

Deepwater Port License Application Blue Marlin Offshore Port (BMOP) Project

Volume IIa – Appendix C Cumulative Impacts Analysis – Offshore And Onshore

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September 2020

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Deepwater Port License Application Blue Marlin Offshore Port (BMOP) Project

- Volume I: General (Public), including Deepwater Port License Application and Appendices
(under separate cover)
- Volume IIa: Offshore Project Components Environmental Evaluation (Public) *(herein)***
- Volume IIb: Onshore Project Components, Environmental Evaluation (Public)
(under separate cover)
- Volume III: Technical Information
[*Confidential*]
(under separate cover)
- Volume IV: Company and Financial Information
[*Confidential*]
(under separate cover)

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APPENDIX C

CUMULATIVE IMPACTS ANALYSIS – OFFSHORE AND ONSHORE

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ABBREVIATIONS AND ACRONYMS

72 COLREGS	1972 International Rules of the Road
APE	Area of Potential Effect
ATBA	Area to be Avoided
BMOP	Blue Marlin Offshore Port
BOEM United States	Bureau of Ocean Energy Management
CALM	Catenary Anchor Leg Mooring
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
dBA	Aweighted decibels
DOE	United States Department of Energy
DWP	Deepwater Port
E&P	Exploration and Production
EPA	United States Environmental Protection Agency
ET	Energy Transfer
FERC	Federal Energy Regulatory Commission
FID	final investment decision
FLNG	floating liquefied natural gas
GOM	Gulf of Mexico
HDD	horizontal directional drill
LNG	liquified natural gas
MARAD	United States Maritime Administration
MH	Maritime Highways
MTPA	Million Metric Tons per Annum
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NSAs	noise sensitive areas
NT	Nederland Terminal
O&G	Oil and Gas
OCS	Outer Continental Shelf
Project	Blue Marlin Offshore Port Project
ROI	Region of Influence
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service

1.0 CUMULATIVE IMPACTS FRAMEWORK

Cumulative impacts are the collective result of the incremental impacts of an action that, when added to the impacts of other past, present, and reasonably foreseeable future actions, would affect the same resources, regardless of what agency or person undertakes those actions (40 Code of Federal Regulations [CFR] § 1508.7). Cumulative impacts can result from actions that individually have minor impacts but that, collectively, impose significant impacts over a period of time. Compliance with the National Environmental Policy Act (NEPA) requires an analysis of cumulative impacts (40 CFR § 1508.25(a)(2) and 40 CFR § 1508.25(c)(3)).

Consistent with Council on Environmental Quality (CEQ) 2005 guidelines, each resource analysis incorporates the effects of past actions in aggregate. Their effects, if not temporary and reversible, are captured in the existing conditions assessments in Topic Reports 3 through 11 of Volume IIa and Topic Reports 2 through 9 of Volume IIb. Long-term, permanent effects are revealed in the characterization of each resource relative to thresholds or other parameters. In the cumulative impacts analyses that follow, present and reasonably foreseeable future actions have been considered. For the evaluation, present actions are activities that are underway and that may not have been captured in the existing conditions characterizations because of timing or delayed effects. Reasonably foreseeable future actions are ones that reasonably could be expected to occur (e.g., projects under review by a federal, state, or local regulatory agency, adopted plans undergoing implementation, projects that have been funded, or actions that occur with regularity, such as dredging). Project proposals announced in formal press releases with evidence of lease agreements, committed investments, or preliminary engineering designs were also considered.

To determine which other actions could create a cumulative effect with the Blue Marlin Offshore Port (BMOP) Project (Project) in the Gulf of Mexico (GOM), the Applicant estimated resource-specific distances wherein Project impacts may occur. Beyond these distances, the Project’s capacity to affect each resource would become negligible. These distances, called “regions of influence,” determined the search radii for other planned or proposed developments or actions that could cumulatively affect the environment along with the Project. Defining the region of influence within which a cumulative effect could occur requires balance (i.e., it must not be too narrow so as to ignore the real possibility of cumulative harm, neither can it be too broad, making the analysis “unwieldy”) (CEQ, 1997). The regions of influence for the offshore and onshore components of the Project are provided in **Table 1-1**.

TABLE 1-1 Regions of Influence by Resource Type		
Offshore Resource Type	Region of Influence	Rationale
Water Quality & Sediment	1 mile	Impacts to sediment occur at the site of construction and in the vicinity during in-water construction activities that disturb the seabed (e.g., pile driving installation) and from accidental introductions of chemicals (e.g., fuel and lubricants).
Marine Environment	5 miles	Impacts to elements of the marine environment (e.g., bottom substrate, wave and tidal action, wetland, deepwater environment) occur within the vicinity of construction and operation activities and potentially up to 5 miles away.
Commercial and Recreational Fisheries	1 mile	Impacts occur where fishing is restricted; in this case, the restricted area is the established safety zone of approximately 1 mile (1.6 kilometers) around the DWP.
Wildlife and Protected Species	6 miles	Greatest estimated distance from Project sources of underwater sound to potential exceedances of National Marine Fisheries Service (NMFS) thresholds for disturbance of marine species (see

Blue Marlin Offshore Port (BMOP) Project
Appendix D – Essential Fish Habitat Assessment
Volume IIa – Offshore Project Components (Public)

TABLE 1-1 Regions of Influence by Resource Type		
		Appendix E of Volume IIa, Marine Mammal Assessment).
Cultural Resources	Area of Potential Effect	Area of Potential Effect (APE) is defined in Topic Report 7 of Volume IIa.
Geological Resources	1 mile	Impacts to geological resources occur at the site of construction and in the vicinity during in-water construction activities that disturb the seabed (e.g., pile driving installation) and from accidental introductions of chemicals (e.g., fuel and lubricants).
Coastal Zone, Recreation, and Aesthetics	5 miles	Potential conflicts with other uses (e.g., oil and gas platforms, commercial and recreational navigation) could reasonably be expected to dissipate to negligible beyond 5 miles.
Air	31.1 miles	Based on U.S. Environmental Protection Agency (EPA) major source modeling guidance. It is the distance to which the cumulative air emissions model is predictive, 31.1 miles (50 kilometers).
Noise (not including underwater noise)	1 mile	The farthest distance at which Project construction activities could have a cumulative effect of producing intrusive sound levels (70 Aweighted decibels [dBA]) when coupled with similar levels of construction noise from another project; pile hammer noise level is rated 36 dBA at 1 mile.
Onshore Resource Type	Region of Influence	Rationale
Water Quality	5 miles from pipelines 8 miles from terminals	Runoff, spills, discharges, eroded sediment, etc., from the Project could drain into downstream waterbodies. The 5-mile and 8-mile radii are reasonable limits commensurate with the scale of installation of the pipelines and terminal.
Land Cover and Vegetation	Project footprint	Land cover and vegetation would be largely restored along the pipeline route; if a cumulative effect of significance were to occur, it would stem from simultaneous activities concentrated within the pipeline route during construction. Station 701 does not result in permanent conversion of land cover (existing). The BMOP Pump Station would be constructed in an industrial zone.
Socioeconomics	Jefferson and Orange Counties, TX and Cameron Parish, LA	Housing and labor supply and economic effects extend through the adjacent communities.
Aquatic Resources	5 miles from pipelines 8 miles from terminals	The Project's onshore component's Region of Influence (ROI) for fisheries is the same as the ROI for water quality and use.
Wildlife and Protected Species	1 mile from pipelines	The 1-mile radius from the pipelines is commensurate with the scale of their construction (only a few months at a time in any single location) and operation (habitat largely restored). The BMOP Pump Station would be constructed in an industrial zone.
Cultural Resources	Area of Potential Effect	Area of Potential Effect (APE) is defined in Section 6 of Volume IIb.
Soils and Geological Resources	Project footprint	Effects would not extend beyond the area of the Project's direct disturbance (i.e., footprint).
Land Use, Recreation, and Aesthetics	Project Footprint for Land Use; 1 mile for Recreation and Aesthetics	Recreation may be affected in areas adjacent to the Project footprint. Aesthetics may have cumulative impacts due to the relatively flat terrain in the area; projects are highly visible in undeveloped, flat terrain. resulting in long-range visual perceptions. The pipeline's effects to Land Use would occur during construction only, as they would not be visible nor restrict

TABLE 1-1 Regions of Influence by Resource Type		
		aboveground activities during operation.
Air	0.25 mile for construction; 31.1 miles for operations	Vehicle, vessel, and equipment emissions and dust generated during construction would not travel farther than 0.25 mile. Based on EPA major source modeling guidance. It is the distance to which the cumulative air emissions model is predictive, 31.1 miles (50 kilometers).
Noise	1 mile	The farthest distance at which Project construction activities could have a cumulative effect of producing intrusive sound levels (70 Aweighted decibels [dBA]) when coupled with similar levels of construction noise from another project; pipeline construction activities (including in Sabine Lake) and HDDs.

In addition to the above criteria, an action must increase or amplify an environmental effect beyond the change already attributed to the Project. Small-scale, non-industrial actions, such as constructing a limited number of waterfront residential units, may have environmental effects, but these effects would be negligible compared with the Project. Their cumulative effects with the Project would not be measurably greater than the Project’s effect alone. At the opposite end of the scale are other offshore and onshore industrial developments, which have the highest potential for compounding effects from the Project.

2.0 CUMULATIVE PROJECTS

The Applicant identified projects for the cumulative analyses by consulting regulatory agency databases, developer and agency press releases, chambers of commerce and business development alliance publications, industry news sites, and other publicly available information. Reasonably foreseeable projects were screened using a standard of having one or more of the following:

- Application or preliminary document submitted to a regulatory agency for permit review;
- Permit issued and not yet expired.
- Description of approved or ongoing activities on a regularly maintained government website;
- Site plan submitted for review by a local planning agency or government agency; or
- Project announcement in press release with evidence of lease agreement, committed investment, or preliminary engineering design.

Present and future actions that met these criteria are presented in the tables below and are roughly divided between actions that could create cumulative effects with the Project’s offshore and onshore components (see **Table 2-1**). **Figure 2-1** shows their locations. Some of the actions may have cumulative effects with both onshore and offshore Project components.

If the Project would have negligible or no effects on a resource, it would not contribute to a cumulative effect. Thus, cumulative evaluations were only performed on resources affected by the Project, meaning those with impacts rated negligible, moderate, or significant in Topic Reports 3 through 11 of Volume IIa and Topic Reports 2 through 9 of Volume IIb. Resources that have the potential to be changed temporarily or permanently by the Project are:

- Offshore Resources:
 - Water Quality & Sediment;

- Marine Environment;
- Commercial and Recreational Fisheries;
- Wildlife and Protected Species (including underwater noise);
- Cultural Resources;
- Geological Resources;
- Coastal Zone, Recreation, and Aesthetics;
- Air and Noise;
- Onshore Resources:
 - Water Quality;
 - Land Cover and Vegetation;
 - Aquatic Resources;
 - Wildlife and Protected Species;
 - Cultural Resources;
 - Soils and Geological Resources;
 - Land Use, Recreation, and Aesthetics;
 - Air and Noise;
- Other Resources:
 - Socioeconomics;
 - Safety and Security; and
 - Transportation.

**TABLE 2-1
Cumulative Projects**

Project	Owner	Type	Description	Dates	Source	Status	Distance to the Project (miles)	Potential Cumulative Resources Affected
Offshore								
Oil and Gas (O&G) Exploration and Production (E&P) Activities – Central Planning Area BOEM	Various	Offshore O&G E&P	O&G E&P activities may occur up to 40 to 50 years on leased blocks in the Western Planning Area. As of 2020, the closest active leased block is 32.7 miles from the DWP and the closest active platform is four miles from the DWP.	Ongoing. The 2017-2022 Five-Year OCS Oil and Gas Program makes available for bidding all unleased blocks in the planning area. The Final Programmatic Environmental Impact Statement (EIS) for the 2017-2022 leasing program was published in November 2016, and the Department of Interior issued an affirmative Record of Decision in January 2017. Source: BOEM. No date. Oil and Gas Energy Program.	https://www.boem.gov/oil-and-gas-energy	Ongoing	See Section 10 of Volume IIa and Figure 2-1, lease blocks in vicinity of DWP.	<ul style="list-style-type: none"> • Marine Environment • Coastal Zone, Recreation, and Aesthetics • Air and Noise
Maritime Highways (MH); Marine Vessel Traffic	MARAD; General Vessel Traffic	Waterway Transportation	Marine Vessel, Transportation	Ongoing	https://maritime.dot.gov/grants/marine-highways/marine-highway	Ongoing	Construction vessel traffic would cross marine fairways and MH.	<ul style="list-style-type: none"> • Marine Environment • Coastal Zone, Recreation, and Aesthetics • Air and Noise

**TABLE 2-1
Cumulative Projects**

Delfin LNG	Deflin Midstream; Delfin LNG LLC	Industrial-LNG; DWP	Brownfield DWP to support up to four FLNG Vessels producing up to 13 million tonnes of LNG per annum. Source: https://delfinmidstream.com/projects#delfin	Delfin purchased the UTOS pipeline, the largest natural gas pipeline in the GOM, in 2014 and submitted its DWP license application in 2015. Delfin LNG received a positive Record of Decision from MARAD in 2017 and approval from the DOE for longterm exports of LNG.	https://www.energy.gov/sites/prod/files/2017/06/f34/EIS-0531-ROD-2017.pdf	Permitted	15 miles from offshore pipeline; 58 miles from the DWP.	<ul style="list-style-type: none"> • Marine Environment • Coastal Zone, Recreation, and Aesthetics • Commercial and Recreational Fisheries • Air and Noise
Offshore Sediment Resources	Various	Offshore Sediment Resources	Non-energy minerals obtained in the GOM OCS are sand and gravel (collectively referred to as “sediment”), BOEM has identified significant sediment resource areas in the GOM.	Ongoing	https://www.data.boem.gov/Main/Mapping.aspx	Ongoing	Crossed by existing Mainline; Construction vessel crossings.	<ul style="list-style-type: none"> • Marine Environment • Water Quality • Coastal Zone, Recreation, and Aesthetics
Onshore								
Nederland Terminal Expansion and Dock 7/8	Sunoco Partners Marketing & Terminals LP	Industrial	This 222-acre area will house new liquefied petroleum gas processing units, approximately 4 refrigerated liquidized petroleum gas storage tanks, 27 aboveground storage tanks, a new pump manifold, and a 36-inch crude oil transfer pipeline which will connect Dock 7/8 to the existing Nederland Terminal.	Construction planned start January 2021.	https://www.swg.usace.army.mil/	In Permitting	Immediately adjacent to BMOP Pump Station. Land filled for this project provides filled footprint for BMOP’s pump station.	<ul style="list-style-type: none"> • Land Use, Coastal Zone, Recreation, and Aesthetics

**TABLE 2-1
Cumulative Projects**

Sabine Pass Liquefaction	Cheniere Energy	Industrial-LNG	Cheniere’s Sabine Pass liquefaction project currently has five fully-operational liquefaction trains. A sixth train at the site has all necessary permits. When all six trains are completed, the aggregate nominal production capacity of the site is expected to be approximately 30 million tonnes per annum (mtpa) of LNG.	Under Construction. Reached final investment decision (FID) in June 2019, and will be complete in 2023.	https://www.cheniere.com/terminals/sabine-pass/	Under Construction	15.8 miles from onshore pipeline; 16 miles from above-ground facilities.	<ul style="list-style-type: none"> • Coastal Zone, Recreation, and Aesthetics • Air and Noise
Port Arthur LNG	Sempra Energy	Industrial-LNG	Two natural gas liquefaction trains, up to three LNG storage tanks and associated facilities at Port Arthur that would enable the export of approximately 11 Mtpa of LNG. Source: https://www.sempra.com/port-arthur-lng-phase-1	FERC permitted the construction and operation of Port Arthur LNG export facility in April 2019. A FID on the project is expected in 2020, while commissioning is expected by 2023.	https://portarthurlng.com/	Permitted	8 miles from the onshore pipeline; 15 miles from above-ground facilities.	<ul style="list-style-type: none"> • Water Quality & Sediment • Commercial and Recreational Fisheries • Wildlife and Protected Species • Aquatic Resources • Coastal Zone, Recreation, and Aesthetics • Air and Noise
Cameron LNG	Sempra LNG, Mitsui & Co., Mitsubishi Corporation, Total, and NYK Line	Industrial-LNG	The Cameron Liquefaction Project consists of expanding from one to three liquefaction trains with a nameplate capacity of approximately 13.5 million tons per year of LNG. The site is 502 acres, 18 miles north of the GOM on the Calcasieu River. Source: https://cameronlng.com/lng-facility/	In May 2016, Cameron LNG received FERC’s authorization to proceed with expansion of the existing liquefaction export project (two additional trains and two additional LNG storage tanks), and has received authorization from DOE to export. No decision on dates to expand has been made.	https://cameronlng.com/	Permitted	23 miles from the onshore pipeline; 23 miles from above-ground facilities.	<ul style="list-style-type: none"> • Coastal Zone, Recreation, and Aesthetics • Air and Noise

**TABLE 2-1
Cumulative Projects**

Venture Global LNG-Calcasieu	Venture Global Calcasieu Pass, LLC	Industrial-LNG	Developing a liquefied natural gas (LNG) export facility in Cameron Parish, Louisiana, south of the city of Lake Charles. The project site is at an ideal location on the Calcasieu Ship Channel at the mouth of the Gulf of Mexico featuring deep-water access, proximity to plentiful gas supplies and ease of transport for buyers. Once complete, the plant will export 10 MTPA of LNG per year.	February 2019 - FERC Order Received; 2019 - Construction Start; Fall 2020 - Proposed Operations Start.	https://venturegloballng.com/project-calcasieu-pass/	Under Construction	14 miles from the onshore pipeline; 16 miles from above-ground facilities.	<ul style="list-style-type: none"> • Coastal Zone, Recreation, and Aesthetics • Air and Noise
Monkey Island LNG	SCT&E: LNG	Industrial-LNG	246-acre LNG project site in Cameron Parish, Louisiana for natural gas liquefaction and LNG export. It is located on the Calcasieu Ship Channel. The location is approximately 2 miles inland from the Gulf of Mexico.	DOE Authorization: 2014 (good for 30 years) Set to begin the pre-filing process with FERC	https://www.monkeyislandlng.com/	Proposed	15 miles from the onshore pipeline; 16 miles from above-ground facilities.	<ul style="list-style-type: none"> • Coastal Zone, Recreation, and Aesthetics • Air and Noise
Commonwealth LNG	Commonwealth LNG	Industrial-LNG	Proposed 3 miles of onshore, interconnected pipelines, as well as liquefaction, LNG storage and LNG export facility on 400 acres located on the west bank of the Calcasieu Ship Channel at the mouth of the GOM near Cameron, Louisiana. Source: https://commonwealthlng.com/the-project/	FERC Application Accepted: 2019 Potential FERC Order: 2021 Proposed Construction Start: 2021 Proposed Operations Begin: 2024	https://commonwealthlng.com/	In Permitting	13 miles from the onshore pipeline; 15 miles from above-ground facilities	<ul style="list-style-type: none"> • Coastal Zone, Recreation, and Aesthetics • Air and Noise

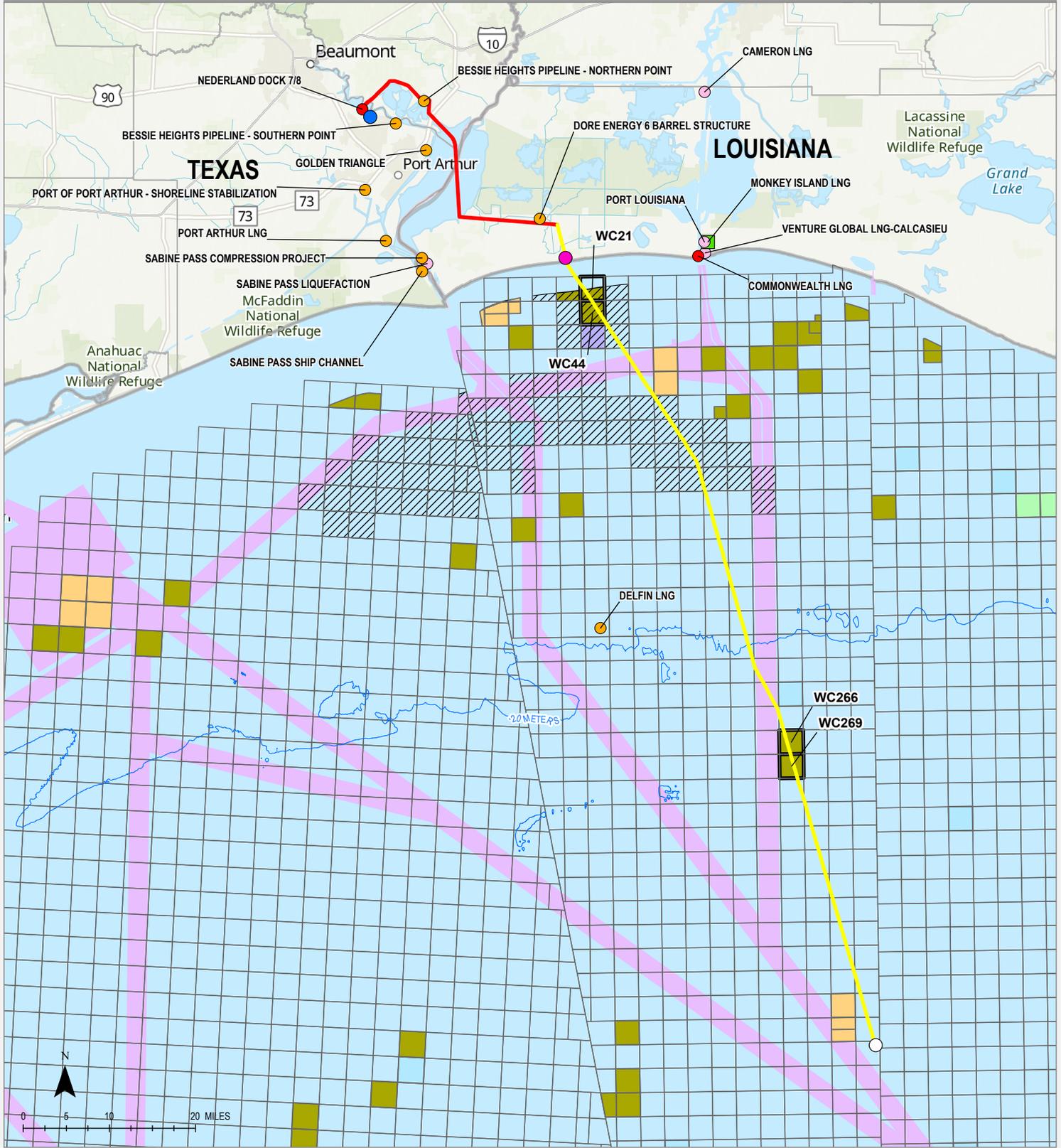
**TABLE 2-1
Cumulative Projects**

Port Louisiana	Multiple, Private	Industrial-Port Facilities	Port Louisiana is an 850-acre port and deepwater energy complex locating 3 miles from the GOM in the Calcasieu Ship Channel. Goal of the port is to support shore-based supplies, services, cargo, and other oil and gas service facilities by establishing a seaport terminal along the Louisiana Gulf Coast.	Construction ongoing	https://www.port-louisiana.com/	Under Construction	15 miles from the onshore pipeline; 16 miles from above-ground facilities.	<ul style="list-style-type: none"> • Coastal Zone, Recreation, and Aesthetics • Air and Noise
Bessie Heights Pipeline	Zydeco Pipeline Company LLC	Pipeline	The applicant proposes to replace a 22,688-linear-foot section of the Houston to Houma 22-inch-diameter pipeline. Originating at the Motiva Terminal in Port Neches and ending at a valve station near Bridge City, Texas.	USACE permit issued with special conditions 2020	https://permits.ops.usace.army.mil/orm-public	Permitted	0.12 miles from the onshore pipeline; 3.7 miles from above-ground facilities.	<ul style="list-style-type: none"> • Wetlands • Coastal Zone, Recreation, and Aesthetics • Air and Noise
Golden Triangle	Golden Triangle Properties	Industrial	Offloading facility for the transfer of unrefined hydrocarbons to tank barges from railroad tank cars.	USACE permit issued with special conditions 2020	https://permits.ops.usace.army.mil/orm-public	Permitted	3.2 miles from the onshore pipeline; 8.2 miles from the BMOP Pump Station.	<ul style="list-style-type: none"> • Wetlands • Water Quality & Sediment • Coastal Zone, Recreation, and Aesthetics • Air and Noise
Port of Port Arthur - Shoreline Stabilization	Port of Port Arthur	Industrial	Construct a new 1,000-foot-long by 62-foot-wide wharf (Berth 6) with driven concrete support piling and mechanically drill and/or hydraulically dredge an additional 4.70 acres from the Sabine-Neches Canal.	USACE permit issued with special conditions 2020	https://permits.ops.usace.army.mil/orm-public	Permitted	8.8 miles from the onshore pipeline; 8.8 miles from the BMOP Pump Station.	<ul style="list-style-type: none"> • Wetlands • Water Quality & Sediment • Coastal Zone, Recreation, and Aesthetics • Air and Noise
Sabine Pass Compression Project	Natural Gas Pipeline Company of America LLC	Natural Gas Compressor Station	Construct a new natural gas fired compressor station, to be known as CS 348, along Natural's existing Louisiana Line Nos. 1 and 2 in Cameron Parish, Louisiana.	USACE permit issued with special conditions 2019	https://permits.ops.usace.army.mil/orm-public	Permitted	6.5 miles from the onshore pipeline; 16 miles from above-ground facilities.	<ul style="list-style-type: none"> • Wetlands • Coastal Zone, Recreation, and Aesthetics • Air and Noise

**TABLE 2-1
Cumulative Projects**

Dore Energy 6 Barrel Structure	D.P. Land	Water Control Structure	Install six barrel flap gate style barrels within a new water control structure and two temporary cofferdams.	USACE permit issued with special conditions 2019	https://permits.ops.usace.army.mil/orp-public	Permitted	0.5 miles from the onshore pipeline; 2.1 miles from above-ground facilities.	<ul style="list-style-type: none"> • Wetlands • Water Quality & Sediment • Wildlife and Protected Species • Coastal Zone, Recreation, and Aesthetics • Air and Noise
Sabine Pass Ship Channel	Sabine Pass Port Authority	Port Improvement	Construction of a concrete pier, a concrete pier extension, a steel sheetpile bulkhead with tieback anchors, the placement of 9 mooring dolphins, and 17 pilings for a new fender system.	USACE permit issued with special conditions 2020	https://permits.ops.usace.army.mil/orp-public	Permitted	16.5 miles from the pipeline; 16 miles from above-ground facilities.	<ul style="list-style-type: none"> • Wetlands • Water Quality & Sediment • Coastal Zone, Recreation, and Aesthetics • Air and Noise

BMOP PROJECT - FIGURE 2-1 PROJECTS CONSIDERED IN CUMULATIVE IMPACTS ANALYSIS



LEGEND

CUMULATIVE IMPACT ANALYSIS PROJECT STATUS	
■	PROPOSED
■	IN PERMITTING
■	UNDER CONSTRUCTION
■	PERMITTED
OIL AND GAS LEASE STATUS	
■	INITIAL TERM EXTENDED BECAUSE OF ACTIVITY ON THE LEASED AREA
■	A LEASE WITHIN THE INITIAL TERM OF THE CONTRACT (5, 8, OR 10 YEARS)
■	A LEASE HELD BY PRODUCTION OF A MINERAL
■	INITIAL TERM EXTENDED DUE TO ORDERING OR APPROVAL BY US OF SOP
■	A LEASE (OR PORTION THEREOF) INCLUDED IN AN APPROVED UNIT AGREEMENT

DRAWING INFORMATION

DRAWN BY:	CA	COUNTY/PARISH:	N/A
CHECKED BY:	CW	STATE:	TEXAS/LOUISIANA
DATE:	8/11/2020	SHEET:	1 OF 1
DWG #:	0802-01-064	SCALE:	1:1,000,000

REVISIONS

DATE	REVISION	REV.
8/11/2020	ISSUED FOR REVIEW	A
	PRELIMINARY	

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BLUE MARLIN OFFSHORE PORT PROJECT
 Figure 2-1
 Projects Considered in Cumulative Impacts Analysis

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3.0 OFFSHORE CUMULATIVE IMPACTS

Activities that could affect offshore resources near the Project area include:

- Offshore pipelines, DWPs;
- Construction and operation of onshore terminals and associated vessel traffic;
- Construction and operation of offshore oil and gas industry and associated marine traffic;
- Channel management and improvements; and
- Offshore sediment resource extraction.

Cumulative impacts with other projects due to construction and operation of the offshore Project components are not expected. The construction duration for the offshore components is approximately 18 months, with the majority of that time in equipment fabrication onshore. There are no known offshore projects within the region of influence and in the same timeframe as the Project. Oil and gas exploration and production, as well as sediment resource extraction, may occur in leased blocks near the Project; however, the timing of any such development is highly variable and speculative. Other offshore facility development could occur in the same period as the Project. The likelihood of simultaneous construction and development in the closest lease area during construction of the Project is unlikely. Impacts to recreation and visual resources in the area of the DWP are expected to be negligible to minor during construction. No other projects are anticipated to contribute to impacts to recreation and visual resources in the same timeframe. Once construction is complete, fishing and other recreational activities that occur in the area would be allowed to resume with the exception of areas that would be prohibited during operation. There are no anticipated cumulative impacts from construction of offshore components.

Operation of the Project would increase vessel traffic in the area of the DWP, however this increase would be negligible when compared to the overall vessel traffic in the area. There are no other projects within the region of influence for air and noise potential impacts. Therefore, there are no anticipated cumulative effects from operations of the Project and other past, present, or reasonably foreseeable projects.

4.0 ONSHORE CUMULATIVE IMPACTS

4.1 Water Quality and Use

The region of influence for water quality and use is defined as surface waters and aquifers crossed by and downstream of Project components, within 5 miles of the onshore pipeline, and 8 miles of the BMOP Pump Station. Based on this region of influence, there are four projects with the potential for cumulative impacts:

- Nederland Terminal Expansion and Dock 7/8
- Bessie Heights Pipeline
- Golden Triangle; and
- Dore Energy.

There are no known construction or opening of new community developments, changes to stormwater and drainage management, and major road construction projects within the region of influence.

Onshore, trenching and backfilling could temporarily increase the amount of sediments released downstream or in nearby waterbodies or wetlands. This could be exacerbated by other projects under construction within the region of influence and within the same timeframe as the proposed Project. The

Applicant would employ a number of BMPs to minimize potential impacts on water quality (see Topic Report 2 of Volume IIb). The Project, in combination with other projects and based on the extent of resources in the area of influence, would have short-term, minor cumulative impacts on water quality during construction.

Cumulative impacts to water quality and use during operation could occur from inadvertent spills from the Project and other pipelines (i.e. Bessie Heights Pipeline), other oil and gas activity in the area including the offloading facility (i.e. Golden Triangle). The severity of these impacts would depend on the severity of the spill. All projects would be required to have spill response plans. The Project, in combination with other projects, could have short-term, minor to major cumulative impacts on water quality from inadvertent spills.

4.2 Land Cover and Vegetation

The region of influence for land cover and vegetation is the footprint of the Project. Based on this region of influence, there is one project with the potential to contribute to impacts from the Project: the Nederland Terminal expansion.

The Nederland Terminal expansion would overlap the footprint of the BMOP Pump Station. Project construction is not likely to be cumulatively substantial when combined with the Nederland Terminal expansion because the Nederland Terminal expansion is proposed to be complete prior to construction of the BMOP Pump Station.

Cumulative impacts to land cover and vegetation during operation could occur from inadvertent spills from the Project and other pipelines (i.e. Bessie Heights Pipeline) and other oil and gas activity in the area including the offloading facility (i.e. Golden Triangle). The severity of these impacts would depend on the severity of the spill. All projects would be required to have spill response plans. The Project, in combination with other projects, could have short-term, minor to major cumulative impacts on land cover and vegetation from inadvertent spills.

4.3 Aquatic Resources

Cumulative impacts to aquatic resource may occur through habitat alteration and displacement and could generate cumulative impacts through degradation of water quality and marine habitats in the coastal zone, increased noise, and inadvertent spills.

The region of influence for aquatic resources is within 5 miles of the onshore pipeline, and 8 miles of the BMOP Pump Station. Based on this region of influence, there are four projects with the potential for cumulative impacts:

- Nederland Terminal Expansion and Dock 7/8
- Bessie Heights Pipeline
- Golden Triangle; and
- Dore Energy.

The Applicant would employ a number of BMPs to minimize potential impacts on aquatic resources (see Topic Report 4 of Volume IIb). As a result, the proposed Project, in combination with other past, present, and reasonably foreseeable projects and the extent of the aquatic resource in the area of influence, could have short-term, negligible to minor cumulative impacts on aquatic resources during construction.

Cumulative impacts to aquatic resources during operation could occur from inadvertent spills from the Project and other industrial activity in the area. The severity of these impacts would depend on the severity of the spill. All projects would be required to have spill response plans. The Project, in combination with other projects, could have short-term, minor to major cumulative impacts on aquatic resource from inadvertent spills.

4.4 Wildlife and Protected Species

Cumulative impacts to wildlife and protected species may occur through vegetation removal and habitat alteration, wildlife displacement, introduction of invasive plant species, and could generate cumulative impacts through degradation of water quality and marine habitats in the coastal zone, increased noise, and inadvertent spills.

The region of influence for wildlife and protected species is one mile. Based on this region of influence, there are three projects with the potential for cumulative impacts:

- Nederland Expansion and Dock 7/8;
- Bessie Heights Pipeline; and
- Dore Energy.

The Nederland Terminal expansion is proposed to be complete prior to construction of the BMOP Pump Station, therefore it is not likely that construction of these projects would occur simultaneously. The Bessie Heights Pipeline and Dore Energy, both within one mile of the Project, may be constructed within the same timeframe and would require coordination to reduce any potential impacts to wildlife and protected species. BMPs, applied by the Applicant and for other projects, would minimize potential impacts on wildlife and protected species (see Topic Report 5 of Volume IIb). As a result, the proposed Project, in combination with other past, present, and reasonably foreseeable projects and the extent of wildlife/protected habitat in the area of influence, could have short-term to long-term, negligible to moderate cumulative impacts on wildlife and protected species during construction.

Operation of the onshore Project components would have fewer impacts on wildlife and protected species, due to less ground disturbance, fewer vehicles, and lower noise levels, and would not be cumulatively substantial when combined with other ongoing and future onshore activities.

4.5 Cultural Resources

Activities that result in disturbance of the ground and seafloor could threaten historic and prehistoric archaeological resources onshore and offshore, and could result in visual impacts on historic structures onshore.

The region of influence for cultural resources is the footprint of the Project or the Area of Potential Effect (APE). The Nederland Terminal (NT) expansion would overlap the footprint of the BMOP Pump Station. Because the NT expansion will complete their cultural resources consultation ahead of their construction, no new cultural resources would be disturbed (i.e., cultural resources can only be disturbed once, before they are either protected or displaced). Unanticipated discoveries during construction could result in minor to major incremental impacts on cultural resources; however, the Applicant would implement its Unanticipated Discoveries Plan for Cultural Resources and Human Remains to minimize potential impacts. As a result, the Project, in combination with the Nederland Terminal expansion, would not have cumulative impacts on cultural resources.

The Project would not impact cultural resources during operation, therefore there are no anticipated cumulative impacts on cultural resources during operation.

4.6 Soils and Geological Resources

Onshore impacts from the Project could be short-term or long-term, and could range from negligible to moderate (see Topic Report 7, “Geologic and Soil Resources,” of Volume IIB for a more detailed description). The region of influence for soils and geological resources is the footprint of the Project. Project construction is not likely to contribute substantially when combined with other ongoing and future onshore activities. In particular, the BMOP Pump Station would be in the same footprint as the Nederland Terminal expansion project, however, no additional ground disturbance would occur in areas previously disturbed by the Nederland Terminal expansion. As a result, construction of the Project, in combination with other past, present, and reasonably foreseeable projects, could have short-term negligible cumulative impacts on onshore soil and geological resources.

During general operation activities, the Project would not contribute to cumulative impacts on geologic or soil resources. During unplanned maintenance or repair activities, the Project, in combination with other past, present, or reasonably foreseeable projects, could have short-term, negligible cumulative impacts on soil and geological resources.

Cumulative impacts to soils during operation could occur from inadvertent spills from the Project, other pipelines (i.e. Bessie Heights Pipeline) and other oil and gas activity in the area including the offloading facility (i.e. Golden Triangle). The severity of these impacts would depend on the severity of the spill. All projects would be required to have spill response plans. The Project, in combination with other projects, could have short-term, minor to major cumulative impacts on soils from inadvertent spills.

4.7 Land Use, Coastal Zone, Recreation and Aesthetics

Onshore impacts from the Project on land use, coastal zone, recreation and aesthetics could be short-term to long-term, and could range from negligible to moderate (see Topic Report 8 of Volume IIB). The region of influence for land use is the footprint of the Project, and for coastal zone, recreation and aesthetics is one mile.

The onshore pipeline route follows existing linear features (e.g., pipelines, electric transmission lines, roads, railroads) to the extent possible to minimize establishing new linear features and causing substantial changes to land use. Conversion of the existing Stingray Mainline also reduces Project impacts and minimizes cumulative impacts. Construction and operation of the BMOP Pump Station and a portion of the pipeline would be same footprint of the Nederland Terminal expansion. There are no anticipated impacts to land use from this because the land will have already been converted to industrial use. There are no known past, present, and reasonably foreseeable projects within the same footprint as the remaining onshore pipeline and all other aboveground facilities; therefore, there are no cumulative impacts to land use associated with construction and operation of the Project.

Other impacts on the coastal zone, recreation and aesthetics include increased traffic and the presence of construction personnel and equipment in the area of construction. The potential for overlap of impacts to land use, recreation, visual resources, and/or ocean use impacts with other projects would be unlikely given the lack of intersection between the Project and other past, present, or reasonably foreseeable projects.

4.8 Air and Noise

The region of influence for air is 0.25 mile for construction and 31.1 miles (50 kilometers) for operations. The region of influence for noise is 1 mile. There are two projects with the potential for cumulative impacts to air during construction: the Nederland Terminal expansion; and Bessie Heights Pipeline. There are 11 projects with the potential for cumulative impacts to air during construction including the following:

- Sabine Pass Liquefaction
- Port Arthur LNG
- Cameron LNG
- Venture Global LNG-Calcasieu
- Monkey Island LNG
- Commonwealth LNG
- Port Louisiana
- Nederland Expansion
- Golden Triangle
- Sabine Pass Compression Project
- Bessie Heights Pipeline

There are three projects with the potential for cumulative impacts to noise during construction including the following:

- Nederland Expansion and Dock 7/8;
- Bessie Heights Pipeline; and
- Dore Energy.

Air and noise impacts associated with construction of the Project would last for the duration of the construction period, but would be intermittent and highly localized to each construction site. While construction activities may overlap with other projects, the Project, in combination with other projects, could result in short-term, negligible cumulative impacts on air quality.

The Applicant's dispersion modeling, which included the emissions from existing stationary emission sources up to 31.1 miles from the proposed Project, determined that the operational Project would remain in compliance with all applicable air quality standards. Based on this assessment, operation of the onshore components of the Project, in combination with other past, present, and reasonably foreseeable projects could result in long-term, minor cumulative impacts on air quality onshore.

Activities that could generate onshore cumulative noise impacts include waterway transportation projects, including channel improvement projects and terminal development projects; onshore and offshore pipeline projects; and industrial facilities. To minimize the noise levels at noise sensitive areas (NSAs), the Applicant would use temporary noise acoustic panels around noise sources and/or perimeter sound walls around the one HDD location near residences. Construction and operation of the BMOP Pump Station would not result in noise levels greater than the ambient noise level and noise mitigation measures would not be implemented. Based on this assessment and the fact that the NSAs are located more than 1 mile from

other cumulative projects, construction of the onshore components, in combination with past, present, or reasonably foreseeable projects, could result in short-term, minor impacts on noise levels.

Operation of the onshore Project components would result in noise from the BMOP Pump Station; however, noise impacts during operation would be minor. Operation of the onshore components of the Project, in combination with operation of other projects is not likely to increase overall noise levels and would not exceed long-term, minor impacts from noise.

5.0 OTHER CUMULATIVE IMPACTS

5.1 Socioeconomics

Activities that could generate cumulative socioeconomic impacts on population, housing, employment, and tourism in the proposed Project vicinity would occur both onshore and offshore. These activities include waterway transportation projects, including channel improvement projects and terminal development projects; onshore and offshore pipeline projects; industrial facilities; and roadway construction projects.

Onshore activities, including construction of new schools, communities, roads, and industrial developments would affect socioeconomic factors such as population, housing, employment, and tourism. Most of the offshore activities included in the cumulative impacts analysis are part of the continued development of the oil and gas and shipping industries in the vicinity of the Project, and would also affect the same socioeconomic factors.

Project construction and operation would have negligible to minor, beneficial impacts on employment and economy and negligible adverse impacts on population, housing, and public services. Project construction and operation would also have negligible adverse and beneficial impacts on marine commerce and shipping.

Ongoing development in the vicinity of the proposed Project would result in both beneficial and adverse socioeconomic impacts, including creation of new jobs and revenue for the local economy as well as increased demand for public services.

The Project, in combination with other past, present, and reasonably foreseeable projects, would have short-term to long-term, minor cumulative impacts on population, housing, public services, recreation and tourism, commercial fishing, and would also have short-term, minor beneficial cumulative impacts on employment, marine commerce, and shipping.

5.2 Safety and Security

Other projects that that could result in onshore cumulative impacts on safety and security include the construction and operation of oil and gas and other industrial facilities. If an event were large enough to affect multiple facilities, city officials, emergency responders, and representatives from the facilities would likely work together to minimize impacts on the public. Additional details on safety and security are included in Topic Report 12 of Volume IIa.

Once constructed, the Applicant is requesting that the United States Coast Guard (USCG) Captain of the Port establish a Safety Zone, as defined in 33 CFR § 148.5, around the entire DWP operations area to restrict vessels or persons from specified areas around the offshore facilities. The Safety Zone will only be open to entry for VLCCs or other crude oil carriers prepared for connection for loading of crude oil, and the necessary service vessels supporting that process. The requested Safety Zone surrounding the BMOP DWP operations area is approximately 9,660 acres. Further, within the Safety Zone and in accordance with 33 CFR § 148.5, the Applicant is requesting the designation of an Area to be Avoided (ATBA) in the waters surrounding the WC 509B Platform (DWP Platform) and Catenary Anchor Leg Mooring (CALM) Buoys. The requested ATBA has a radius of 600 meters extending out from the centroid of the Platform. CALM Buoy Nos. 1 and 2 will have a requested ATBA at a radius of 500 meters extending out from the centroid of each. Therefore, impacts to safety and security would be avoided and reduced and it is unlikely there would be cumulative impacts from this and other activity.

Based on the evaluation above, the Project, in combination with other past, present, and reasonably foreseeable projects, could have short-term, negligible cumulative impacts on safety and security unless a

major event were to occur. If a major event were to occur, cumulative impacts could be long-term, minor to major.

5.3 Transportation

Activities that could create onshore cumulative impacts on road transportation include construction of onshore pipelines, construction and operation of onshore terminals, and road construction projects. Onshore impact-producing activities could include increased traffic congestion and delays due to road construction. Activities that could create offshore cumulative impacts on marine transportation include installation of offshore pipelines, construction and operation of onshore terminals and DWPs and associated vessel traffic, marine traffic associated with the offshore oil and gas industry, and channel management and improvements. Offshore impact-producing activities would include navigational restrictions and increased maritime traffic and congestion.

There are no known planned residential developments within one mile of the Project. There are also no known Department of Transportation (USDOT) or local planned transportation projects in either Texas or Louisiana that would take place in the same timeframe as the Project. Traffic in the area of the Project would increase during construction. Cumulative impacts on transportation could result from increased traffic during construction of the Project and any other projects using the same transportation routes. Therefore, construction of the Project, in combination with other past, present, and foreseeable projects, could have short-term, minor cumulative impacts on onshore transportation. Operation of the Project is not likely to have impacts to onshore transportation, and therefore would have no cumulative impacts.

The offshore projects considered for the cumulative analysis would use established shipping safety fairways. Offshore Project construction would temporarily increase marine traffic. Waterways in the coastal areas off the coast already experience heavy use. All vessels (whether related to the Project or cumulative projects) would be required to follow navigational safety laws, adhere to safe navigation practices established through the 1972 International Rules of the Road (72 COLREGS), observe safety zones, and coordinate with Federal and state agencies responsible for regulating marine traffic. Therefore, offshore construction of the Project, in combination with other past, present, and foreseeable projects, could have short-term, minor cumulative impacts on offshore transportation.

Operation of offshore components of the Project would result in increased vessel traffic. As a result, operation of the Project, in combination with other cumulative projects, could have long-term, minor cumulative impacts on offshore transportation.