed for the Liquefaction Project would be utilized for the Project, as they would be most familiar with relevant compliance specifications and other documents contained in the construction contracts. The EIs' duties would be fully consistent with those contained in section II.B (Responsibilities of Environmental Inspectors) of Freeport's Project-specific Plan to ensure that the environmental conditions associated with other permits or authorizations are satisfied. The EIs would have authority to stop work or require other corrective actions to achieve environmental compliance. In addition to monitoring compliance, the EIs' duties would include training Project personnel about environmental requirements and reporting compliance status to the contractors, Freeport LNG, the FERC, and other parties, as required.

Freeport LNG would utilize the approved environmental training program currently in place for the Liquefaction and Train 4 Project. The program is designed to ensure that:

- qualified environmental training personnel provide thorough and well-focused training sessions regarding the environmental requirements applicable to the trainees' activities;
- all individuals receive environmental training before they begin work;
- adequate training records are kept; and
- refresher training is provided as needed to maintain high awareness of environmental requirements.

The jurisdictional Project facilities would be located entirely within the Pretreatment Facility boundary in areas where clearing, grubbing, backfilling, grading, and soil-stabilizing activities have already been performed in association with the Liquefaction Project. The jurisdictional Project facilities would require no additional improvements with regard to site preparation.

The Project would utilize the existing stormwater management system at the Pretreatment Facility (including the stormwater retention pond, one water detention pond, and conveyance channels) currently in operation as part of the Liquefaction Project. Following construction, temporary workspace would be returned to preconstruction conditions and would continue to be used during operation of the Pretreatment Facility.

Operating procedures in place at the Pretreatment Facility would be updated as necessary to include Project jurisdictional facilities after final design is complete, and incorporated into other existing facility procedures where applicable. Freeport LNG would provide training to ensure that facility personnel are familiar with and adhere to safe procedures. Maintenance of the jurisdictional Project facilities would be conducted in accordance with the existing Pretreatment Facility maintenance procedures and programs.

9. Construction Schedule

Construction of the jurisdictional Project is scheduled to occur between March and April 2021. Construction of the jurisdictional components of the Project would take place prior to construction of the non-jurisdictional components. Construction activities would occur, on average, 6 days per week mostly during daytime hours (between 7:00 am and 7:00 pm). The primary activities anticipated outside of these hours include civil work (e.g., concrete pours for foundations and paving), as well as the installation, fit-up, and welding of pipe. No pile driving or scheduled material deliveries would occur at night, although occasional unscheduled deliveries could occur if necessary to pre-position materials for the day shift.

10. Future Plans and Abandonment

Beyond the Liquefaction Project and the Train 4 Project, Freeport LNG has not identified any future additions at the Pretreatment Facility or elsewhere, other than the Project. On December 18, 2019, Freeport LNG Development filed a Motion to Vacate Authorization in Docket No. CP14-57-000 for Commission approval to remove the skid-mounted BOG reliquefaction unit refrigeration/chiller unit. This was approved on April 16, 2020. There are no other current plans relating to abandonment or removal of any proposed or existing facilities.

Any Freeport LNG expansion of non-Free Trade Agreement country export capacity would require an additional U.S. Department of Energy authorization as well as FERC authorization. In addition, further environmental analysis would be conducted. The expansion or abandonment would be subject to appropriate federal, state, and local regulations in effect at that time.

11. Land Requirements

The Project is entirely within Freeport LNG's existing Pretreatment Facility. Construction of the jurisdictional Project facilities would impact a total of 13.5 acres of land, and operation would impact less than 0.1 acre of land within the Pretreatment Facility operational footprint. A 9.9-acre existing access road would be used during construction of the Project.

12. Consultation, Approvals, and Permits

Table 1 identifies all the federal, state and local permits, authorizations, or consultations for the Project. Freeport LNG would be responsible for obtaining and abiding by all permits and approvals required for construction and operation of the Project regardless of whether they appear in the table or not.

TABLE 1

Permits, Approvals, and Consultations for the Project

Agency	Permit/Approval – Regulatory Scope	Authorization/ Interaction Required	Status
FEDERAL			
U.S. Environmental Protection Agency – Region VI	Section 402 – Clean Water Act – NPDES	Storm Water Construction Permit	Anticipated submittal for NPDES Stormwater Construction Permit: February 2021 Anticipated Authorization: March 2021
		Process Waste Water Discharge Permit	Anticipated Process Water Discharge Permit Filing: September 2021 Anticipated Authorization: March 2022
STATE			
Railroad Commission of Texas	Discharge of Gas Plant Effluent (non- jurisdictional)	Update existing Pretreatment Facility Permit	Anticipated Discharge of Gas Plant Effluent Permit Update Filing: September 2021 Anticipated Authorization: March 2022
Texas Commission for Environmental Quality – Air Permits Division	Helium Plant (FERC non-jurisdictional) 30 Texas Administrative Code Chapter 116 Permit to Construct	Industrial Gases added to Pretreatment Existing Operation Air Permit No. O 3958	Anticipated submittal Pretreatment Operation Air Permit: January 2021
Texas Historic Commission— State Historic Preservation Officer	Section 106 of the National Historic Preservation Act	Consultation	Request for clearance sent: June 18, 2012 Clearance received: July 3, 2012 Project introduction letter sent: September 28, 2020

B. ENVIRONMENTAL ANALYSIS

The proposed Project is in Brazoria County, Texas, along the Gulf Coast. The Project would be within Freeport LNG's existing Pretreatment Facility, located about 3.5 miles northeast of the City of Freeport.

The City of Freeport is about 16 miles south of Angleton in southern Brazoria County. The city was founded by the Freeport Sulphur Company in 1912 and was the site of one of the world's largest sulfur mines. In 1957, Velasco, one of the oldest towns in Texas, was incorporated into Freeport. Today Freeport is home to one of the Gulf of Mexico's largest commercial shrimp trawler fleets and has over 600 businesses and about 12,118 inhabitants.

The Freeport region has a predominantly maritime climate, characterized by periods of modified continental influence during the colder months when cold fronts from the northwest may reach the area. Because of its coastal location and latitude, cold fronts that reach the Freeport region seldom have severe temperatures. High humidity prevails throughout the year. The average annual precipitation is about 51 inches, varying from 2.8 inches per month in February, March, and April, to 7.8 inches per month in September. Tropical disturbances such as hurricanes and tropical storms have been historically infrequent but are increasing in frequency and intensity and can be major storm events when they occur. Local air mass movements are strongly influenced by onshore-offshore flows. The area is prone to fog, particularly in winter months when warm, humid ocean air is transported over cooler land surface and moisture in the air condenses.

1. Geology

The Project is in the West Gulf Coast subdivision of the Coastal Plain geomorphic province. This region is characterized by seaward-dipping sedimentary rocks overlain by Quaternary deposits containing thick layers of clay, silt, sand, and gravel. The area consists of Holocene barrier ridge/barrier flat deposits, alluvium, and fill and spoil deposits overlying the Pleistocene Beaumont Formation. The Beaumont and subsequent underlying formations represent unconsolidated deposits (sand, silt, clay, and gravel) up to several thousand feet thick. The Project would be located on beach-ridge and barrier-flat sand and shell sand deposits derived from coastal processes and fill and spoil material dredged for raising land along waterways. The Pretreatment Facility is largely underlain by alluvium associated with historical deposition from the Brazos River and Oyster Creek. The Project area has no karst geology, and no potential for karst or pseudokarst development. The closest karst geology is approximately 175 miles to the northwest of the Project.

1.1 Mineral Resources

Underground mineral resources in proximity to the Project consist of salt (formerly exploited for brine production) and oil and gas resources. The Stratton Ridge Salt Dome was discovered in 1913 and has a salt ore body that extends from about 1,250 to 10,560 feet below ground surface. It is about 2.8 miles northwest of the Pretreatment Facility. The margins of the salt dome, including a small oil and gas field (the Stratton Ridge Oil Field), have been explored for oil and gas development. Another salt dome, the Bryan Mound, is about 3.1 miles southwest of the Terminal and serves as a storage site of the U.S. Strategic Petroleum Reserve. A commercial

sand extraction operation existed at the Pretreatment Facility site up until 2005. This operation has since been closed and the associated equipment and structures removed. The Pretreatment Facility overlies the eastern section of a former abandoned borrow pit that was filled with about 20 feet of imported material as part of the Phase II Modification Project. There are no identified active surface mining operations within one mile of the Project.

Existing mineral resources in the area are found at depths significantly greater than the depth of disturbance associated with facility. These resources would not be affected by the generally shallow nature of Project construction. Therefore, none of the activities associated with the construction and operation of the proposed Project would be expected to affect mineral resources in the area.

1.2 Seismic Environment and Risk

The Gulf Coastal Plain geomorphic province is characterized by a low seismic-hazard potential. Freeport LNG conducted a site-specific hazard evaluation (Probabilistic Seismic Hazard Analysis) of the Pretreatment Facility site. The site-specific evaluation determined that the maximum peak ground accelerations within the soil profile, including site effects, are 0.02 g (where g is the acceleration due to gravity) with a 10 percent probability of exceedance in 50 years and 0.06 g with a 2 percent probability in 50 years. Significant earthquakes in the region are rare. The Advanced National Seismic System Comprehensive Catalog (USGS, 2014) has no record of significant seismic activity in the region of southeast Texas since the inception of the database in 1973. This database shows that there have been 102 seismic events recorded within 200 miles of the Pretreatment Facility that ranged from a magnitude of 2.1 to 4.8, with a mean average of 2.9. The nearest moderate seismic events were a magnitude 3.1 event that was recorded in February 2015 about 107 miles northwest of the Project and a magnitude 4.8 event that occurred in 2011, about 167 miles west of the Project.

1.3 Ground Faults

In the Gulf Coastal Plains, several hundred faults are known or suspected to be active. These faults are ancient, natural features, but in recent times most modern fault activity in southern and eastern Texas appears to have been induced by anthropogenic actions, and nearly all appreciable and accelerated fault movements in the past 70 years have occurred in areas where withdrawals of oil, natural gas, and groundwater have caused increased ground subsidence. Evidence of modern fault activity includes changes in ground surface elevations, sharp linear features on aerial photography, offsets in pavements, and damage to buildings and other structures.

There are several faults near the Project, including normal, listric, growth faults that generally dip toward the Gulf of Mexico along the Texas coast and faults around salt domes associated with diapirisms. Slip rates along the normal growth faults in the Project area are anticipated to be less than 0.2 millimeter per year.

The fault investigation performed in 2014 identified a surface fault (the Salt Lake Fault) in the northern portion of the Pretreatment Facility property extending generally south-southwest. The Salt Lake Fault is an active fault that is considered to be an extension of the Horseshoe Lake Fault located south of the Pretreatment Facility site.

Freeport LNG maintains a monitoring program at Pretreatment Facility to monitor a fault located on the northwest corner of the property. During the permitting process for the Train 4 Project facilities, a study conducted by Fugro on behalf of Freeport LNG concluded that this fault would have no impact on the Train 4 Project facilities. As the Train 4 Project facilities are located to the west and closer to the fault than the Project facilities, the fault is not anticipated to impact the Project. Based on the design measures taken, potential effects on the Project by faulting are not expected to be significant

1.4 Soil Liquefaction and Subsidence

Soil liquefaction is the transformation of loosely packed cohesionless soil from a solid to a liquid state as a result of increased pore pressure and reduced effective stress due to intense and prolonged vibrations, such as ground shaking from seismic events. Soil liquefaction at the Project site is unlikely. Therefore, it is also unlikely that liquefaction-induced lateral spreading would occur.

Subsidence is defined as sudden sinking or gradual downward settling of land with little or no horizontal motion, caused by surface faults and intensified or accelerated by the extraction of subsurface mineral resources, groundwater, or hydrocarbons. Large-scale subsidence has occurred in Brazoria County, starting around the turn of the last century. By the 1970s the area around Freeport had subsided about 1.5 feet, and up to 2 feet in northern portions of the county, near Houston (Sandeen and Wesselman, 1973). The risk of subsidence in the Freeport area has been reduced greatly due to a reduction in groundwater pumping and the associated rise in the water levels in the Chicot aquifer. Subsidence in the area of the Project is estimated at up to one foot when projected through 2050 according to the Brazoria County Groundwater Conservation District (BCGCD). The subsidence would not affect improved facilities such as the Pretreatment Facility, although it may have minor effects on appurtenant structures attaching to the plants such as roads, stairs, etc. Mitigation for minor, ongoing settlement of these appurtenant facilities would require continued maintenance by Freeport LNG.

1.5 Hurricane Winds, Flooding/Storm Damage/Tsunami

The Project site could be subject to hurricane winds. The Project is located along the Gulf of Mexico shoreline and would be subject to coastal storms, hurricanes, flooding, and other coastal processes. The Pretreatment Facility is in an area designated as Zone X, indicating that it is an area protected by levees from a 100-year flood (FEMA, 1993a). Because the aboveground facilities associated with the Project would be constructed within the existing levees at the Pretreatment Facility, they would have no effect on the flood-storage capacity of the floodplain.

Climate change in the region would have two effects which may cause increased storm surges: increased temperatures of Gulf Waters which could increase storm intensity, and a rising sea level. Even with the increased sea levels due to climate change, and increased storm surge, the Pretreatment Facility, while inland, has a lower 8-foot-above mean sea level pad that would be more vulnerable to storm surge, but would be afforded more protection due to its location 2.5 miles inland. It would also not be susceptible to inundation from tsunamis due to the distance from the coast.

Non-jurisdictional Facilities

The non-jurisdictional Helium Plant and Electrical Tie-in facilities are located entirely within the previously authorized Pretreatment Facility. Despite the above-average sea level rise predicted for the western Gulf of Mexico, the distance from the shore and protection from Freeport Hurricane-Flood Protection Levee System, the relative sea level rise is not expected to impact the non-jurisdictional Project facilities. No impacts on geological resources are expected from construction or operation of the non-jurisdictional Helium Plant and Electrical Tie-in facilities.

2. Soil Resources

The areas that would be temporarily or permanently affected by the Project facilities at the Pretreatment Facility site are currently serving as temporary construction workspace for the Liquefaction Project. Soils in all of these previous developed areas have been graded, graveled, and/or amended (e.g., mixed with Portland cement) or otherwise stabilized. As a result, the soils have been altered from their original state and are considerably different from the natural soils present on the respective sites prior to development. We conclude that no significant effects on soils would occur.

Non-jurisdictional Facilities

The non-jurisdictional Helium Plant and Electrical Tie-in would be on land that has been previously converted to industrial land use in association with the Liquefaction and Train 4 Projects. No impacts on native soils would occur as a result of construction and operation of the non-jurisdictional Project facilities.

3. Biological Resources - Water Resources; Vegetation; Wildlife; Threatened, Endangered and Other Special Status Species

Based on the scope of the Project, the location of the proposed facilities within the fenced boundaries of the Freeport LNG Pre-Treatment Facility, and the industrial nature of the Project area (previously filled and disturbed), we have determined that constructing and operating the proposed facilities would not impact surface waters, wetlands, vegetation, or wildlife. Furthermore, fisheries and other aquatic resources, migratory birds, and federal and state protected species would also not be affected.

The minor ground disturbance necessary to install the tie-in facilities (0.5 acre) and the use (and storage) of heavy equipment in support of this installation would temporarily disturb soils and could result in an inadvertent release of equipment-related fluid(s) potentially affecting underlying groundwater quality. Impacts on industrial land and previously filled and disturbed soils would be minor and temporary. Impacts on underlying groundwater quality are unlikely; however, to reduce the potential for an inadvertent equipment-related fluid release, Freeport LNG would implement measures described in a Project-specific SPCC Plan. The SPCC Plan would address a number of spill-related measures including personnel training, secondary containment, hazardous substance storage, best management practices, and spill response and reporting

procedures. We find the implementation of a Project-specific SPCC Plan acceptable. Therefore, based on the proposed construction procedures and the measures that would be implemented to avoid and reduce the potential for impacts on the environment, we conclude that constructing and operating the Project would only result in minor, highly localized, and temporary impacts on soils and groundwater.

Non-jurisdictional Facilities

Constructing and operating the non-jurisdictional Helium Plant would temporarily and permanently impact about 2.5 and 1.1 acres of land, respectively; all of which would be within the fenced boundaries of the Pretreatment Facility. As previously described for the proposed facilities, the Project area is industrial in nature having been previously filled and disturbed. Similarly, the non-jurisdictional facilities would not impact surface waters, wetlands, vegetation, and wildlife including fisheries and other aquatic resources, migratory birds, and federal and state protected species.

The ground disturbance necessary to install the Helium Plant and the use (and storage) of heavy equipment in support of this installation would temporarily and permanently disturb soils and could result in an advertent release of equipment-related fluid(s) potentially affecting underlying groundwater quality. Impacts on previously filled and disturbed soils would be minor and contained within the boundaries of the Pretreatment Facility. There would be no change in land use resulting from the construction and operation of the non-jurisdictional facilities. Based on the fill present and operational best management practices associated with the adjacent Pretreatment Facility, impacts on underlying groundwater quality are unlikely.

4. Land Use

The Project is located entirely within the existing Pretreatment site, roughly 3 miles east of the city of Freeport in Brazoria County, Texas. The Project is in a semi-rural area that is predominantly used for cattle grazing, but also supports several residential communities, commercial developments concentrated along arterial roads (State Highway 332 and Farm to Market Road 523), and infrastructure associated with oil and gas production and storage. The area that would be affected by construction and operation is classified as industrial/developed and therefore would not affect any areas of special land use, state, federal, local, public lands, recreation land, or conservation lands.

In total, construction of the jurisdictional facilities of the Project would impact approximately 3.5 acres of land. The entirety of the 3.5 acres would consist of impacts that are currently within the operational footprint of the Liquefaction and Train 4 Projects. Additionally, construction of the Project would require the use of an existing access road. The 9.9-acre access road is partially within the boundary of the Pretreatment Facility and is currently being used for construction of the Liquefaction Project. Given the small footprint and limited facilities being constructed, we conclude that the Project would have no impact on nearby Brazoria National Wildlife Refuge, residential areas that are within 0.2 mile, or on visual resources.

Non-Jurisdictional Facilities

Construction of the non-jurisdictional facilities of the Project would impact 2.5 acres of land. The non-jurisdictional workspaces (laydown area and parking area) would overlap with the jurisdictional facilities, and the acreages for this workspace have been accounted for under the jurisdictional facility impacts.

The entirety of the non-jurisdictional Helium Plant facilities are within the footprint of the existing Pretreatment Facility operational footprint. Of these 2.5 acres, 1.1 acres would transition from construction into the operational footprint for the non-jurisdictional Helium Plant and Electrical Tie-in. The remaining 1.4 acres would revert to their preconstruction use, for operation of Pretreatment Facility. Construction and operational impacts entirely comprise industrial/developed land, and the land would continue to remain industrial/developed following construction.

The Helium Plant and Electrical Tie-in facilities would be similar to those authorized and currently in operation in association with the Liquefaction Project. Further, the non-jurisdictional facilities would be within the existing Pretreatment Facility boundary. Therefore, impacts on residential areas due to construction and operation of the non-jurisdictional facilities are not anticipated. Further, no commercial or residential developments are proposed in the vicinity of the Pretreatment Facility. As is discussed for the jurisdictional components above, it is not anticipated that the non-jurisdictional facilities would have any significant impact on the Brazoria National Wildlife Refuge or its visitors.

During operation, the greatest opportunity for potential visual impacts from the Helium Plant would likely involve residences along Duncan Drive, north of the Pretreatment Facility. The closest of these residences is about 0.5 mile from the operational footprint of the Helium Plant. The Helium Plant's tallest feature would be a C501 PSA surge drum that would stand 120 feet high.

Because the proposed non-jurisdictional facilities would be within the fence line of Pretreatment Facility it would be consistent in appearance with the existing authorized facilities. The Pretreatment facility has an existing vent stack and flare stack both higher than the 120 feet tall C501 PSA surge drum at the Helium Plant. However, it would be noticeable to the residents and visitors in the area.

5. Cultural Resources

The National Historic Preservation Act (NHPA) is the cornerstone of the federal government's historic preservation program. Section 101(d)(6) of the NHPA states that properties of traditional religious and cultural importance to Indian tribes³ may be determined eligible for the

³ Indian tribes are defined in 36 CFR 800.16(m) as: "an Indian tribe, band, nation, or other organized group or community, including a Native village, Regional Corporation, or Village Corporation, as those terms are defined in Section 3 of the Alaska Native Claims Settlement Act (43 U.S.C. 1602), which is recognized as eligible for the special programs and services provided by the United States to Indians because of their special status as Indians."

National Register of Historic Places. In carrying out our responsibilities under the NHPA, the FERC conducted government-to-government consultations with Indian tribes that may attach religious and cultural importance to properties in the area of potential effect (APE), in accordance with the implementing regulations at 36 CFR 800.2(c)(2)(ii). Consultations with Indian tribes are detailed below.

Section 106 of the NHPA requires that the FERC take into account the effect of its undertakings⁴ (including authorizations under Section 3 of the Natural Gas Act) on historic properties,⁵ and afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment. The steps in the Section 106 compliance process, as outlined in the implementing regulations at 36 CFR 800, include: consultations; identification of historic properties; assessment of effects; and resolution of adverse effects, if necessary.

Freeport LNG, as a non-federal applicant, is assisting the FERC staff in meeting our obligations under Section 106 by providing data, analyses, and recommendations in accordance with 36 CFR 800.2(a)(3), and the FERC's regulations at 18 CFR 380.12(f). Cultural resources information was gathered for Freeport LNG by its consultants, HRA/Gray & Pape. The FERC remains responsible for all final determinations under the NHPA. Below, we summarize the status of compliance with Section 106 for this Project.

5.1 Consultations

We sent copies of our July 16, 2020 NOI for the Project to a wide range of stakeholders, including other federal agencies, such as the ACHP, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Department of the Interior Bureau of Indian Affairs, and National Park Service; state and local government agencies, such as the State Historic Preservation Office of Texas (SHPO); affected landowners; and Indian tribes that may have an interest in the Project area. The NOI contained a paragraph about Section 106 of the NHPA, which stated that we use the notice to initiate consultations with the SHPO as well as to solicit the SHPO's views and those of other government agencies, interested Indian tribes, and the public on the Project's potential effects on historic properties. As indicated in section A.5, we received no comments in response to the NOI.

5.2 Consultations with the SHPO

In response to Freeport LNG's submittal of its "Cultural Resources Survey of the Freeport LNG Proposed Pretreatment Plant in Brazoria County, Texas" (Soltysiak, K. 18 June 2012,

⁴ "Undertaking" means a project activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; those requiring a Federal permit, license or approval; and those subject to state or local regulation administered pursuant to a delegation or approval by a Federal agency," as defined in 36 CFR 800.16(y).

⁵ Historic properties include prehistoric or historic sites, districts, buildings, structures, objects, landscapes, or properties of traditional religious or cultural importance listed on or eligible for listing on the National Register of Historic Places, as defined in 36 CFR 800.16(l).

HRA/Gray & Pape), the SHPO stamped the front of the report on July 3, 2012: “No Historic Properties Affected – Project May Proceed.”

5.3 Consultations with Indian Tribes

FERC Staff Consultations

The FERC sent our NOI for this Project to four Indian tribes: Alabama-Coushatta Tribe of Texas; Caddo Nation of Oklahoma; Tonkawa Tribe of Oklahoma; and Wichita and Affiliated Tribes of Oklahoma. None of these tribes responded to our NOI.

Communications between the Applicant and Indian Tribes

In letters dated September 20, 2020, Freeport LNG contacted seven federally recognized Indian tribes with information about the Project, and requested comments. The tribes contacted included the Alabama-Coushatta Tribe of Texas; Alabama-Quassarte Tribal Town of Oklahoma; Caddo Indian Nation of Oklahoma; Coushatta Tribe of Louisiana; Mescalero Apache Tribe of New Mexico; Tonkawa Tribe of Oklahoma; and Wichita and Affiliated Tribes of Oklahoma. Freeport LNG stated that any tribal responses to its letters would be filed in the docket for this Project. None have been filed as of issuance of this EA.

5.4 Identification of Historic Properties

Area of Potential Effect

We define the direct APE as all areas subject to ground disturbance. The jurisdictional facilities, which consist of tie-ins to a non-jurisdictional helium plant, including the parking lot and laydown area, would encompass a total of about 3.5 acres. The 9.9-acre existing access road is not included in this Project, because it was a component of the Liquefaction Project and reviewed in a previous environmental assessment.

5.5 Inventory Results

The Project is within the Pretreatment Facility boundaries. In March--May 2012, the Pretreatment Facility was inventoried for cultural resources by HRA/Gray & Pape on behalf of Freeport LNG. The intensive pedestrian inventory covered about 222 acres. The survey was supplemented by the excavation of 157 shovel tests and 14 backhoe trenches. Eighty-seven acres within the tract were not examined because it was previously disturbed by a sand mine. Fifty-four acres within the tract were not examined because they were flooded or wetlands. For all proposed construction areas for the Project, the HRA/Gray & Pape archaeologists concluded these areas had a low potential for containing historic properties. The SHPO concurred with this determination.

The survey identified no historic properties. The SHPO accepted the draft survey report on July 3, 2012, and reached a finding of “No Historic Properties Affected.” We agree that the

Project components would be located in areas with low potential for containing historic properties.

5.6 Unanticipated Discoveries Plan

A Project-specific updated Unanticipated Discovery Plan (UDP) was developed by Environmental Resource Management for Freeport LNG in September 2020, and filed with the FERC on October 7, 2020. Freeport LNG sent the UDP to the SHPO and seven potential interested Indian tribes (identified above) on September 28, 2020. Although the UDP has not yet been approved by the SHPO, we found it acceptable.

5.7 Compliance with the NHPA

No traditional cultural properties or properties of religious or cultural importance to Indian tribes were identified in the APE by Freeport LNG or its consultants, the SHPO, U.S. Bureau of Indian Affairs, National Park Service, or Indian tribes contacted. Therefore, we have complied with the intent of Section 101(d)(6) of the NHPA.

We and the SHPO agree that this Project should have no effects on historic properties. No additional investigations are required. We have completed the process of complying with Section 106 of the NHPA, in accordance with 36 CFR 800, for this Project. Because no historic properties would be affected, further consultation with the ACHP is not required; nor do we need to produce an agreement document to resolve adverse effects.

Non-jurisdictional Facilities

The Helium Plant would be within the surveyed areas within the Pretreatment Facility fence line, and the HRA/Gray & Pape archaeologists concluded these areas had a low potential for containing historic properties. The SHPO concurred with this determination. We agree that the Project components would be located in areas with low potential for containing historic properties.

6. Reliability and Safety

6.1 Process Design

The proposed Project would be entirely within Freeport LNG's existing Pretreatment Facility. The tie-ins associated with the Project would consist of three 12-inch-diameter BOG isolation valves, connection to the 20-inch-diameter firewater ring main, and a 1-inch-diameter nitrogen tie-in, all to deliver feed gas, firewater, and nitrogen to the proposed Helium Plant. The proposed BOG tie-ins would tap into existing lines that currently feed the Gas Turbine Generator within the Pretreatment Facility with pressurized BOG from compressors within the liquefaction trains. BOG typically consists of the lightest components of LNG and therefore contains a higher concentration of helium than the feed gas into the liquefaction trains. After the BOG tie-ins, gas would flow in buried pipeline to the Helium Plant. After helium is extracted from the BOG it would be returned to the BOG header for reuse or recycling.

Two aboveground isolation valves would be installed to provide isolation capabilities from the BOG feed gas supply and return lines along with a bypass arrangement. The two isolation tie-

in valves would be operated manually within the Pretreatment Facility fenceline while the Helium Plant would have its own Distributed Control System and Safety Instrumentation System to provide monitoring, control, alarm, and isolation capabilities for the valves within the Helium Plant. Freeport LNG has indicated that the shutdown and bypass actions would occur within the Helium Plant where supply and return lines would be equipped with emergency shutdown (ESD) valves at a nominal 150 foot distance underground between the tie-ins and the Helium Plant. Therefore, to ensure operating, maintenance, and testing of the ESD valves on the supply and return line are adequate, we recommend below that supply and return ESD valve(s) be included in final design documents for FERC review and approval. In addition, we recommend a damage prevention program for buried piping, as well as plant-to-place line markers over buried piping be filed prior to initial site preparation. Front-end engineering piping and instrumentation diagrams (P&IDs) indicated the preliminary details and locations of the tie-ins to the Project; therefore, prior to construction of final design we recommend up-to-date P&IDs be filed, as well as the specifications and procedures that clearly show and specify the tie-in details required to safely connect subsequently constructed facilities with the operational facilities. Freeport LNG would adopt the existing operation, maintenance, and safety training programs for the Noble Gas Project, and standard operating procedures would include monitoring, testing, operations, and maintenance. Therefore, we recommend updated operation and maintenance procedures and manuals, as well as safety procedures be filed prior to commissioning.

6.2 Mechanical Review

The piping components of the tie-ins would be designed and constructed in accordance with American Society of Mechanical Engineers (ASME) B31.3 and National Fire Protection Association Standard (NFPA) 24. The Project facilities would be periodically inspected and repaired or replaced under the facility's existing scheduled maintenance program. Freeport LNG would construct the facilities in accordance with their piping specifications and Quality Assurance and Quality Control program, as implemented by its Project management team. Therefore, we recommend the piping specifications and Quality Assurance and Quality Control procedures be filed prior to construction of final design. In addition, we recommend P&IDs, specifications, and procedures that clearly show and specify the tie-in details required to safely connect subsequently constructed facilities with the operational facilities be filed prior to final design.

6.3 Security and Hazard Review

The Project would be constructed within the Pretreatment Facility footprint, which is expected to be conducting normal operation and maintenance activities during the construction of the Project. The Project's Engineering, Procurement, and Construction Contractor would develop a Simultaneous Operations Plan (SIMOPS Plan) for the construction of the Project to provide safe operations at the existing facilities simultaneously with the Project's construction activities. Therefore, prior to initial site preparation, we recommend that a SIMOPS Plan be filed. While in the operation phase, access would be through the existing main security gate, and the Helium Plant would be separated from other facilities within the Pretreatment Facility site by a unit fence. During construction, contractors would access the work site via a controlled access point of the Pretreatment Facility. Therefore, we recommend prior to site preparation, Freeport LNG should file its procedures for controlling access during construction.

There would be approximately 625 truck deliveries over the 11-month construction period, while operational traffic is estimated at 150 long haul trucks annually once construction activities have concluded. The Project has proposed construction traffic routes and in-plant vehicular infrastructure that would be utilized during construction, including access points, access routes, parking areas, jersey barriers, laydown areas, and existing roads. During construction, contractors would follow an updated Transportation Management Plan; therefore, prior to site preparation, we recommend the Transportation Management Plan be filed. The existing Pretreatment Facility's emergency response systems, procedures, and plans would be updated to incorporate the Project; therefore, we recommend an updated Emergency Response Plan be filed prior to initial site preparation.

Non-Jurisdictional Facilities

The Helium Plant would rely on membrane separation technology to enrich the helium product; there is no heating or cryogenic cooling within the facility, and the only source of elevated temperatures comes from recompression of the gas streams to provide system hydraulics necessary to meet the process pressure requirements. The heat of compression would be removed from the gas via fin-fans and closed cooling water loops, as per normal practice, and personnel protection would be provided between the compressor discharges and the aftercoolers. There would be no liquid lines within the Helium Plant, nor would there be any condensables in the BOG feed gas or any other process lines within the Helium Plant. Several compressors would be used to pressurize the helium for loading into helium tube trailers

Piping within the Helium Plant would be designed, fabricated, assembled, erected, inspected, examined, and tested in accordance with ASME Standards B31.3 -2016 edition with American National Standards Institute B16 group of standards used for fitting details. All pressure vessels would be designed, fabricated and tested in accordance with ASME V (Nondestructive Examination) VIII, Div. 1, 2019; Section IX (Welding and Brazing Qualifications); Welding Research Council-107; International Building Code-2015/American Society of Civil Engineers-7-10; and American Institute of Steel Construction Steel Manual 9th Edition. Pressure and vacuum safety relief valves and flares would be installed to protect pressure vessels, process equipment, and piping from an unexpected or uncontrolled pressure excursion, and would utilize local vents for vessel and equipment overpressure protection. The vent lines would include nitrogen process purge to sweep all lines and maintain clear path for relieving. The Helium Plant would be designated with an appropriate hazardous electrical classification in accordance with American Petroleum Institute Recommended Practice 500. The Helium Plant would include a safety-instrumented system that would include safety control valves and an ESD system designed in accordance with International Society of Automation 84.01 to prevent a release if design limits are exceed during operation.

Hazard analysis of the Helium Plant indicates there would be no storage or accumulation of helium within the facility, therefore the largest hazard would be a vapor cloud forming from failure of the 3-inch main helium loading line. The Helium Plant introduces an asphyxiation hazard but would not result any hot/cold hazards, toxic dispersion, flammable, vapor cloud overpressure, or fire hazards. Vapor dispersion modeling was performed to consider the effects of

a high pressure helium release from the main 3-inch line to the helium tube trailers. The worst-case scenario modeled was a release at the helium header followed by 10 minutes of production. Due to the buoyancy of helium relative to air, a hazardous vapor cloud formed from a release would quickly rise above the level where personnel would be at risk. The two dispersion release scenarios resulted in dispersion to 19.5 percent oxygen concentration end points of 63 feet and 107 feet, respectively. This would stay well within the boundaries of the Pretreatment Facility, although the Helium Plant would not be subject to the exclusion zone siting requirements in 49 CFR 193.

The Helium Plant would have its own hazard detection, including fire and gas detectors and low oxygen detectors, which would have a dedicated operation workstation/control panel within the Freeport LNG Central Control Building to initiate an ESD. The low oxygen detectors would be located near the truck trailers and around the Helium Plant. Firefighting equipment would consist of extinguishers located in the immediate area. Hazard control devices would be installed to extinguish or control incipient fires and releases should an ignition of flammable vapors occur. The hazard control layout and design would meet NFPA 10 and 17; as well as other recommended and generally accepted good engineering practices.

6.4 Recommendations from FERC Preliminary Engineering and Technical Review

Based on our preliminary engineering and technical review of the reliability and safety of the Noble Gas Project, we recommend the following mitigation measures as conditions to any order authorizing the Project. These recommendations would be implemented prior to initial site preparation, prior to construction of final design, prior to commissioning, prior to introduction of hazardous fluids, prior to commencement of service, and throughout the life of the facility to enhance the reliability and safety of the facility and to mitigate the risk of impact on the public.

Information pertaining to the following specific recommendations should be filed with the Secretary for review and written approval by the Director of OEP, or the Director's designee, within the timeframe indicated by each recommendation. Specific engineering, vulnerability, or detailed design information meeting the criteria specified in Order No. 833 (Docket No. RM16-15-000), including security information, should be submitted as critical energy infrastructure information pursuant to 18 CFR 388.113. See Critical Electric Infrastructure Security and Amending Critical Energy Infrastructure Information, Order No. 833, 81 Fed. Reg. 93,732 (December 21, 2016), FERC Stats. & Regs. 31,389 (2016). Information pertaining to items such as offsite emergency response, procedures for public notification and evacuation, and construction and operating reporting requirements would be subject to public disclosure. All information should be filed **a minimum of 30 days** before approval to proceed is requested.

- **Prior to initial site preparation, Freeport LNG should file an overall Project schedule, which includes the proposed stages of the commissioning plan.**
- **Prior to initial site preparation, Freeport LNG should file a SIMOPS Plan for construction activities.**
- **Prior to initial site preparation, Freeport LNG should file procedures for controlling**

access during construction.

- **Prior to initial site preparation**, Freeport LNG should file an updated Transportation Management Plan.
- **Prior to initial site preparation**, Freeport LNG should file an updated plot plan of the final design showing all major equipment, structures, and buildings.
- **Prior to initial site preparation**, Freeport LNG should file a damage prevention program for buried piping, as well as plans to place line markers over buried piping.
- **Prior to initial site preparation**, Freeport LNG should file its updated Emergency Response Plan to include the Noble Gas Project.
- **Prior to construction of final design**, Freeport LNG should file P&IDs, specifications, and procedures that clearly show and specify the tie-in details required to safely connect subsequently constructed facilities with the operational facilities.
- **Prior to construction of final design**, Freeport LNG should file quality assurance and quality control procedures for construction activities.
- **Prior to construction of final design**, Freeport LNG should include BOG supply and return ESD valves within the FERC jurisdictional design and associated P&IDs.
- **Prior to construction of final design**, Freeport LNG should file cause-and-effect matrices for the BOG supply and return ESD valves.
- **Prior to commissioning**, Freeport LNG should file a plan for clean-out, dry-out, purging, and tightness testing. This plan should address the requirements of the American Gas Association's Purging Principles and Practice, and should provide justification if not using an inert or non-flammable gas for clean-out, dry-out, purging, and tightness testing.
- **Prior to commissioning**, Freeport LNG should file the procedures for pressure/leak tests which address the requirements of ASME B31.3. In addition, Freeport LNG should file a line list with pneumatic and hydrostatic test pressures.
- **Prior to commissioning**, Freeport LNG should tag all instrumentation and valves in the field, including drain valves, vent valves, main valves, and car-sealed or locked valves.
- **Prior to commissioning**, Freeport LNG should file updates addressing the Noble Gas Project in the operation and maintenance procedures and manuals, as well as safety procedures.

- **Prior to introduction of hazardous fluids**, Freeport LNG should complete and document a pre-startup safety review to ensure that installed equipment meets the design and operating intent of the facility. The pre-startup safety review should include any changes since the last hazard review, operating procedures, and operator training. A copy of the review with a list of recommendations, and actions taken on each recommendation, should be filed.
- **Prior to commencement of service**, Freeport LNG should notify the FERC staff of any proposed revisions to the security plan and physical security of the plant.
- **Prior to commencement of service**, Freeport LNG should label piping with fluid service and direction of flow in the field, in addition to the pipe labeling requirements of NFPA 59A.

In addition, we recommend that the following measures should apply **throughout the life** of the Project:

- **The jurisdictional facilities installed as part of the Noble Gas Project should be subject to the same incident reporting requirements stated in the Commission’s May 17, 2019 Order for the Freeport LNG Liquefaction Train 4 Project under Docket No. CP17-470-000.**
- **The jurisdictional facilities installed as part of the Noble Gas Project should be subject to the regular FERC staff technical reviews and site inspection on at least an annual basis or more frequently as circumstances indicate.**
- **Freeport LNG should file semi-annual operational reports for the jurisdictional facilities at the Noble Gas Project that meet the requirements stated in the Commission’s May 17, 2019 Order for the Freeport LNG Liquefaction Train 4 Project under Docket No. CP17-470-000.**

As a result of our technical review on the design of the proposed Project, we conclude that the Project would not result in significantly increased public safety risk.

7. Air Quality and Noise

7.1 Air Quality

Local and regional air quality may be affected by construction and operation of the Project. Minor air emissions would be generated by operation of equipment during construction and long-term operation of the Project facilities. This section will identify the direct and indirect emissions from the Project and identify the associated impacts.

Combustion of fossil fuels (natural gas, gasoline, diesel, etc.) would produce criteria air pollutants such as carbon monoxide (CO), sulfur dioxide (SO₂), and inhalable particulate matter (PM_{2.5} and PM₁₀). PM_{2.5} includes particles with an aerodynamic diameter less than or equal to 2.5 micrometers, and PM₁₀ includes particles with an aerodynamic diameter less than or equal to 10 micrometers. Combustion of fossil fuels also produces the ozone (O₃) precursors volatile organic compounds (VOC), a large group of organic chemicals that have a high vapor pressure at room temperature, and oxides of nitrogen (NO_x). VOCs react with NO_x, typically on sunny days to form O₃. Another byproduct of combustion is greenhouse gases (GHG) and hazardous air pollutants (HAPs). HAPs are chemicals known to cause cancer and other serious health impacts.

GHGs, including carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons, and perfluorocarbons, are naturally occurring pollutants in the atmosphere and products of human activities, including burning fossil fuels. GHGs produced by fossil-fuel combustion are CO₂, CH₄, and N₂O. GHGs are non-toxic and non-hazardous at normal ambient concentrations. GHG emissions due to human activity are the primary cause of increased levels of all GHGs since the industrial age. These elevated levels of GHGs are the primary cause of warming of the global climate system since the 1950s. These existing and future emissions of GHGs, unless significantly curtailed, will cause further warming and changes to the local, regional, and global climate systems. Emissions of GHGs are typically expressed in terms of CO₂ equivalents (CO₂e).

Other pollutants, not produced by combustion, are fugitive dust and fugitive emissions. Fugitive dust is a mix of PM_{2.5}, PM₁₀, and larger particles that become airborne due to vehicle travel, earth movement, or wind erosion. Fugitive emissions in the context of this EA would be leaks or venting emissions of CH₄.

The U.S. Environmental Protection Agency has established Air Quality Control Regions (AQCR) in accordance with the Clean Air Act of 1970, 42 United States Code 7401 et seq., amended in 1977 and 1990, and codified at 40 CFR Parts 50-99. AQCRs are defined as contiguous areas within a state or an interstate metropolitan area considered to have relatively uniform ambient air quality and are treated as single units for reducing emissions and determining compliance with the National Ambient Air Quality Standards. The Project would be in Brazoria County, which is in the Metropolitan Houston-Galveston Intrastate AQCR (HG-APQCR)⁶.

The U.S. Environmental Protection Agency has designated the HG-AQCR area, which includes the overall Project footprint, as a “serious” nonattainment area for O₃ under the 2008 8-hour O₃ standard and a “marginal” nonattainment area under the 2015 8-hour O₃ standard. The HG-AQCR is in attainment for all other criteria pollutants.

Federal Air Quality Requirements

The Pretreatment Facility is currently a major source of emissions regulated under Title V Site Operating Permit No. O-3958. An application for a revision of the Pretreatment Site

⁶ The HG-AQCR is comprised of Austin, Brazoria, Chambers, Colorado, Fort Bend, Galveston, Harris, Liberty, Matagorda, Montgomery, Walker, Waller, and Wharton Counties.

Operating Permit would be submitted by Freeport LNG to the Texas Commission for Environmental Quality to incorporate the Project and non-jurisdictional facilities.

A General Conformity Analysis is required when a federal action would generate emissions exceeding conformity applicability threshold levels of pollutants for which an AQCR or portion thereof is designated as nonattainment. According to Section 176(c)(1) of the Clean Air Act (40 CFR 93.153), a federal agency cannot approve or support an activity that does not conform to an approved State Implementation Plan. General Conformity is not applicable to activities at locations in attainment areas nor does it count operating emissions covered by an air quality permit towards applicability thresholds.

The Project would generate air emissions from its construction and long-term operation. Air pollutants would be emitted from vehicles transporting workers to and from the construction sites and from vehicles and barges used to transport materials and equipment to the construction site. As can be seen in table 2, both the Project emissions as well as the combined Project and non-jurisdictional Helium Plant construction and operational emissions would not exceed the General Conformity Applicability Thresholds for the O₃ nonattainment area. Therefore a General Conformity Determination is not required.

Air Quality Emission Impacts from Project Construction and Operation

Air emissions would be generated during construction of the Project. Construction activities for the proposed facilities would result in very minor, and temporary increases in emissions of pollutants due to the use of equipment powered by diesel or gasoline engines. Construction activities would also result in the temporary generation of fugitive dust due to land clearing, ground excavation, and cut and fill operations. Indirect emissions during construction of the Project would be generated by delivery vehicles and construction workers commuting to and from work areas. The construction emissions are extremely low with estimated emissions of criteria pollutants, VOCs, and HAPs under 0.4 ton each and GHG emissions of 156 tons CO_{2e}. Similarly, the operation emissions would be low and only be from fugitive emissions from piping resulting in about 0.003 tons (6 pounds) per year of VOC, and 500 tons per year of CO_{2e}.

TABLE 2			
General Conformity Analysis for Project and Non-Jurisdictional Helium Plant Construction and Operation			
Houston-Galveston-Brazoria Nonattainment Area			
Year	VOC (tons per year)	NO_x (tons per year)	
2021 – Project Construction	0.03	0.38	
2021 – Helium Plant Construction	0.13	1.88	
2021 – Total	0.16	2.26	
2022 – Project Emissions	0.00	0.00	
2022 – Helium Plant Construction	0.05	0.72	
2022 – Total	0.05	0.72	
Noble Gas Annual Operation Emissions (not covered by Federal Air Permits) – Vehicle Emissions	0.005	0.095	
General Conformity Applicability Threshold	50	50	

Based upon the magnitude of emissions, we have determined that the construction and operation of the Project would not result in significant air quality impacts.

Non-Jurisdictional Facilities

Similar to the jurisdictional facilities, construction and operation of the Helium Plant would result in air emissions. As indicated above under General Conformity, the combined emissions of jurisdictional and non-jurisdictional facilities would not trigger a General Conformity determination. The emissions from construction and operation of the non-jurisdictional Helium Plant are shown in table 3. The operational emissions are primarily fugitive CH₄ emissions and emissions from vehicles transporting helium from the facility.

Construction Emissions (tons)								
	VOCs	PM ₁₀	PM _{2.5}	CO	NO _x	SO ₂	CO _{2e}	Total HAPs
2021	0.13	0.14	0.13	0.78	1.88	0.01	914	0.58
2022	0.05	0.05	0.05	0.30	0.72	0.003	358	0.23
Operational Emissions (tons per year)								
Helium Plant	0.001	0.00	0.00	0.00	0.00	0.00	257	0.00
Helium Trucking ^a	0.005	0.006	0.004	0.029	0.095	0.0004	58.3	0.001

a: Emission estimates based on 150 trucks per year traveling 221 miles per vehicle (1 mile onsite and 220 miles offsite).

7.2 Noise

The noise environment can be affected both during construction and operation of natural gas or LNG projects. The magnitude and frequency of environmental noise may vary considerably over the course of the day, throughout the week, and across seasons, in part due to changing weather conditions.

Two measures used by some federal agencies to relate the time-varying quality of environmental noise with its known effect on people are the equivalent continuous sound level (L_{eq}) and the day-night average sound level (L_{dn}). The preferred single value figure to describe sound levels that vary over time is L_{eq} , which is defined as the sound pressure level of a noise fluctuating over a period of time, expressed as the amount of average energy. L_{dn} is defined as the 24-hour average of the equivalent average of the sound levels during the daytime (L_d – from 7:00 a.m. to 10:00 p.m.) and the equivalent average of the sound levels during the nighttime (L_n – 10:00 p.m. to 7:00 a.m.). Specifically, in the calculation of the L_{dn} , late night and early morning (10:00 p.m. to 7:00 a.m.) noise exposures are increased by 10 decibels (dB) to account for people’s greater sensitivity to sound during nighttime hours. In general, if the sound energy does not vary over the given time period, the L_{dn} level will be equal to the L_{eq} level plus 6.4 dB. The 6.4 dB difference between the L_{dn} and the L_{eq} is a result of the 10 dB nighttime addition for the L_{dn} calculation.

Decibels are the units of measurement used to quantify the intensity of noise. To account for the human ear's sensitivity to low level noises the decibel values are corrected to weighted values known as decibels on the A-weighted scale (dBA). A 3 dB change of sound level is considered to be barely perceivable by the human ear, a 5 or 6 dB change of sound level is considered noticeable, and a 9-10 dB increase is perceived as if the sound intensity has doubled.

FERC guidelines require that the sound attributable to jurisdictional new or modified compressor equipment, or LNG equipment not exceed an L_{dn} of 55 dBA at any nearby noise sensitive area (NSA)--typically residences, houses of worship, hospitals, etc. Also, a sound level of 55 dBA (L_{dn}) can be used as a benchmark sound criterion or guideline for assessing the noise impact of other sources of noise.

There are no Texas, Brazoria County, or local numerical noise standards applicable to the Project.

Noise Impacts from Project Construction and Operation

The jurisdictional components of the Project would not contain any major noise-generating sources during operation, except for some extremely minor piping noise. Construction noise would also be negligible due to the minor nature of pipe installation and the limits on nighttime construction. Therefore, we conclude that the noise impacts from the Project would not be significant.

Non-jurisdictional Facilities

There would be noise impacts from construction and operation of the Helium Plant and Electrical Tie-in. Construction equipment would be the predominant noise source and would differ from phase to phase but would include dozers, cranes, cement mixers, dump trucks, and loaders. As indicated in section A.9 of this EA, the majority of construction activity would take place during daytime hours, and no pile driving is anticipated to be required during construction. The nearest NSA is approximately 3,400 feet from the non-jurisdictional facilities. Freeport LNG has estimated that impacts at the nearest NSA would be 30-45 dBA L_{eq} , depending upon the phase of construction. This is lower than the measured daytime ambient noise levels of 46.9-51.9 dBA L_{eq} at the nearest NSAs.

Operational noise would be produced on a continuous basis at the non-jurisdictional facilities by several sources, primarily compressors and cooling fans. Freeport LNG has estimated the noise impacts using a noise model and indicated that the noise impacts from the non-jurisdictional facilities at the nearest NSAs would be between 47.8 and 50.7 dBA L_{dn} . This would result in permanent noise increases at the nearest NSAs. The combined operational noise of the Helium Plant plus ambient is estimated to exceed 55 dBA L_{dn} at NSA 3 – Duncan Drive, a home about 3,400 feet to the Northwest. Although the noise attributable to the Helium Project would only be 50.7 dBA L_{dn} .

8. Cumulative Impacts Analysis

NEPA requires the lead federal agency to consider the potential cumulative impacts of proposals under its review. Cumulative impacts may result when the environmental effects associated with the proposed action (Project) are superimposed on or added to impacts associated with past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.

The Project-specific impacts of the Project are discussed in detail in other sections of this EA. The purpose of this section is to identify and describe cumulative impacts that would potentially result from implementation of the proposed Project along with other projects that could affect the same resources in the same approximate timeframe. To ensure that this analysis focuses on relevant projects and potentially significant impacts, the actions included in the cumulative impact analysis include projects that:

- impact a resource potentially affected by the proposed Project;
- impact that resource within all or part of the timespan encompassed by the proposed Project or reasonably expected construction and operation schedule of the proposed Project; and
- impact that resource within all or part of the same geographic area affected by the proposed Project. The geographic area considered varies depending on the resource being discussed, which is the general area (geographic scope) in which the projects could contribute to cumulative impacts on that particular resource.

The only project we identified that would contribute additive impacts with the proposed action was the construction associated with the non-jurisdictional facilities. Although the activities would be sequential, some overlap in impacts on resources is expected.

We analyzed the Project's impacts on geology and soils; groundwater; vegetation and wildlife; land use and visual resources; cultural resources; and air quality and noise. We determined there would be no impacts on geology, groundwater, soils, surface water, vegetation, wildlife, wetlands, fisheries, land use; therefore, these resources are not considered in this cumulative impact analysis. We also determined there would be "no effect" on species listed under the Endangered Species Act and that no cultural resources are within or near the Project; therefore, special status species and cultural resources are not considered further in this cumulative impact analysis. We determined that the Project impacts on visual resources, and air quality and noise would not be significant, but are sufficient to analyze in a cumulative analysis.

Visual Impacts

The Project area is fully within the fence line of the existing Pretreatment Facility and would not build outside of the area. The non-jurisdictional Helium Plant would be within the disturbed areas and fence line, but would extend the visual bulk of the combined facility and would be closer to nearby residents. The Project only involves minor new facilities; however, the existing

Pretreatment Facility has visual impacts due to large footprint and tall stacks and flares. While the Project facilities would contribute nothing to visual bulk or height, the Helium Plant would contribute cumulatively with the existing Pretreatment Facility to visual impacts. Although local residents and visitors may notice the additional structures, we conclude that this is not a significant cumulative visual impact.

Air Quality

In section B.7.1 Air Quality, we analyzed the combined construction emissions of the Project and the non-jurisdictional facilities in consideration of General Conformity. Although air quality in the Project area is poor (serious non-attainment for O₃), the emissions of all pollutants, and specifically the O₃precursors would not require a General Conformity Determination. Considering this, the low amount of construction emission, and the very low combined emissions from operation of both Project and non-jurisdictional facilities, we conclude that cumulative air quality impacts would not be significant.

Noise Impacts

The noise impacts from construction of the Project would be minor and are analyzed in section B.7.2. The construction of the Helium Plant would involve additional equipment and result in higher noise impacts, but the noise impacts would not necessarily occur at the same time as those of the Project. In addition, the noise levels from the construction equipment proposed would not result in high levels of noise at the nearest NSAs, the closest is 3,400 feet from the construction area. Freeport LNG's construction combined noise analysis indicated that the noise impacts at the NSAs would be between 37-45 dBA L_{eq}. This is lower than existing ambient noise levels.

The cumulative noise analysis submitted by Freeport LNG indicated that the combined operational noise levels from the Project, non-jurisdictional Helium Plant, and existing Pretreatment Facility would result in elevated noise impacts from the combined facilities. These cumulative noise impacts attributable to the Pretreatment Facilities, Project, and Helium Plant would not exceed 55 dBA L_{dn}. However, when ambient noise levels are included, the resulting noise impacts at all nearest NSAs would exceed 55 dBA L_{dn}. We note that noise from the Project facilities themselves would be negligible, and the increase in noise would be from the Pretreatment Facility and the Helium Plant. Thus we conclude that the Project would not result in significant cumulative noise impacts.

Based on our analysis in the previous sections, we conclude that the jurisdictional Project has little or no impacts on all resources due to the very minor nature of the construction impacts and very small air and noise impacts. Because the Project does not contribute to a significant impact on environmental resources, we conclude that cumulative impacts from construction and operation of the Project along with the non-jurisdictional facilities would not be significant.

C. ALTERNATIVES

In accordance with NEPA and FERC policy, we considered a range of alternatives to determine whether an alternative would be preferable to the proposed action. Based on the limited nature of the proposed Project, the range of alternatives evaluated consists of the no-action alternative.

1. Evaluation Process

The purpose of this evaluation is to determine whether an alternative would be preferable to the proposed action. We generally consider an alternative to be preferable to a proposed action using three evaluation criteria, as discussed in greater detail below. The evaluation criteria applied to each alternative include a determination whether the alternative:

- meets the stated purpose of the project;
- is technically and economically feasible and practical; and
- offers a significant environmental advantage over a proposed action.

The alternatives were reviewed against the evaluation criteria in the sequence presented above. The first consideration for including an alternative in our analysis is whether or not it could satisfy the stated purpose of the Project. An alternative that cannot achieve the purpose for the Project cannot be considered as an acceptable replacement for the Project.

Many alternatives are technically and economically feasible. Technically practical alternatives, with exceptions, would generally require the use of common construction methods. An alternative that would require the use of a new, unique, or experimental construction method may not be technically practical because the required technology is not available or is unproven. Economically practical alternatives would result in an action that generally maintains the price competitive nature of the proposed action. Generally, we do not consider the cost of an alternative as a critical factor unless the added cost to design, permit, and construct the alternative would render the Project economically impractical.

Alternatives that would not meet the Project's objective or were not feasible were not brought forward to the next level of review (i.e., the third evaluation criterion). Determining if an alternative provides a significant environmental advantage requires a comparison of the impacts on each resource as well as an analysis of impacts on resources that are not common to the alternatives being considered. The determination must then balance the overall impacts and all other relevant considerations. In comparing the impact between resources, we also considered the degree of impact anticipated on each resource.

One of the goals of an alternatives analysis is to identify alternatives that avoid significant impacts. In section B, we evaluated each environmental resource potentially affected by the Project and concluded that constructing and operating the Project would not significantly impact these resources. We have determined that the only other sites that could be viable alternative sites to the Pretreatment Facility would be if the Helium Plant was in another location along the BOG pipeline or at the Terminal. However, the Commission does not have siting authority of the Helium

Plant, given the non-jurisdictional nature of that facility. In addition, we did not receive any comments, or identify any resource issues, that would lead us to seek alternative sites for the proposed Project facilities. Thus, site alternatives were not considered further.

2. No-Action Alternative

Under the no-action alternative, Freeport LNG would not construct the Project. If the Project is not constructed, then neither the adverse environmental nor beneficial potential economic impacts described in this EA would occur. Implementing the no-action alternative would not allow Freeport LNG to meet the Project purpose and need.

The no-action alternative can only be achieved by the Commission deciding to not authorize the proposal. The impacts disclosed in this EA would not occur, at the cost of not meeting the purpose, need, and goals of Freeport LNG. The waste helium would not be captured. Given the minor impacts from construction and operation of the Project, we do not recommend the no-action alternative.

3. Alternatives Conclusion

Based on the results of the alternatives analysis discussed in the preceding sections, we find that the Project, as currently proposed and modified by our recommended mitigation measures, is the preferred alternative that can meet the Project's objectives.

D. CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis contained in this EA, we have determined that if Freeport LNG constructs and operates the proposed facilities in accordance with its application and supplements and our recommended mitigation measures, approval of this proposal would not constitute a major federal action significantly affecting the quality of the human environment. We recommend that the Order contain a finding of no significant impact and include the following mitigation measures listed below as conditions to any authorization the Commission may issue.

1. Freeport LNG shall follow the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests) and as identified in the EA, unless modified by the Order. Freeport LNG must:
 - a. request any modification to these procedures, measures, or conditions in a filing with the Secretary of the Commission (Secretary);
 - b. justify each modification relative to site-specific conditions;
 - c. explain how that modification provides an equal or greater level of environmental protection than the original measure; and
 - d. receive approval in writing from the Director of OEP **before using that modification.**
2. The Director of OEP, or the Director's designee, has delegated authority to address any requests for approvals or authorizations necessary to carry out the conditions of the Order, and take whatever steps are necessary to ensure the protection of life, health, property, and the environment during construction and operation of the Project. This authority shall allow:
 - a. the modification of conditions of the Order;
 - b. stop-work authority and authority to cease operation; and
 - c. the imposition of any additional measures deemed necessary to ensure continued compliance with the intent of the conditions of the Order as well as the avoidance or mitigation of unforeseen adverse environmental impact resulting from Project construction and operation.
3. **Prior to any construction**, Freeport LNG shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, EIs, and contractor personnel will be informed of the EI's authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs **before** becoming involved with construction and restoration activities.
4. The authorized facility locations shall be as shown in the EA, **As soon as they are available, and before the start of construction**, Freeport LNG shall file with the Secretary any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by the Order. All requests for modifications of environmental conditions of the Order or site-specific clearances must

be written and must reference locations designated on these alignment maps/sheets.

5. Freeport LNG shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or facility relocations, and staging areas, pipe storage yards, new access roads, and other areas that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, documentation of landowner approval, whether any cultural resources or federally listed threatened or endangered species would be affected, and whether any other environmentally sensitive areas are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OEP **before construction in or near that area.**

6. **Within 60 days of the Order and before construction begins,** Freeport LNG shall file an Implementation Plan with the Secretary for review and written approval by the Director of OEP, or the Director's designee. Freeport LNG must file revisions to the plan as schedules change. The plan shall identify:
 - a. how Freeport LNG will implement the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests), identified in the EA, and required by the Order;
 - b. how Freeport LNG will incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;
 - c. the number of EIs assigned, and how the company will ensure that sufficient personnel are available to implement the environmental mitigation;
 - d. company personnel, including EIs and contractors, who will receive copies of the appropriate material;
 - e. the location and dates of the environmental compliance training and instructions Freeport LNG will give to all personnel involved with construction and restoration (initial and refresher training as the Project progresses and personnel change);
 - f. the company personnel (if known) and specific portion of Freeport LNG's organization having responsibility for compliance;
 - g. the procedures (including use of contract penalties) Freeport LNG will follow if noncompliance occurs; and
 - h. for each discrete facility, a Gantt or PERT chart (or similar project scheduling diagram), and dates for:
 - (1) the completion of all required surveys and reports;
 - (2) the environmental compliance training of onsite personnel;
 - (3) the start of construction; and
 - (4) the start and completion of restoration.

7. Beginning with the filing of its Implementation Plan, Freeport LNG shall file updated status reports with the Secretary on a **biweekly** basis until all construction and restoration activities are complete. Problems of a significant magnitude shall be reported to the FERC **within 24 hours**. On request, these status reports will also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include:
 - a. an update on Freeport LNG's efforts to obtain the necessary federal authorizations;
 - b. project schedule, including current construction status of the Project and work planned for the following reporting period;
 - c. a listing of all problems encountered, contractor nonconformance/deficiency logs, and each instance of noncompliance observed by the EI during the reporting period (both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies);
 - d. a description of the corrective and remedial actions implemented in response to all instances of noncompliance, nonconformance, or deficiency;
 - e. the effectiveness of all corrective and remedial actions implemented;
 - f. a description of any landowner/resident complaints which may relate to compliance with the requirements of the order, and the measures taken to satisfy their concerns; and
 - g. copies of any correspondence received by Freeport LNG from other federal, state, or local permitting agencies concerning instances of noncompliance, and Freeport LNG's response.
8. Freeport LNG must receive written authorization from the Director of OEP, or the Director's designee, **before commencing construction of any Project facilities**. To obtain such authorization, Freeport LNG must file with the Secretary documentation that it has received all applicable authorizations required under federal law (or evidence of waiver thereof).
9. Freeport LNG must receive written authorization from the Director of OEP, or the Director's designee, **prior to introducing hazardous fluids into the Project facilities**. Instrumentation and controls, hazard detection, hazard control, and security components/systems necessary for the safe introduction of such fluids shall be installed and functional.
10. Freeport LNG must receive written authorization from the Director of OEP, or the Director's designee, **before placing the Project into service**. Such authorization will only be granted following a determination that rehabilitation and restoration of the right-of-way and other areas affected by the Project are proceeding satisfactorily.
11. **Within 30 days of placing the authorized facilities in service**, Freeport LNG shall file an affirmative statement with the Secretary, certified by a senior company official:
 - a. that the facilities have been constructed in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or

- b. identifying which of the conditions in the Order Freeport LNG has complied with or will comply with. This statement shall also identify any areas affected by the Project where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.

Information pertaining to the following specific recommendations shall be filed with the Secretary for review and written approval by the Director of OEP, or the Director's designee, within the timeframe indicated by each recommendation. Specific engineering, vulnerability, or detailed design information meeting the criteria specified in Order No. 833 (Docket No. RM16-15-000), including security information, must be submitted as critical energy infrastructure information pursuant to 18 CFR 388.113. See Critical Electric Infrastructure Security and Amending Critical Energy Infrastructure Information, Order No. 833, 81 Fed. Reg. 93,732 (December 21, 2016), FERC Stats. & Regs. 31,389 (2016). Information pertaining to items such as offsite emergency response, procedures for public notification and evacuation, and construction and operating reporting requirements would be subject to public disclosure. All information shall be filed **a minimum of 30 days** before approval to proceed is requested.

12. **Prior to initial site preparation**, Freeport LNG shall file an overall Project schedule, which includes the proposed stages of the commissioning plan.
13. **Prior to initial site preparation**, Freeport LNG shall file quality assurance and quality control procedures for construction activities.
14. **Prior to initial site preparation**, Freeport LNG shall file a SIMOPS Plan for construction activities.
15. **Prior to initial site preparation**, Freeport LNG shall file procedures for controlling access during construction.
16. **Prior to initial site preparation**, Freeport LNG shall file a plot plan of the final design showing all major equipment, structures, and buildings.
17. **Prior to initial site preparation**, Freeport LNG shall file a damage prevention program for buried piping, as well as plans to place line markers over buried piping.
18. **Prior to initial site preparation**, Freeport LNG shall file its updated Emergency Response Plan to include the Noble Gas Project.
19. **Prior to construction of final design**, Freeport LNG shall file P&IDs, specifications, and procedures that clearly show and specify the tie-in details required to safely connect subsequently constructed facilities with the operational facilities.
20. **Prior to construction of final design**, Freeport LNG shall include BOG supply and return ESD valves within the FERC jurisdictional design and associated P&IDs.

21. **Prior to construction of final design**, Freeport LNG shall file cause-and-effect matrices for the BOG supply and return ESD valves.
22. **Prior to commissioning**, Freeport LNG shall file a plan for clean-out, dry-out, purging, and tightness testing. This plan must address the requirements of the American Gas Association's Purging Principles and Practice, and shall provide justification if not using an inert or non-flammable gas for clean-out, dry-out, purging, and tightness testing.
23. **Prior to commissioning**, Freeport LNG shall file the procedures for pressure/leak tests which address the requirements of ASME B31.3. In addition, Freeport LNG shall file a line list with pneumatic and hydrostatic test pressures.
24. **Prior to commissioning**, Freeport LNG shall tag all instrumentation and valves in the field, including drain valves, vent valves, main valves, and car-sealed or locked valves.
25. **Prior to commissioning**, Freeport LNG shall file updates addressing the Noble Gas Project in the operation and maintenance procedures and manuals, as well as safety procedures.
26. **Prior to introduction of hazardous fluids**, Freeport LNG shall complete and document a pre-startup safety review to ensure that installed equipment meets the design and operating intent of the facility. The pre-startup safety review must include any changes since the last hazard review, operating procedures, and operator training. A copy of the review with a list of recommendations, and actions taken on each recommendation, shall be filed.
27. **Prior to commencement of service**, Freeport LNG shall notify the FERC staff of any proposed revisions to the security plan and physical security of the plant.
28. **Prior to commencement of service**, Freeport LNG shall label piping with fluid service and direction of flow in the field, in addition to the pipe labeling requirements of NFPA 59A.

In addition, we recommend that the following measures shall apply **throughout the life** of the Project:

32. The jurisdictional facilities installed as part of the Noble Gas Project shall be subject to the same incident reporting requirements stated in the Commission's May 17, 2019 Order for the Freeport LNG Liquefaction Train 4 Project under Docket No. CP17-470-000.
33. The jurisdictional facilities installed as part of the Noble Gas Project shall be subject to the regular FERC staff technical reviews and site inspection on at least an **annual** basis or more frequently as circumstances indicate.
34. Freeport LNG shall file semi-annual operational reports for the jurisdictional facilities at the Noble Gas Project that meet the requirements stated in the Commission's May 17,

2019 Order for the Freeport LNG Liquefaction Train 4 Project under Docket No. CP17-470-000.

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