EXHIBIT 33

Federal Energy Regulatory Commission
Office of Energy Projects
Washington, DC 20426

Rio Grande LNG Project
Final Environmental Impact Statement
Volume I

Rio Grande LNG, LLC and Rio Bravo Pipeline Company, LLC

April 2019
Docket Nos. CP16-454-000, CP16-455-000
FERC/EIS-0287F

Cooperating Agencies:

U.S. Environmental Protection Agency

U.S. Department of Transportation

U.S. Coast Guard

U.S. Department of Energy

U.S. Army Corps of Engineers

U.S. Fish and Wildlife Service

Federal Aviation Administration

National Park Service

National Oceanic Atmospheric Administration - National Marine Fisheries Service

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426

OFFICE OF ENERGY PROJECTS

In Reply Refer To:
OEP/DG2E/Gas 4
Rio Grande LNG, LLC
Rio Bravo Pipeline
Company, LLC
RG LNG Project
Docket Nos. CP16-454-000 and
CP16-455-000

TO THE INTERESTED PARTY:

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared a final environmental impact statement (EIS) for the Rio Grande LNG Project (Project) proposed by Rio Grande LNG, LLC (RG LNG) and Rio Bravo Pipeline Company, LLC (RB Pipeline) (collectively referred to as the RG Developers) in the above-referenced dockets. RG LNG requests authorization pursuant to section 3(a) of the Natural Gas Act (NGA) to construct and operate liquefied natural gas (LNG) export facilities in Cameron County, Texas, and RB Pipeline requests a Certificate of Public Convenience and Necessity pursuant to section 7(c) of the NGA to construct, operate, and maintain a new pipeline system in Jim Wells, Kleberg, Kenedy, Willacy, and Cameron Counties, Texas.

The final EIS assesses the potential environmental effects of the construction and operation of the Project in accordance with the requirements of the National Environmental Policy Act (NEPA). The FERC staff concludes that construction and operation of the Rio Grande LNG Project would result in some adverse environmental impacts, but these impacts would be reduced to less than significant levels. However, the Rio Grande LNG Project, combined with other projects within the geographic scope, including the Texas LNG and Annova LNG Projects, would contribute to potential significant cumulative impacts from construction noise during nighttime pile-driving, sediment/turbidity, and shoreline erosion within the Brownsville Ship Channel during operations from vessel transits; on the federally listed ocelot and jaguarundi from habitat loss and potential for increased vehicular strikes during construction; on the federally listed northern aplomado falcon from habitat loss in combination with past actions; and on visual resources from the presence of aboveground structures. Construction and operation of the Rio Grande LNG Project would result in mostly temporary or short-term environmental impacts; however, some long-term and permanent environmental impacts would occur.

The U.S. Army Corps of Engineers, U.S. Coast Guard, U.S. Department of Energy, U.S. Department of Transportation's (DOT) Pipeline and Hazardous Materials Safety Administration, the DOT's Federal Aviation Administration, the U.S. Fish and Wildlife Service, the National Park Service, the U.S. Environmental Protection Agency, and the

National Oceanic and Atmospheric Administration – National Marine Fisheries Service participated as cooperating agencies in the preparation of the EIS. Cooperating agencies have jurisdiction by law or special expertise with respect to resources potentially affected by the proposal and participate in the NEPA analysis. Although the cooperating agencies provided input to the conclusions and recommendations presented in the final EIS, the agencies will present their own conclusions and recommendations in their respective Records of Decision for the Project.

The final EIS addresses the potential environmental effects of the construction and operation of the following proposed facilities:

- six liquefaction trains at the Rio Grande LNG Terminal, each with a nominal capacity of 4.5 million tons per annum of LNG for export, resulting in the total nominal capacity of 27.0 million tons per annum;
- four LNG storage tanks, each with a net capacity of 180,000 cubic meters;
- LNG truck loading facilities with four loading bays, each with the capacity to load 12 to 15 trucks per day;
- a refrigerant storage area and truck unloading facilities;
- a condensate storage area and truck loading facilities;
- a new marine slip with two LNG vessel berths to accommodate simultaneous loading of two LNG vessels, an LNG vessel and support vessel maneuvering area, and an LNG transfer system;
- a materials off-loading facility;
- 2.4 miles of 42-inch-diameter pipeline, including 0.8 mile of dual pipeline, to gather gas from existing systems in Kleberg and Jim Wells Counties (referred to as the Header System);
- 135.5 miles of parallel 42-inch-diameter pipelines originating in Kleberg County and terminating at the Rio Grande LNG Terminal in Cameron County (referred to as Pipelines 1 and 2);
- four stand-alone metering sites along the Header System;
- two new interconnect booster compressor stations, each with a metering site;
- three new compressor stations (one at the LNG Terminal site); and

- other associated utilities, systems, and facilities (yards, access roads, etc.).

The Commission mailed a copy of the *Notice of Availability* of the final EIS to federal, state, and local government representatives and agencies; elected officials; environmental and public interest groups; Native American tribes; potentially affected landowners and other interested individuals and groups; and newspapers and libraries in the project area. The final EIS is only available in electronic format. It may be viewed and downloaded from the FERC's website (www.ferc.gov), on the Environmental Documents page (https://www.ferc.gov/industries/gas/enviro/eis.asp). In addition, the final EIS may be accessed by using the eLibrary link on the FERC's website. Click on the eLibrary link (https://www.ferc.gov/docs-filing/elibrary.asp), click on General Search, and enter the docket number in the "Docket Number" field, excluding the last three digits (i.e. CP16-454 or CP16-455). Be sure you have selected an appropriate date range. For assistance, please contact FERC Online Support at FercOnlineSupport@ferc.gov or toll free at (866) 208-3676, or for TTY, contact (202) 502-8659.

Additional information about the Project is available from the Commission's Office of External Affairs, at **(866) 208-FERC**, or on the FERC website (www.ferc.gov) using the eLibrary link. The eLibrary link also provides access to the texts of all formal documents issued by the Commission, such as orders, notices, and rulemakings.

In addition, the Commission offers a free service called eSubscription that allows you to keep track of all formal issuances and submittals in specific dockets. This can reduce the amount of time you spend researching proceedings by automatically providing you with notification of these filings, document summaries, and direct links to the documents. Go to www.ferc.gov/docs-filing/esubscription.asp.

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ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
µg	micrograms
µPa	micropascal
AAQS	Ambient Air Quality Standards
ACHP	Advisory Council on Historic Preservation
ACI	American Concrete Institute
AEP	American Electric Power
AIChE	American Institute of Chemical Engineers
Annova	Annova LNG Common Infrastructure, LLC, Annova LNG Brownsville A, LLC, Annova LNG Brownsville B, LLC, and Annova LNG Brownsville C, LLC
API	American Petroleum Institute
AQCR	Air Quality Control Region
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ATWS	additional temporary workspace
BA	Biological Assessment
BACT	Best Available Control Technology
BCC	Birds of Conservation Concern
Bcf/d	billion cubic feet per day
BCR	Bird Conservation Region
BGEPA	Bald and Golden Eagle Act
BLEVE	boiling liquid expanding vapor explosion
BMP	best management practice
BND	Brownsville Navigational District
BOG	boil-off gas
BS	British Standard
BSC	Brownsville Ship Channel
BTEX	benzene, toulene, ethylbenzene, and xylene
Btu/m^2-hr	British thermal units per square foot per hour
C3MR™	Air Products and Chemicals, Inc. liquefaction process
CAA	Clean Air Act
CAMx	Comprehensive Air Quality Model with Extensions
Cat	Category
CCPS	Center for Chemical Process Safety
CCRMA	Cameron County Regional Mobility Authority
CEB	Comite Euro-International du Beton

CEQ	Council on Environmental Quality
Certificate	Certificate of Public Convenience and Necessity
CFE	Comisión Federal de Electricidad
CFR	Code of Federal Regulations
CH_4	methane
Cheniere Corpus Christi	Cheniere Corpus Christi LNG, LLC and Cheniere Corpus Christi Pipeline, LP
CI ICE	compression ignition internal combustion engines
CIP	cast-in-place
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide-equivalent
Coast Guard	U.S. Coast Guard
COE	U.S. Army Corps of Engineers
Commission	Federal Energy Regulatory Commission
Corpus Christi	Corpus Christi LNG, LLC
COTP	Captain of the Port
CP	calculation point
CPT	cone penetration test
CRP	Conservation Reserve Program
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
CZMP	Coastal Zone Management Program
dB	decibels
dBA	A-weighted decibel scale
DHS	Department of Homeland Security
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DPS	distinct population segment
DR	dimension ratio
EEM	estuarine emergent marsh
EFH	essential fish habitat
EI	environmental inspector
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
EPAct 2005	Energy Policy Act of 2005
ERP	Emergency Response Plan

ESA	Endangered Species Act
ESD	emergency shutdown
ESS	estuarine scrub-shrub
EUS	estuarine unconsolidated shore
FAA	Federal Aviation Administration
FEED	Front End Engineering Design
FEMA	Federal Emergency Management Administration
FERC	Federal Energy Regulatory Commission
FHWA	Federal Highway Administration
FIS	Flood Insurance Study
FLEX	Freeport LNG Expansion and FLNG Liquefaction, LLC
FM	farm to market
FRA	Federal Railroad Administration
Freeport Development	Freeport LNG Development, L.P.; FLNG LNG, LLC; FLNG LNG 2, LLC; and FLNG LNG 3, LLC
FSA	Farm Service Agency
ft^2	square feet
FTA	free trade agreement
Fugro	Fugro Consultants, Inc.
FWCA	Fish and Wildlife Coordination Act
FWS	U.S. Fish and Wildlife Service
GBLNG	Galveston Bay LNG, LLC
GHG	greenhouse gases
GIS	geographic information system
GMFMC	Gulf of Mexico Fisheries Management Council
gpm	gallons per minute
GPP	Golden Pass Products LLC
Gulf Coast	Gulf Coast LNG Export, LLC
GWP	global warming potential
H_2S	hydrogen sulfide
HAP	hazardous air pollutant
HAZID-ENVID	Hazard Identification - Environmental Hazard Identification
HAZOP	hazard and operability review
HCA	high consequence areas
HDD	horizontal directional drill
HGB	Houston-Galveston-Brazoria
HMI	human machine interfaces
hp	horsepower

HUC	hydrologic unit code
IBC	International Building Code
IBWC	International Boundary and Water Commission
ILI	in-line inspection
IMO	International Maritime Organization
IMP	integrity management program
IPaC	Information for Planning and Consultation
ISA	Interatnional Society of Automation
ISO	International Organization for Standardization
KOP	key observation point
kV	kilovolt
kW/m^2	kilowatts per square meter
lb	pounds
L_{dn}	day-night sound level
L_{eq}	equivalent sound level
LFL	lower flammability limit
L_{max}	maximum sound level observed during a measurement period or
LNG	liquefied natural gas
LOD	Letter of Determination
LOI	Letter of Intent
LOR	Letter of Recommendation
LOS	Level-of-Service
LPG	liquefied petroleum gas
m^3	cubic meter
m^3/hr	cubic meters per hour
MAOP	maximum allowable operating pressure
MBCP	Migratory Bird Conservation Plan
MBTA	Migratory Bird Treaty Act
mcy	million cubic yards
Memorandum	Memorandum of Understanding on Natural Gas Transportation Facilities
MEOW	maximum envelope of water
mg/L	milligrams per liter
MLLW	mean low low water
MLV	mainline valve
MMPA	Marine Mammal Protection Act
MMscf	million standard cubic foot
MOF	material offloading facility

MOU	Memorandum of Understanding
MP	milepost
mph	miles per hour
MSA	metropolitan statistical area
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
MTPA	million tons per annum
MTSA	Maritime Transportation Security Act
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAVD 88	North American Vertical Datum 88
NEPA	National Environmental Policy Act of 1969
NESHAP	National Emissions Standards for Hazardous Air Pollutant
NFPA	National Fire Protection Association
NGA	Natural Gas Act
NGL	natural gas liquid
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPIL	The Williams Transco North Padre Island Lateral
NPS	National Park Service
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NSA	noise sensitive area
NSPS	New Source Performance Standards
NSR	New Source Review
NVIC	Navigation and Vessel Inspection Circular
NWI	National Wetlands Inventory
NWR	national wildlife refuge
ODMDS	Ocean Dredged Material Disposal Site
OEP	Office of Energy Projects
P&ID	piping and instrument diagrams
PA	Placement Area
PEM	palustrine emergent

PFO	palustrine forested
PGA	peak ground acceleration
PHMSA	Pipeline and Hazardous Materials Safety Administration
PIR	Potential Impact Radius
Plan	FERC Upland Erosion Control, Revegetation, and Maintenance Plan
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to 10 microns
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than or equal to 2.5 microns
Port Arthur	Port Arthur LNG, LLC and Port Arthur Pipeline, LLC
ppb	part(s) per billion
ppm	part(s) per million
Procedures	The FERC Wetland and Waterbody Construction and Mitigation Procedures
Project	The Rio Grande LNG Project
PSD	Prevention of Significant Deterioration
psi	pounds per square inch
PSS	palustrine scrub-shrub
PVB	pressure vessel burst
RB Pipeline	Rio Bravo Pipeline Company, LLC
RG Developers	Rio Grande LNG, LLC (RG LNG) and Rio Bravo Pipeline Company, LLC
RG LNG	Rio Grande LNG, LLC
RHA	Rivers and Harbors Act
RMP	EPA Risk Management Plan
RMS	root mean square
ROW	right-of-way
RRC	Railroad Commission of Texas
RV	recreational vehicle
SAFE	State Acres for Wildlife Enhancement
SCADA	Supervisory Control and Data Acquisition System
SCPT	seismic cone penetration test
Secretary	Secretary of the Commission
SH	State Highway
SHPO	State Historic Preservation Office
SIL	significant impact level
SIS	safety instrument system
SLOSH	Sea, Lake, and Overland Surge from Hurricanes

SO_2	sulfur dioxide
SPCC Plan	Spill Prevention, Control, and Countermeasure Plan
SSE	safe shutdown earthquake
SSURGO	NRCS Soil Survey Geographic database
STSSN	Sea Turtle Stranding and Salvage Network
SWEL	standing water elevation
SWPPP	Stormwater Pollution Prevention Plan
TAC	Texas Administrative Code
TAHC	Texas Animal Health Commission
TCEQ	Texas Commission of Environmental Quality
TDWR	Texas Department of Water Resources
Texas Eastern	Texas Eastern Transmission Pipeline
Texas LNG	Texas LNG Brownsville
TGS	Texas Gas Service Company
The Rio Bravo Pipeline	the proposed new pipeline system and facilities in Jim Wells, Kleberg, Kenedy, Willacy, and Cameron Counties, Texas
The Rio Grande LNG Terminal	facilities necessary to liquefy and export natural gas at a proposed site along the Brownsville Ship Channel in Cameron County, Texas
TPG	The Perryman Group
TPWD	Texas Parks and Wildlife Department
tpy	tons per year
TWDB	Texas Water Development Board
TWIC	Transportation Worker Identification Credential
TxDOT	Texas Department of Transportation
USC	United States Code
USGCRP	U.S. Global Change Research Program
USGS	U.S. Geological Survey
VCP	Valley Crossing Pipeline
VLCC	very large crude carrier
VOC	volatile organic compounds
WSA	Waterway Suitability Assessment
yd^3	cubic yard

EXECUTIVE SUMMARY

On May 5, 2016, Rio Grande LNG, LLC (RG LNG) and Rio Bravo Pipeline Company, LLC (RB Pipeline), filed a joint application with the Federal Energy Regulatory Commission (Commission or FERC) for authorization pursuant to Sections 3(a) and 7(c) of the Natural Gas Act (NGA). In Docket No. CP16-454-000, RG LNG requests authorization under Section 3(a) of the NGA and Part 153 of the Commission's regulations to site, construct, and operate facilities necessary to liquefy and export natural gas at a proposed site (the Rio Grande LNG Terminal) along the Brownsville Ship Channel (BSC) in Cameron County, Texas. In Docket No. CP16-455-000, RB Pipeline requests a Certificate of Public Convenience and Necessity (Certificate) pursuant to Section 7(c) of the NGA and Part 157 of the Commission's regulations to site, construct, operate, and maintain a new pipeline system (the Rio Bravo Pipeline or Pipeline System) and related facilities in Jim Wells, Kleberg, Kenedy, Willacy, and Cameron Counties, Texas. Collectively, RG LNG and RB Pipeline are called RG Developers; the Rio Grande LNG Terminal and the Rio Bravo Pipeline are collectively called the Rio Grande LNG Project (Project).

The purpose of this environmental impact statement (EIS) is to inform FERC decision-makers, the public, and the permitting agencies about the potential adverse and beneficial environmental impacts of the proposed Project and its alternatives, and recommend mitigation measures that would reduce adverse impacts to the extent practicable. We[1] prepared this EIS to assess the environmental impacts associated with construction and operation of the Project as required under the National Environmental Policy Act of 1969, as amended (NEPA). Our analysis is based on information provided by RG Developers, and further developed from data requests; field investigations; scoping; literature research; contacts with or comments from federal, state, and local agencies; and comments from individual members of the public.

The FERC is the lead agency for the preparation of the EIS. The U.S. Army Corps of Engineers (COE), U.S. Coast Guard (Coast Guard), U.S. Department of Energy (DOE), U.S. Department of Transportation's (DOT) Pipeline and Hazardous Materials Safety Administration and Federal Aviation Administration (FAA), the U.S. Fish and Wildlife Service (FWS), the National Park Service (NPS), the U.S. Environmental Protection Agency (EPA), and the National Oceanic and Atmospheric Administration – National Marine Fisheries Service (NMFS) are participating in the NEPA review as cooperating agencies.[2]

PROPOSED ACTION

RG Developers' stated purpose of the Rio Grande LNG Project is to develop, own, operate, and maintain a natural gas pipeline system and a liquefied natural gas (LNG) export facility in South Texas that provides an additional source of firm, long-term, and competitively priced LNG to the global market. The Project is intended to access natural gas from the Agua Dulce hub area and would also provide LNG for truck transport and for fueling operations. Any exports would be consistent with authorizations from the DOE. The DOE granted an

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

[2] A cooperating agency is an agency that has jurisdiction over all or part of a project area and must make a decision on a project, and/or an agency that provides special expertise with regard to environmental or other resources.

authorization to RG LNG for export to countries having a free trade agreement with the United States that includes national treatment for trade in natural gas on August 17, 2016. An application for export to non-free trade agreement nations is pending the DOE's review of RG LNG's application, which was filed on December 23, 2015.

Rio Grande LNG Terminal

The Rio Grande LNG Terminal would be located on about 750.4 acres of a 984.2-acre parcel of land along the northern shore of the BSC in Cameron County, Texas,[3] approximately 9.8 miles east of Brownsville and about 2.2 miles west of Port Isabel. The Project, which is currently expected to begin operations in Year 4 of construction, would produce a nominal capacity of about 27 million tons per annum of LNG during its minimum 20-year life (which could be extended to a 50-year life). The LNG Terminal would include the following major facilities:

- six liquefaction trains, each with a liquefaction capacity of 4.5 million tons per annum of LNG for export;
- four full-containment LNG storage tanks, each with a net capacity of 180,000 cubic meters;
- docking facilities for two LNG carriers and a turning basin;
- LNG truck loading facilities with four loading bays; and
- RB Pipeline's Compressor Station 3, a metering site, and the interconnection to the Pipeline System.

Rio Bravo Pipeline System

The LNG Terminal would receive natural gas via the proposed Rio Bravo Pipeline System, which would connect the LNG Terminal to the existing infrastructure near the Agua Dulce hub[4] Nueces County. The Pipeline System would include a 42-inch-diameter Header System, which would include dual pipelines for the first 0.8 mile of its route, and dual 42-inch-diameter mainline pipelines (individually identified as Pipeline 1 and Pipeline 2). The Header System would be about 2.4 miles of pipeline in Kleberg and Jim Wells Counties that would collect gas from six existing pipeline systems for transport into Pipelines 1 and 2. Pipelines 1 and 2 would be about 135.5 miles long, originate in Kleberg County, and transit through Kenedy, Willacy, and Cameron Counties before terminating at Compressor Station 3 within the boundaries of the LNG Terminal. RB Pipeline proposes three compressor stations and two interconnect booster compressor stations along the Pipeline System. The Pipeline System, when complete, would provide the Rio Grande LNG Terminal with about 4.5 billion cubic feet per day of gas. Although the Header System and Pipeline 1 are proposed to be constructed at the same

[3] All Project locations referred to in this EIS (including towns, counties, and other municipalities) are within the state of Texas, unless specifically stated otherwise.

[4] A natural gas hub is an interconnection of two or more pipelines that allows the transfer of gas.

time, Pipeline 2 would be constructed on a separate schedule (approximately 18 months after the completion of Pipeline 1) to accommodate the staged construction of the LNG Terminal; therefore, RB Pipeline estimates that Pipeline 1 would begin operation in Year 4 of construction, concurrent with the LNG Train 1.

PUBLIC INVOLVEMENT

On March 20, 2015, RG Developers filed a request with the FERC to use our pre-filing review process. This request was approved on April 13, 2015, and pre-filing Docket No. PF15-20-000 was established in order to place information filed by RG Developers, documents issued by the FERC, as well as comments from the public, agencies, Native American tribes, organizations, and other stakeholders into the public record. RG Developers held open houses in Kingsville, Raymondville, and Brownsville on May 19, 20, and 21, 2015, respectively, to provide information to the public about the Rio Grande LNG Project. FERC staff participated in the meetings, describing the FERC process and providing those attending with information on how to file comments with the FERC.

On July 23, 2015, the FERC issued a *Notice of Intent to Prepare an Environmental Impact Statement for the Planned Rio Grande LNG Project and Rio Bravo Pipeline Project, Request for Comments on Environmental Issues, and Notice of Public Scoping Meetings*. This notice was sent to about 720 interested parties including federal, state, and local officials; agency representatives; conservation organizations; Native American tribes; local libraries and newspapers; and property owners in the vicinity of the proposed Project. Publication of the *Notice of Intent* established a 30-day public scoping period for the submission of comments, concerns, and issues related to the environmental aspects of the Project. In addition, in July and August 2015, we met with representatives of interested agencies, including the FWS, COE, Coast Guard, NMFS, NPS, and the Texas Parks and Wildlife Department (TPWD) and conducted a site visit at the LNG Terminal site.

During the scoping period, we received comments on a variety of environmental issues. Substantive environmental issues identified through this public review process are addressed in this EIS. The transcripts of the public scoping meetings and all written comments are part of the FERC's public record for the Rio Grande LNG Project and are available for viewing on the FERC internet website (http://www.ferc.gov).[5]

On October 12, 2018, we issued a *Notice of Availability of the Draft Environmental Impact Statement for the Proposed Rio Grande LNG Project.* This notice, which was published in the Federal Register, listed the date and locations of public comment sessions and established a closing date of December 3, 2018, for receiving comments on the draft EIS. Copies of the notice were mailed to 3,253 stakeholders. The EPA noticed the draft EIS in the Federal Register on October 18, 2018. We held three public comment sessions in the Project area to solicit and receive comments on the draft EIS. These sessions were held on November 13, 14, and 15, 2018, in Kingsville, Raymondville, and Port Isabel, respectively. The sessions provided the

[5] To access public documents on the FERC website, use the "eLibrary" link, select "General Search" from the eLibrary menu, and enter the docket number, excluding the last three digits, in the "Docket Number" field (i.e., PF15-20). Be sure to select an appropriate date range.

public an opportunity to present oral comments directly to FERC staff (which were recorded by a court reporter) on the environmental analysis presented in the draft EIS. A total of 63 individuals provided oral comments. We also received 861 comment and form letters from federal agencies, companies/organizations, and individuals in response to the draft EIS. Transcripts from the public sessions, as well as written comment letters, were entered into the public record and are available for viewing on FERC's eLibrary website (www.ferc.gov).[6] All substantive environmental comments on the draft EIS have been addressed in this final EIS. In addition, issues raised in the comments and our responses are provided in appendix R of this final EIS.

PROJECT IMPACTS

We evaluated the potential impacts of construction and operation of the Project on geology; soils; water use and quality; wetlands; vegetation; wildlife, aquatic resources, and essential fish habitat (EFH); threatened, endangered, and other special-status species; land use, recreation, and visual resources; socioeconomics; cultural resources; air quality and noise; reliability and safety; and cumulative impacts. Where necessary, we recommend additional mitigation to minimize or avoid these impacts. Section 5 of the EIS contains a compilation of our recommendations.

Overall, construction and installation of facilities for the Project would require temporary disturbance of about 3,633.2 acres of land. Following construction, the LNG Terminal site and pipeline facilities would encompass about 2,149.2 acres. The remaining 1,484.0 acres would return to pre-construction conditions and uses. Based on our analysis, scoping, and agency consultations, the major issues are impacts on surface water resources; wetlands; wildlife and aquatic resources; threatened and endangered species; land use, recreation, and visual resources; socioeconomics; cultural resources; air quality; noise; reliability and safety; and cumulative impacts.

Surface Water Resources

The proposed LNG Terminal site is on the north shore of the BSC, a man-made, marine navigation channel that connects to the Gulf of Mexico. The BSC, along with its Entrance Channel and Jetty Channel, form the Brazos Island Harbor. As a separate federal action, the COE has determined that deepening the Brazos Island Harbor from its current depth of -42 feet relative to mean lower low water (MLLW) to -52 feet MLLW would be in the national interest and would not result in significant environmental impacts (COE 2014); however, the deepening has not yet begun. The western boundary of the LNG Terminal site is the Bahia Grande Channel, which was constructed in 2005 to connect the BSC to the Bahia Grande to restore tidal exchange to the Bahia Grande (FWS 2015a); this channel is proposed for future widening from its current 34-foot width to a 250-foot width to increase tidal exchange (Ocean Trust 2009, FWS 2010a).

[6] The public meeting transcripts are available on FERC's elibrary website (see accession numbers 20190102-4002, 20190102-4003, and 20190102-4005).

Construction and operation of the LNG Terminal would result in permanent impacts on 174.8 acres of open water, including impacts on the BSC and an open water lagoon within the LNG Terminal site. A total of 75.8 acres of open water would be converted to industrial/commercial land for construction of the LNG Terminal, and an additional 68.7 acres of open water within the BSC would be dredged for the material offloading facility (to a maximum depth of -12 feet MLLW) and for the marine berths and turning basin (to a maximum depth of -45 feet MLLW). The remainder (30.2 acres) would be modified to create the firewater canal or marine facilities. RG LNG would be required to mitigate for the permanent loss of open water resources and proposes to preserve open water within an off-site wetland mitigation area about 1 mile south of the Project.

Dredging, which would be conducted by hydraulic cutter suction or mechanical dredge, would result in increased suspended solid and turbidity levels in the BSC. The dredged material would be dominated by cohesive clay sediments and would settle within a few hours after dredging (COE 2014). All dredging would be conducted using equipment designed to meet the Texas state water quality standards and in accordance with applicable COE permit requirements. Disposal of dredged material would be conducted in accordance with RG LNG's draft Dredged Material Management Plan, as finalized; however, the final management of dredged material would be determined by the Brownsville Navigation District and COE, in consultation with other federal, state, and local resource agencies and interested stakeholders, including the EPA, NMFS, FWS, and Texas Commission on Environmental Quality (TCEQ). Impacts on surface water quality would be adequately mitigated through adherence to applicable COE permits and requirements for dredging and dredged material management. We conclude that dredging and dredged materials placement for construction of the LNG Terminal would have temporary and minor impacts on water quality.

RG LNG estimates that 880 barges and support vessels would deliver construction materials and equipment to the material offloading facility and Port of Brownsville during LNG Terminal construction. During operation, about 312 LNG carriers would call on the LNG Terminal per year (about 6 LNG carriers per week). Vessel traffic during construction and operation could increase shoreline erosion and suspended sediment concentrations due to increased wave action. To minimize these impacts, the channel embankments and slope of the LNG Terminal site along the BSC, the marine loading berths, and the turning basin would be stabilized using rip-rap. Although FERC does not have jurisdiction over the transit of LNG carriers through the BSC, final permitting for the Brazos Harbor Channel Improvement Project should account for the impacts of these larger vessels on the stability of unarmored shorelines due to vessel passage and reflective wave energy.

The Pipeline System would cross 63 waterbodies, including 21 perennial streams, 19 intermittent streams, 10 ephemeral streams, and 13 ponds and reservoirs. These waterbodies would be crossed using various methods, including open cut, conventional bore, and horizontal directional drill (HDD). No active surface water intakes for public water supply are within 3 miles downstream of the Pipeline System or LNG Terminal. The Pipeline System would cross two waterbodies regulated by the International Boundary and Water Commission, and RB Pipeline is developing site-specific HDD crossing plans for these waterbodies that would adhere to the International Boundary and Water Commission's criteria.

RB Pipeline would minimize potential impacts on surface waters by implementing its Project-specific *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures) and utilizing trenchless crossing methods for 26 of the 34 waterbodies anticipated to be flowing at the time of construction. Following construction of each waterbody crossing, waterbody contours would be restored to pre-construction conditions, and riparian areas would be revegetated using native grasses, legumes, and woody species and allowed to return to pre-construction conditions. With implementation of the Procedures; Stormwater Pollution Prevention Plan; and Spill Prevention, Control, and Countermeasures Plans; we conclude that impacts on water resources would be adequately minimized.

Wetlands

Construction of the Project would affect a total of 327.7 acres of wetlands, of which 182.4 acres would be permanently converted to industrial land or open water within the footprint of the LNG Terminal, and 107.3 acres would be maintained in an herbaceous wetland state within the permanent right-of-way for the pipelines. The remaining 38.0 acres would be allowed to revert to pre-construction conditions. RG Developers would implement the mitigation measures in their Procedures to control erosion and restore the grade and hydrology after construction in wetlands. However, in accordance with the Project-specific Procedures, RB Pipeline would consult with the COE to develop a Project-specific wetland restoration plan. RG LNG is also developing a plan to mitigate for wetland impacts; its Conceptual Mitigation Plan identifies the potential to acquire and preserve a portion of the Loma Ecological Preserve in perpetuity, and to transfer the land to a land manager, such as the FWS. The COE has not approved RG LNG's Conceptual Mitigation Plan and is working with RG Developers, in conjunction with the FWS, EPA, and the TPWD, to revise the proposed mitigation measures as appropriate. Construction of the LNG Terminal would not commence prior to finalization of wetland mitigation plans and issuance of the COE's Clean Water Act Section 404/Section 10 permit.

RG LNG originally proposed to use a temporary haul road for construction to transport fill material from the Port Isabel dredge pile. We reviewed RG LNG's proposal and determined that construction of the temporary haul road through wetlands was not adequately justified. We therefore recommended in the draft EIS that RG LNG conduct a feasibility assessment for transporting fill material from the Port Isabel dredge pile (if necessary) to the LNG Terminal site via the existing system of roads or via barges. As a result of our recommendation in the draft EIS, RG LNG is no longer pursuing use of the temporary haul road, thus the associated wetland impacts would be avoided.

With adherence to measures contained in the Project-specific Procedures and applicable COE permits, impacts on wetlands would be reduced, with the majority of adverse permanent impacts occurring at the LNG Terminal site. We anticipate that the COE's Clean Water Act Section 404/Section 10 permit for the Project would be conditioned to effectively offset the

Project-related adverse impacts on waters of the United States by wetland mitigation, such that impacts would be reduced to less than significant levels.

Wildlife and Aquatic Resources

A total of about 3,220.1 acres of wildlife habitat would be within the footprint of the LNG Terminal and pipeline facilities; of this, 2,055.9 acres would be within the operational footprint of the Project (including 737.8 acres that would be permanently converted to developed land at the LNG Terminal site). Wildlife would be directly displaced from the LNG Terminal footprint, and some wildlife may be indirectly displaced within a larger area due to the increase in noise and lighting during construction and operation of the LNG Terminal. In response to comments on the draft EIS regarding concern over facility lighting, we recommend that RG Developers finalize Project lighting plans in coordination with the FWS and TPWD to minimize potential effects on wildlife. The direct loss of habitat and the indirect effects associated with displacement indicate that the construction and operation of the proposed LNG Terminal would result in a minor to moderate, permanent impact on local wildlife. Construction and operation of the Pipeline System would generally be short-term and limited to the construction period.

The proposed Project is within the migratory bird Central Flyway, which generally covers the central portion of North America and into Central America. South Texas acts as a funnel for migratory birds as they try to avoid flying too far east (into open Gulf waters) or west (into desert habitat). RG LNG proposes measures to avoid or minimize impacts on migratory birds and has developed a Migratory Bird Conservation Plan outlining these measures, which it would implement, as practicable, during construction of the Project. RB Pipeline would also implement measures in this plan if vegetation clearing along the Pipeline System would take place during the bird nesting period between March 1 and August 31. Because of the high use of habitat at the LNG Terminal by migratory birds (including birds of conservation concern), we agree that the measures in RG LNG's Migratory Bird Conservation Plan are appropriate, and we recommend that the plan be finalized in consultation with the FWS and TPWD. We have also determined that the overall increase in nighttime lighting during operation of the proposed Project would result in permanent, but minor impacts on resident or migratory birds.

Construction of the Rio Grande LNG Project would result in minor impacts on aquatic resources due to water quality and noise impacts and direct mortality of some immobile individuals during dredging for the LNG Terminal and installation of the Pipeline System across waterbodies. During operations, the Project would have minor impacts on aquatic resources due to maintenance dredging and increased marine vessel traffic. Permanent impacts on aquatic habitat would result where open water would be converted to industrial/commercial land within the LNG Terminal site and where dredging would convert existing wetlands and mudflats to open water. Portions of the BSC, the channel to San Martin Lake, the Bahia Grande Channel, and the water column at potential dredged material disposal sites have been designated as habitats that function as EFH. Although the construction activities would result in the alteration of habitat and the mortality or displacement of individuals, the impacts on EFH and the species and life stages that utilize EFH would be temporary and minor. Consultation under the Magnuson Stevens Fishery Conservation and Management Act is complete, and given the

temporary, minor impacts on EFH, NMFS does not have EFH conservation recommendations for the Project.

Threatened, Endangered, and Other Special-status Species

A total of 25 species that are federally listed as threatened or endangered, or those that are candidates, proposed, or under review for listing, may occur in counties affected by the Project. Within these counties, or offshore of them, critical habitat has been designated for two species, the piping plover and the loggerhead sea turtle. We determined that the Project would have *no effect* on one federally listed and one candidate species, is *not likely to adversely affect* 19 federally listed (or proposed) species, and would *not result in a trend towards federal listing* for two species (one candidate and one that is under review). We have also determined that the Project would not be likely to destroy or adversely modify designated critical habitat for the piping plover or loggerhead sea turtle. Our *not likely to adversely affect* determinations for the West Indian manatee and federally listed plants are based on our recommendations to conduct appropriate training and complete applicable surveys, respectively. Similarly, our *not likely to adversely affect* determination for the northern aplomado falcon is related to nest identification, monitoring, and implementation of best management practices for the species, but also accounts for its coverage under a Safe Harbor Agreement that allows development (and take) in the Project area. As RG Developers have committed to multiple mitigation measures for the protection of federally and state listed species (e.g., implementing biological monitors, following agency-recommended best management practices), we have also recommended that RG Developers file documentation demonstrating that such measures have been incorporated into its environmental training program.

We have determined that the Project *is likely to adversely affect* the ocelot and the Gulf coast jaguarundi. The ocelot breeds in two locations in South Texas, including the vicinity of the proposed pipelines in Kenedy and Willacy Counties, as well as in the Laguna Atascosa National Wildlife Refuge, adjacent to the LNG Terminal. Direct and indirect impacts on the ocelot's preferred habitat (upland shrub habitat, particularly with thornscrub vegetation) would result from Project construction and operation. Within the lower Laguna Atascosa National Wildlife Refuge, indirect impacts on the ocelot may occur from an increase in ambient sound levels, which may also render suitable habitat unattractive to ocelots. In addition, suitable habitat would be lost within the LNG Terminal site boundaries, and potentially along the pipeline route. The loss of suitable habitat, through either direct or indirect pathways, has the potential to result in significant impacts on ocelots and ocelot recovery. Although there is a lack of confirmed sightings for the jaguarundi in the Project area, its range and habitat usage overlaps that of the ocelot and, if present in the area, the jaguarundi would experience impacts similar to those discussed for the ocelot. Final mitigation requirements would be determined by FWS in its Biological Opinion and through completion of the Endangered Species Act Section 7 consultation process. Because consultation with the FWS and NMFS is ongoing, we recommend completion of any necessary Endangered Species Act consultation with these agencies prior to construction.

Land Use, Recreation, and Visual Resources

Land use in the vicinity of the Project is generally classified into the following categories: shrub/forest land, open land, non-forested wetlands, barren, open water, industrial/commercial, and agricultural. Installation of facilities for the Project would require temporary disturbance of about 3,633.2 acres of land. Following construction, the LNG Terminal site and permanent rights-of-way would encompass about 2,149.2 acres. The remaining 1,484.0 acres would return to pre-construction conditions and uses. There are no residences within 0.25 mile of the LNG Terminal, compressor stations, or booster stations, or within 50 feet of the Pipeline System. Two residential structures are within 50 feet of proposed access roads; however, these roads are existing and would not be modified for Project use.

Twelve recreation/special use areas are within 0.25 mile of the proposed Project (two National Wildlife Refuges, one National Historic Landmark, one public boat launch/fishing pier, four birding trails, one land acquisition project, and three conservation easement areas under the Conservation Reserve Program). All of these recreation/special use areas, with the exception of the Laguna Atascosa and Lower Rio Grande Valley National Wildlife Refuges, would be directly affected by construction of the pipelines. However, construction of the Pipeline System would last only a few weeks in any one area, except at 19 discrete locations (including areas adjacent to recreation/special use areas) where up to 10 weeks would be required for crossings accomplished by HDD; therefore, impacts would be temporary.

In addition to the special use areas, recreational boating and fishing activities occur within the BSC, Bahia Grande Channel, and San Martin Lake (west of the LNG Terminal site) and could be affected by construction and operation of the LNG Terminal due to increased noise, restrictions on fishing in the immediate vicinity of the LNG Terminal, and LNG and barge vessel traffic. Increased noise associated with construction of the Project could deter recreational users from fishing in the immediate vicinity of Project activities. In particular, dredging activities, which would occur 24 hours per day, 7 days per week, during a two-week period, and land- and water-based pile-driving which would occur at discrete points during construction for periods as short as a few days to as long as 5 months, could result in avoidance of these areas by recreational users. In addition, construction of the Pipeline System across the Jamie J. Zapata Memorial Boat Ramp, Fishing Pier, and Kayak Launch Pad (Zapata boat launch) would be accomplished by HDD, and could take up to 10 weeks. As a result, we have determined that there would be moderate impacts on recreational use of the Zapata boat launch during construction of the Pipeline System.

The viewshed of the proposed Project includes predominately large parcels of open land with herbaceous or scrub-shrub vegetation supporting ranch and cattle operations, as well as numerous easements for oil and gas pipelines. The BSC and State Highway (SH) 48 frame the southern and northern boundaries of the LNG Terminal, respectively. The movement of domestic and foreign products on the channel and motorists on the highway contribute to the characterization of the existing viewshed. No state-designated scenic byways or roads classified under the National Scenic Byways Program (23 U.S. Code [USC] 162) would be crossed. Given the siting of the LNG Terminal, no residences are proximal to the proposed construction work areas; however, the nature of the existing landscape (e.g., open land with limited vegetation) allows for extended views from greater distances.

Permanent changes to the visual character of the area would result from operation of the aboveground structures, most notably the LNG Terminal, which would modify the viewshed. The most prominent visual features at the LNG Terminal site would be four LNG storage tanks. Daytime visibility of the LNG Terminal would be mitigated by the use of grey coloring for the tanks, horticultural plantings, and the construction of a levee that would obstruct most construction activities and low-to-ground operational facilities from view. RG LNG is also proposing the use of ground flares, which would be partially obstructed by a 67-foot-high vertical wall. To further minimize visual impacts, lighting at the LNG Terminal would be limited to that required for safety and RG LNG would use directional lighting.

Numerous public comments identified concerns with the visual impact of the LNG Terminal to surrounding communities, specifically including Port Isabel and South Padre Island. Based on our review of visual simulations conducted by RG LNG, most public vantage points (e.g., the Port Isabel lighthouse, historic battlegrounds/landmarks, Isla Grand Hotel) are at a distance far enough away from the LNG Terminal site that impacts on the viewshed would be permanent, but negligible or minor. Visual receptors within nearby waters north of the LNG Terminal site, such as Laguna Madre, would be at lower elevations and/or far enough away such that the nearby shoreline areas would obscure the LNG Terminal site. Visual receptors at locations closer to the LNG Terminal site (e.g., SH-48, the Bahia Grande Channel, and the Zapata boat launch), would be able to discern individual structures; however, these receptors would generally not be stationary and therefore would have a short viewing time (i.e., until the vehicle or vessel passes the site).

A portion of the Project is within the designated coastal zone, which is managed by the Railroad Commission of Texas through the Texas Coastal Management Program (CMP). The boundaries of the state's coastal zone include all or parts of 18 coastal counties, including Willacy and Cameron Counties. The purpose of the Texas CMP is to manage designated coastal natural resource areas. RG Developers submitted their application and request for consistency review to the Railroad Commission of Texas on April 10, 2018. We recommend that, prior to construction, RG Developers file documentation of concurrence from the Railroad Commission of Texas that the Project is consistent with the Texas CMP.

Socioeconomics

Construction of the Project would generally have a minor impact on local populations, employment, housing, provision of community services, and property values. There would not be any disproportionately high or adverse environmental and human health impacts on low-income and minority populations from construction or operation of the Project. No residences or businesses would be displaced as a result of construction or operation of the LNG Terminal or pipeline facilities.

Construction of the LNG Terminal would require an average monthly construction workforce of 2,950 workers (peak of 5,225 workers) over the 7-year construction period; RG LNG anticipates that 30 percent of these workers would be hired locally. Construction of the pipeline facilities would require an average workforce of between 760 and 1,240 workers (peak of 1,500 workers) over two, non-consecutive 12-month periods, of which 90 percent would be non-local. Vehicular traffic associated with these workers would result in considerable increases

in local traffic, specifically along SH-48 during construction of the LNG Terminal, but traffic levels would remain well within the capacity of the roadway. Permanent, moderate increases in marine traffic within the BSC would occur as the addition of six LNG carriers per week would double the current volume of large vessel traffic within the BSC; however, the Coast Guard has determined that the waterway is suitable for Project use.

Construction of the Rio Grande LNG Project would stimulate the economy through an estimated $22.4 billion in direct expenditures by RG Developers and annual operating direct expenditures of $2.1 billion. Indirect and induced effects of the Project, including additional demands for goods and services and the spending of disposable income by workers at local businesses, would also occur. Further, RG LNG estimates that the LNG Terminal would generate about $92.9 million in property taxes in the affected counties over the first 22 years of operation (inclusive of applicable tax abatements). These expenditures and taxes would result in a moderate, permanent, and positive impact on the local economy.

Construction of the Project could impact local tourism through an increase in noise, changes in the visual landscape, and heavier traffic along SH-48. However, given the extent of tourism areas (including birding areas, National Wildlife Refuges, National Historic Landmarks, and beaches) and the distance of many of the recreational portions of the areas from the LNG Terminal site and Pipeline System, neither construction nor operation would be expected to significantly impact tourism at these locations. Waterborne tourism (e.g., fishing, charter, and tour boats), in portions of South Bay, the Zapata boat launch, and within the Bahia Grande would likely experience moderate increases in ambient noise during certain construction activities at the LNG Terminal, potentially changing visitation patterns immediately adjacent to the LNG Terminal but likely not the total number of visits to the general Project area. In addition, boaters may experience minor impacts resulting from potential delays in launching during periods of LNG carrier transit.

Cultural Resources

Two National Historic Landmarks are located within or near the extended 12-mile study area, including the Palmito Ranch Battlefield (4.1 miles from the LNG Terminal site) and the Palo Alto Battlefield (about 12 miles from the LNG Terminal site). Viewshed and noise assessments conducted by RG Developers indicated that visual impacts on the battlefields would be moderate (Palmito Ranch) and minor (Palo Alto) and that noise from construction and operation would not be audible. On March 19, 2018, the State Historic Preservation Office (SHPO) commented that visibility of the Project from identified historic resources in the area is limited, and that the proposed lighting design should help limit the Project impacts on the Palmito Ranch Battlefield National Historic Landmark. The NPS is reviewing the results of these assessments. In addition, about 30 miles of the Pipeline System would cross the King Ranch National Historic Landmark.

RG Developers have not yet completed cultural resources surveys for the Project, including the portion crossing King Ranch National Historic Landmark. Once complete, if any historic properties would be adversely affected by the Project, we recommend that a treatment plan be prepared and the SHPO and the Advisory Council on Historic Preservation are afforded an opportunity to comment, if applicable. We recommend that RG Developers file

documentation of consultation with the SHPO, NPS, and Advisory Council on Historic Preservation prior to construction to ensure the FERC's responsibilities under Section 106 of the National Historic Preservation Act are met.

Air Quality

Construction of the Project would result in temporary impacts on air quality associated with the emissions generated from fossil-fuel fired construction equipment and fugitive dust. Air quality impacts due to construction of the Project would generally be localized, and are not expected to cause or contribute to a violation of applicable air quality standards. The LNG Terminal and pipeline facilities would be located in areas currently classified as being in attainment for all criteria pollutant standards. Fugitive dust emissions would be limited or mitigated through implementation of RG Developers' Fugitive Dust Control Plans. In addition, transport of construction materials associated with the Project could occur within the Houston-Galveston-Brazoria (HGB) area, which is a marginal nonattainment area for the 2015 8-hour ozone standard. Construction emissions from the Project occurring within the HGB area would not be expected to result in an exceedance of applicable general conformity thresholds for the HGB area.

Long-term impacts on air quality would result from operation of the LNG Terminal, Compressor Stations 1, 2, and 3, and Booster Stations 1 and 2. On March 21, 2017, RG Developers submitted a revised application to the TCEQ for a Prevention of Significant Deterioration (PSD) permit for the LNG Terminal and Compressor Station 3, and the TCEQ issued an Order granting the PSD permit on December 17, 2018. RG Developers plan to submit the Title V permit application for the LNG Terminal and Compressor Station 3 prior to beginning construction. Compressor Stations 1 and 2 and Booster Stations 1 and 2 would require state minor source permits; RB Pipeline submitted state permit applications for these facilities on March 24, 2017, and the permits were approved in June 2017. The annual emissions of greenhouse gases for the LNG Terminal (including Compressor Station 3) and Compressor Stations 1 and 2 would exceed 25,000 metric tons per year, thus these facilities would be subject to mandatory greenhouse gas reporting.

RG Developers estimated pollutant concentrations in the vicinity of the Project for comparison with the National Ambient Air Quality Standards (NAAQS). The analysis for all pollutants at the LNG Terminal (including Compressor Station 3, mobile LNG carrier, and support vessel emissions) showed that the facility would not cause or significantly contribute to an exceedance of the NAAQS. RG LNG and the TCEQ also performed ozone modeling analyses to quantify the potential impacts of the Project on ozone concentrations in the surrounding area. Both analyses determined that the addition of the modeled Project impacts on background concentrations would not exceed the 70 parts per billion 2015 ozone NAAQS. Further, the results the State Health Effects modeling evaluation required by the TCEQ for the LNG Terminal indicate that the Project emissions are below applicable effects screening levels, and therefore adverse health effects are not expected. Similarly, ambient pollutant concentration modeling for Compressor Stations 1 and 2 and the booster stations showed that these facilities would not cause or significantly contribute to an exceedance of the NAAQS.

RG Developers would minimize operational impacts on air quality by adhering to applicable federal and state regulations as required in their air permit applications to the TCEQ. However, concurrent emissions from staged construction, commissioning and start-up, and operation of the LNG Terminal would temporarily impact local air quality, and could result in exceedances of the NAAQS in the immediate vicinity of the LNG Terminal during these construction years. These exceedances would not be persistent at any one time during these years due to the dynamic and fluctuating nature of construction activities within a day, week, or month.

Based on our independent review of the analyses conducted and mitigation measures proposed, we conclude that construction of the Project would result in elevated emissions near construction areas and would impact local air quality. However, construction emissions would not have a long-term, permanent effect on air quality in the area. Operation of the Project would have minor impacts on local and regional air quality. Given the mitigation measures proposed by RG Developers, and air quality controls and monitoring requirements that would be included in the Title V/PSD permits for the facilities, the Project would not result in regionally significant impacts on air quality.

Noise

The most prevalent noise-generating equipment and activity during construction of the LNG Terminal is anticipated to be pile-driving, although internal combustion engines associated with general construction equipment and dredging would also produce noise that would be perceptible in the vicinity of the site. With the exception of dredging, construction at the LNG Terminal site would take place during daytime hours. RG LNG plans to use both impact-type and vibratory pile-drivers during construction of the LNG Terminal, and pile-driving would be conducted both on land and in water. Pile-driving could produce peak sound levels in the event that three pile-drivers operate simultaneously that result in an increase of greater than 10 decibels (dB) over ambient levels at the nearest noise sensitive area (NSA). As a result, we recommend that RG LNG monitor pile-driving, file weekly noise data, and implement mitigation measures in the event that measured noise impacts are greater than 10 dB over ambient levels at the NSAs. Estimated noise levels for site preparation and facility construction (including intermittent pile-driving during which all three pile-drivers do not operate simultaneously) are not estimated to result in significant impacts on NSAs in the LNG Terminal vicinity.

Installation of the pipeline facilities would include noise from internal combustion engines associated with typical pipeline and aboveground facility construction, as well as HDD activities. Construction noise would be temporary and would vary as construction progresses along the Pipeline System corridor. While most construction activity would occur during daytime hours, RB Pipeline indicated that some specialized construction activities could occur during nighttime hours (such as at HDDs, operation of pumps at dry-ditch waterbody crossings, hydrostatic testing, and tie-ins).

RB Pipeline conducted an HDD acoustical impact assessment, which found that sound levels for 24-hour HDD operations would exceed FERC's noise criterion of a day-night noise level of 55 dB on the A-weighted scale at NSAs near seven proposed HDDs. While RB Pipeline has identified potential mitigation measures to reduce sound levels during HDD construction, the

site-specific measures that would be implemented at each location have not been identified. Therefore, we recommend that RB Pipeline prepare a noise mitigation plan for each NSA where HDD noise would exceed FERC's noise criterion, and that these plans be implemented during construction.

Operation of the LNG Terminal, and compressor, meter, and booster stations would produce noise on a continual basis during the lifetime of the facilities. The results of the noise impact analysis indicate that the noise attributable to construction and operation of the LNG Terminal would be lower than the FERC noise criteria at the nearest NSAs, and the predicted increases in ambient noise would be below perceptible levels. The results of the noise impact analysis conducted for the compressor and booster stations indicates that operation of these facilities would not generate noise that exceeds FERC noise level requirements at the nearest NSAs. To ensure that NSAs are not significantly affected by noise during operations, we recommend that RG Developers conduct post-construction noise surveys after each noise-producing unit (e.g. each liquefaction train and compressor) is placed into service and once the entire LNG Terminal (including Compressor Station 3) is placed into service. In addition, no NSAs are within 1 mile of the stand-alone meter stations proposed for the Project; therefore, operation of these facilities is not expected to result in perceptible noise impacts at any NSAs.

While construction of the Rio Grande LNG Project would result in localized minor to moderate elevated noise levels near construction areas, impacts would be limited to the construction period for the Project. During operations, noise impacts would be minor at the aboveground facilities along the Pipeline System and at the NSAs in the vicinity of the LNG Terminal. Based on the analyses conducted, mitigation measures proposed, and with our additional recommendations, we conclude that construction and operation of the Project would not result in significant noise impacts on residents and the surrounding communities.

Reliability and Safety

As part of the NEPA review, Commission staff assessed the potential impact on the human environment in terms of safety and whether the proposed facilities would operate safely, reliably, and securely.

As a cooperating agency, the DOT advises the Commission on whether RG LNG's proposed design would meet the DOT's Title 49 of the Code of Federal Regulations, Part 193 Subpart B (49 CFR 193 Subpart B) siting requirements. On March 26, 2019, the DOT provided a Letter of Determination on the Project's compliance with 49 CFR Part 193 Subpart B.[7] This determination was provided to the Commission for consideration in its decision on the Project application. If the Project is authorized, constructed, and operated, the facility would be subject to the DOT's inspection and enforcement program; final determination of whether a facility is in compliance with the requirements of 49 CFR 193 would be made by the DOT staff.

Furthermore, DOT's 49 CFR 192 requirements would apply to the Valley Crossing Pipeline that is routed through the northern part of the proposed LNG Terminal site. FERC staff,

[7] March 26, 2019 letter "Re: Rio Grande LNG Terminal, Docket No. CP16-454-000, 49 CFR, Part 193, Subpart B, Siting – Letter of Determination." Filed in Docket Number CP16-454-000 on March 27, 2019. FERC eLibrary accession number 20190327-3003.

in consultation with DOT, has evaluated the potential risk and impact from an incident on the Valley Crossing Pipeline. Based on DOT Pipeline and Hazardous Materials Safety Administration's incident data, the likelihood of a pipeline incident or failure would be low, and a worst-case pipeline rupture scenario would be even less likely.

As a cooperating agency, the Coast Guard also assisted the FERC staff by reviewing the proposed LNG Terminal and the associated LNG marine carrier traffic. The Coast Guard reviewed a Waterway Suitability Assessment submitted by RG LNG that focused on the navigation safety and maritime security aspects of LNG carrier transits along the affected waterway. On December 26, 2017, the Coast Guard issued a Letter of Recommendation to FERC staff indicating the BSC would be considered suitable for accommodating the type and frequency of LNG marine traffic associated with this Project, based on the Waterway Suitability Assessment and in accordance with the guidance in the Coast Guard's Navigation and Vessel Inspection Circular 01-11. If the Project is authorized, constructed, and operated, the LNG Terminal would be subject to the Coast Guard's inspection and enforcement program to ensure compliance with the requirements of 33 CFR 105 and 33 CFR 127.

As a cooperating agency, the FAA assisted FERC staff in evaluating impacts on and from the SpaceX rocket launch facility in Cameron County. Specific recommendations are included to address potential impacts from rocket launch failures on the Project. However, the extent of impacts on SpaceX operations, National Space Program, and to the federal government would not fully be known until SpaceX submits an application with the FAA requesting to launch, and whether the LNG Terminal is under construction or in operation at that time.

FERC staff conducted a preliminary engineering and technical review of the RG LNG design, including potential external impacts based on the site location. Based on this review, we recommend a number of mitigation measures and continuous oversight 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 life of the LNG Terminal to enhance the reliability and safety of the terminal to mitigate the risk of impact on the public. With the incorporation of these mitigation measures and oversight, we conclude that RG LNG's Terminal design would include acceptable layers of protection or safeguards that would reduce the risk of a potentially hazardous scenario from developing into an event that could impact the off-site public.

The Pipeline System and associated aboveground facilities would be constructed, operated, and maintained in compliance with DOT standards published in 49 CFR 192. These regulations are intended to minimize the potential for natural gas facility accidents and protect the public and environment. The DOT specifies material selection and qualification; minimum design requirements; and protection from internal, external, and atmospheric corrosion. We conclude that the Pipeline System would not have a significant impact on public safety.

Cumulative Impacts

Our analysis of cumulative impacts includes other projects in the vicinity of the proposed Rio Grande LNG Project that could affect the same resources in the same approximate timeframe. Other projects in the geographic scope with the greatest potential to contribute to

cumulative impacts with the Rio Grande LNG Project are the proposed Annova and Texas LNG Terminals, both of which would be constructed along the BSC, along with each project's non-jurisdictional facilities. We conclude that the proposed Project's contribution to cumulative impacts is primarily associated with the LNG Terminal and not the pipeline facilities, and that the cumulative impact contribution of the LNG Terminal would not be significant for most resources. The greatest potential for cumulative impacts would be on soils, surface water quality, vegetation, wildlife, aquatic resources, threatened and endangered species, visual resources, land- and water-based transportation, tourism and commercial fisheries, air quality, and noise. Resources potentially subjected to moderate or significant cumulative impacts are discussed below.

Construction of the proposed Project, the Texas LNG Project, and the non-jurisdictional facilities for the two projects are anticipated to occur concurrently, on immediately adjacent lands which would result in soil disturbance in succession; as the Annova LNG Terminal would be on the south side of the BSC, it would not contribute to cumulative impacts on soils. Collectively the Rio Grande LNG and Texas LNG Projects would contribute to moderate, permanent impacts on soils due to prolonged and delayed revegetation, and the potential for increased runoff and erosion from unstable soils. Similarly, if dredging were to occur in the BSC for multiple projects at the same time, moderate, but temporary, cumulative impacts on water quality and aquatic resources may occur. In addition, it is expected that significant impacts from increased vessel traffic would occur along unarmored portions of the BSC from increased marine vessel traffic related to shoreline erosion and turbidity, which would be relatively persistent throughout the life of the proposed LNG projects in the Brownsville area.

The Rio Grande LNG Project and most of the other projects we identified (including, but not limited to, Texas LNG and Annova LNG) would be located partially or wholly within the same subwatershed, which is the geographic scope for vegetation, wildlife, aquatic species, and threatened and endangered species. Due to the relatively large proportion of the subwatershed that would be affected by the projects considered, as well as the low revegetation potential of the local soils, we have determined that the proposed LNG Terminal would contribute to moderate cumulative impacts on rare plant communities and vegetation. This impact on vegetation would also contribute to moderate impacts on wildlife species using the vegetation communities. Federally listed threatened and endangered species that may be subjected to moderate to significant cumulative impacts include sea turtles (moderate), from the combined construction impacts associated with dredging and in-water pile-driving; the Northern aplomado falcon (significant), because of past cumulative habitat loss and construction of aboveground structures adjacent to areas of remaining habitat; and the ocelot and jaguarundi (significant), from the loss and/or decrease in suitability of habitat and the potential increase in vehicular strikes during construction. All federally regulated projects, including all three of the proposed LNG projects along the BSC, are required to coordinate with the FWS to minimize impacts on federally listed species.

The potential for cumulative visual impacts would be greatest if, in addition to the proposed LNG Terminal, the Annova LNG and Texas LNG Projects are permitted and built concurrently. Motorists on SH-48 (and other local roadways) and visitors to local recreation areas would experience a permanent change in the existing viewshed during operation of the

projects. We conclude that cumulative impacts of the three LNG projects on visual resources would be potentially significant.

Construction of the proposed LNG Terminal and the Texas LNG Project would result in a substantial increase in daily vehicle trips on SH-48. Both RG LNG and Texas LNG have agreed to make improvements to SH-48 to ensure safe movement of traffic along the road especially during peak hour traffic flows and implement additional mitigation measures; however, moderate cumulative impacts on roadways would occur during overlapping construction.

During operations, LNG carriers calling on the Rio Grande LNG Terminal and other LNG facilities along the BSC may have moving security zones that could preclude other marine vessels from transiting the waterway for up to 39 hours per week. Mandates for prior notice of expected arrivals would minimize impacts on other vessels; however, we conclude that there would be a moderate cumulative impact on marine vessel traffic in the BSC from overlapping construction and operation.

Although the land proposed to be developed for the three Brownsville LNG projects is zoned for industrial use, the concurrent construction and operation of three large industrial facilities would result in a change of the character of the landscape that could cause some visitors to choose to vacation elsewhere or alter their recreation activities to destinations in the region that are further from the proposed Brownsville LNG project sites. In addition, increased vessel traffic resulting from the concurrent operation of the three Brownsville LNG projects would likely result in delays for commercial fishing and recreational vessels that need to transit the BSC. Therefore, we anticipate that cumulative impacts on tourism and commercial fisheries would be permanent and moderate.

With other projects in the geographic scope, construction of the Rio Grande LNG Project would contribute to localized moderate elevated emissions of criteria pollutants near construction areas during the period(s) when construction of these activities would overlap. Operational air emissions from the Rio Grande LNG Project would contribute to cumulative emissions with other projects in the geographic scope, and would be required to comply with applicable air quality regulations. Overall, impacts from the Rio Grande LNG Terminal along with the other LNG facilities would cause elevated levels of air contaminants in the area and a potential exceedance of the 1-hour nitrogen dioxide NAAQS in an uninhabited area between the proposed LNG Project facilities. We are aware that each LNG Terminal could be constructed within the same time period, and the concurrent construction, commissioning, and operations emissions of the proposed Brownsville LNG terminals could potentially exceed the NAAQS in local areas, and result in cumulatively greater local air quality impacts. Along the Rio Bravo Pipeline, no compressor or booster stations would trigger PSD major source permitting requirements for any pollutants and would not cause or contribute to a NAAQS exceedance. Therefore, cumulative impacts on regional air quality as a result of the operation of the Rio Grande LNG Project and other facilities would be long-term during the operational life of the Project, but minor.

For simultaneous construction activities at all of the three LNG projects proposed along the BSC, the predicted sound level increase over the existing ambient ranges from 2.2 to 9.8 decibels on the A-weighted scale (dBA) day-night sound level (L_{dn}) at certain NSAs (residences) in the general vicinity of the projects. These noise level increases result in levels slightly over 55

dBA L_{dn}, and range between less than noticeable increases in ambient noise to a doubling of noise at specific NSAs. For construction activities that are not simultaneous but incremental, the predicted sound level increase ranges from 1.0 to 8.6 dBA L_{dn} at the NSAs. These increases would be minor to moderate; however, all levels would be below 55 dBA L_{dn}. For the Palmito Ranch Battlefield National Historic Landmark (4.1 miles from the Rio Grande LNG Project), the predicted cumulative construction increase is 10.1 dBA L_{dn} over the existing ambient, which could result in periods of perceived doubling of noise. However, for the duration of Annova's nighttime pile-driving, significantly higher levels of noise are estimated and this would result in significant cumulative noise impacts. The only 24-hour construction proposed at the Rio Grande LNG Terminal would be dredging. As described in section 4.11.2.3, the estimated sound level from dredging associated with the Rio Grande LNG Terminal at the nearest NSAs would be below existing ambient sound levels, and noise associated with dredging activities is not expected to be perceptible. Therefore, RG LNG's contribution to cumulative nighttime construction noise would be negligible. The predicted sound level impacts for simultaneous operation of all three LNG projects are much lower than construction impacts, with potential increases over the existing ambient sound level between 0.3 and 1.5 dBA L_{dn} at NSAs, resulting in a negligible to minor impact. Construction and operation of the pipeline facilities would not contribute to significant cumulative noise impacts on nearby NSAs.

In summary, the anticipated cumulative impacts associated with the construction and operation of the Project along with other projects in the geographic scope are primarily construction-related dredging and pile-driving impacts in the BSC on aquatic fish and sea turtle resources, construction vehicle traffic on SH-48, potential direct impacts on the federally listed ocelot and jaguarundi, and construction noise impacts on NSAs during concurrent construction. The primary operation-related cumulative impacts include marine vessel impacts on water quality and on existing marine vessel traffic in the BSC, as well as loss or degradation of vegetation (habitat for federally listed species). These cumulative impacts are predominantly based on concurrent construction and operation of the Rio Grande LNG, Texas LNG, and Annova LNG Projects.

ALTERNATIVES CONSIDERED

In accordance with NEPA and FERC policy, we evaluated the no-action alternative, system alternatives, and other siting and design alternatives that could achieve the Project objectives. The range of alternatives that could achieve the Project objectives included system alternatives for both the terminal and pipeline, alternative LNG Terminal sites, and alternative pipeline configurations. Alternatives were evaluated and compared to the Project to determine whether these alternatives presented a significant environmental advantage to the proposed Project. While the no-action alternative would avoid the environmental impacts identified in this EIS, adoption of this alternative would preclude meeting the stated Project objectives. If the Project is not approved and built, the need could potentially be met by other LNG export projects developed elsewhere along the Texas Gulf Coast. Implementation of other LNG export projects likely would result in impacts similar to or greater than those of the proposed Project.

We evaluated seven LNG Terminal system alternatives, including four existing LNG import terminals with planned, proposed, or authorized liquefaction projects; and three proposed/planned stand-alone LNG export terminals. To meet all or part of RG LNG's

contractual agreements, each of these projects would require substantial construction beyond what is currently planned and would not offer significant environmental advantages over the proposed LNG Terminal; therefore, they were eliminated from further consideration. We also evaluated alternative sites for the LNG Terminal within other Texas coast ports and other sites along the BSC. Each site was excluded from further consideration due to size constraints, lease restrictions, and/or presence of additional sensitive resources. In the draft EIS we evaluated alternatives to RG LNG's proposed new haul road to bring fill material from the Port Isabel dredge pile to the terminal site. In response to our recommendation in the draft EIS, RG LNG adopted an alternative to transport the fill materials, if necessary, using barges.

We reviewed three pipeline system alternatives; however, none of the alternatives had enough available capacity to transport the Project volumes. We also reviewed the construction of one larger diameter pipeline as opposed to the two mainline pipelines, as well as concurrent construction of both pipelines, but eliminated these alternatives from further review based on construction and safety considerations. Because none of the alternatives reduced impacts on the environment, we eliminated them from further consideration.

CONCLUSIONS

We determined that construction and operation of the Rio Grande LNG Project would result in adverse environmental impacts. We conclude that impacts on the environment from the proposed Project would be reduced to less than significant levels with the implementation of RG Developers' proposed impact avoidance, minimization, and mitigation measures and the additional measures recommended by FERC staff. However, the Rio Grande LNG Project, combined with the other projects in the geographic scope, including the Texas LNG and Annova LNG projects, would result in significant cumulative impacts from construction noise during nighttime pile-driving, sediment/turbidity and shoreline erosion within the BSC during operations from vessel transits; on the federally listed ocelot, and jaguarundi from habitat loss and the potential for increased vehicular strike during construction; on the federally listed northern aplomado falcon from habitat loss, and on visual resources from the presence of new facilities. We based our conclusions upon information provided by RG Developers and through data requests; field investigations; literature research; geospatial analysis; alternatives analysis; public comments and scoping sessions; and coordination with federal, state, and local agencies and Native American tribes. The following factors were also considered in our conclusions:

- The LNG Facility site would be in an area currently zoned for commercial and industrial use, along an existing, man-made ship channel.

- The pipelines would be collocated with, or adjacent to, other disturbed right-of-way corridors for about 66.0 percent of the route.

- The pipelines would be installed by trenchless methods (HDD or bore) to avoid impacts on all major perennial streams (i.e., streams over 100 feet wide), as well as many smaller waterbodies, wetlands, and road crossings.

- RG Developers would follow the Project-specific Spill Prevention, Control, and Countermeasures Plans; Stormwater Pollution Prevention Plans; Unanticipated

Contaminated Sediment and Soils Discovery Plan; Unanticipated Discovery Plan (for cultural resources); HDD Contingency Plan; Fugitive Dust Control Plans; Noxious and Invasive Weed Plan; and Migratory Bird Conservation Plan.

- The Coast Guard issued a Letter of Recommendation indicating the BSC would be considered suitable for the LNG marine traffic associated with the Project.

- The LNG Terminal design would include acceptable layers of protection or safeguards that would reduce the risk of a potentially hazardous scenario from developing into an event that could impact the off-site public.

- The pipelines and associated aboveground facilities would be constructed, operated, and maintained in compliance with DOT standards published in 49 CFR 192.

- RG Developers would implement their Project-specific *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan) and Procedures to minimize construction impacts on soils, wetlands, and waterbodies.

- All appropriate consultations with the FWS and NMFS regarding federally listed threatened and endangered species would be completed before construction is allowed to start in any given area.

- Consultation under the Magnuson Stevens Fishery Conservation and Management Act is complete, and NMFS does not have EFH conservation recommendations for the Project.

- All appropriate National Historic Preservation Act consultations with the Texas SHPO and the Advisory Council on Historic Preservation would be completed before construction is allowed to start in any given area.

- RG Developers would follow an environmental inspection program, including Environmental Inspectors, to ensure compliance with the mitigation measures that become conditions of the FERC authorizations. FERC staff would conduct inspections throughout construction, commissioning, and restoration of the Project.

In addition, we developed recommendations that RG Developers should implement to further reduce the environmental impacts of the Project, including recommendations specific to engineering, vulnerability, and detailed design of the LNG Terminal, and ongoing recommendations relating to inspections, reporting, notification, and non-scheduled events that would apply throughout the life of the LNG Terminal facility. Our recommendations are presented in section 5.2 of the EIS. We recommend that these mitigation measures be attached as conditions to any authorization issued by the Commission for the Project.