DEEPWATER PORT LICENSE APPLICATION FOR THE BLUEWATER SPM PROJECT

VOLUME II – ENVIRONMENTAL EVALUATION

Section 1 – Project Purpose and Need

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ACRONYMS AND ABBREVIATIONS

bpd	barrels per day
bph	barrels per hour
DWP	deepwater port
EFH	essential fish habitat
EIA	Energy Information Administration
Ft.	feet
LOOP	Louisiana Offshore Oil Port
MMbpd	million barrels per day
Project	Bluewater SPM Project
SPM	Single point mooring
STS	ship to ship transfer
T&E	Threatened and Endangered
U.S.	United States [of America]
VLCC	very large crude carriers
WOUS	Waters of the U.S.

1 Project Purpose and Need

The purpose of the proposed Bluewater SPM Project (Project) is to provide a safe and environmentally sustainable solution for the export of abundant domestic crude oil supply from major shale basins. The Project will help fulfill market demand and support economic growth in the United States of America (U.S.).

Based on the need for the proposed Project and an alternatives analysis (Volume II, Section 2), the Applicant proposes to construct the Project to allow for the loading of very large crude carriers (VLCCs) at a deepwater port (DWP) via two (2) single point mooring (SPM) buoy systems in the Gulf of Mexico. The Applicant has identified critical objectives required for the fulfillment of the Project purpose and need. This will serve as the basis for consideration throughout the alternative analysis process detailed in Section 2 of Volume II. The Project objectives have been defined as follows:

Project Objectives

- Provide a safe and environmentally sustainable solution for the export of abundant domestic crude oil supply from major shale basins and support economic growth in the U.S.
- Ability to safely and fully load a VLCC.
- Ability of infrastructure to support the simultaneous full loading of up to two (2) VLCC vessels.
- Ability of infrastructure to support loading rates of approximately 80,000 barrels per hour (bph) for the full loading of up to 16 VLCC's per month in order to result in an acceptable return on investments.
- Minimize the required modifications to existing environmental conditions.
- Minimize potential interference with existing natural processes.
- Maximize offsite fabrication in a controlled setting thereby minimizing offshore impact as a result of on-site construction activities.
- Locate Project in proximity to existing and planned crude oil infrastructure in order to reduce footprint and environmental impacts.
- Minimize impact to waters of the U.S. (WOUS), including wetlands, coastal bend ecosystems, and special aquatic resources.
- Minimize impact to threatened and endangered (T&E) species and their associated habitats
- Minimize impact to cultural resources.
- Minimize impact to navigation and navigation safety.
- Minimize impact to commercial and recreational fisheries and essential fish habitat (EFH).
- Existing land use compatibility, availability, and suitability for the Project.

1.1 U.S. Crude Oil Production

Crude oil is a traded commodity used to provide a wide variety of end products like fuel for transportation, fertilizers, and plastics. Crude oil has been a primary source of energy in the U.S. for over a century. Over the past 10 years, U.S. domestic crude oil production has increased significantly because of production from tight rock formations and the use of recent horizontal drilling and hydraulic fracturing techniques. In the future, most of the U.S. production growth is expected to come from tight rock formations.

According to the U.S. Energy Information Administration (EIA) 2019 Annual Energy Outlook, total U.S. crude oil production reached an average of 10.8 million barrels per day (MMbpd) in 2018 (Figure 1-1). By 2030, U.S. crude oil production is expected to increase by an additional 3.7 MMbpd. Tight oil will account for almost 81% (3.7 MMbpd) of the increase (Figure 1-2). Most of the tight oil growth is from Southwest region (Texas and New Mexico). Production in the Southwest region is expected to grow by 2.2 MMbpd by 2030 (Figure 1-1).

Figure 1-1: U.S. Crude Oil Production 2000-2030

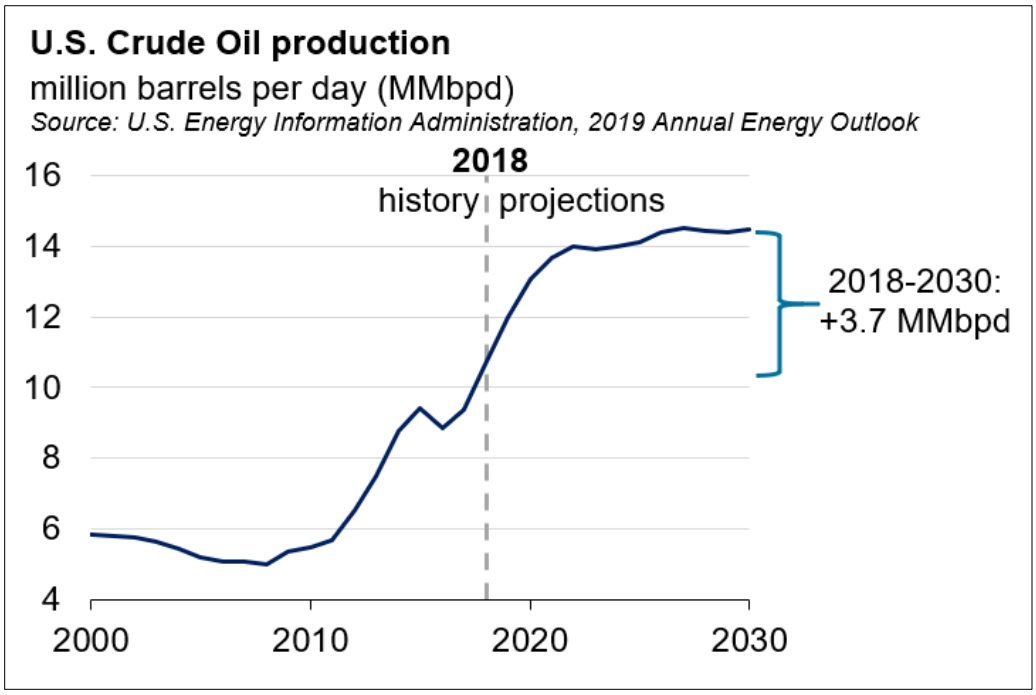


Figure 1-2: U.S. Crude Oil Production by Type 2000-2030

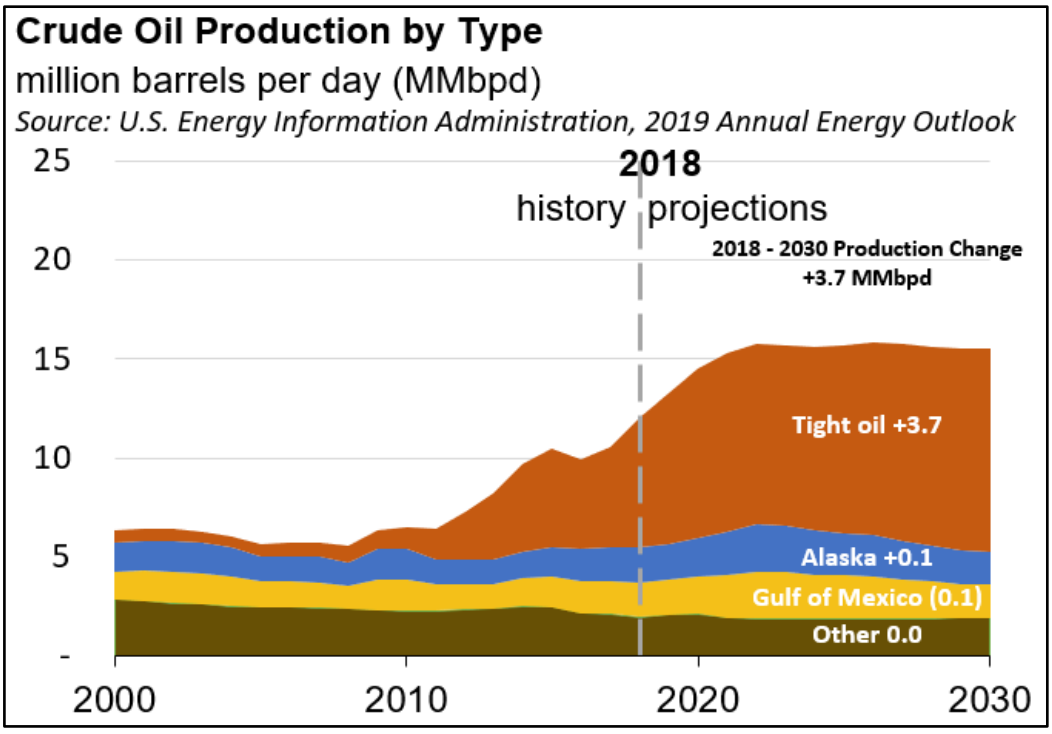
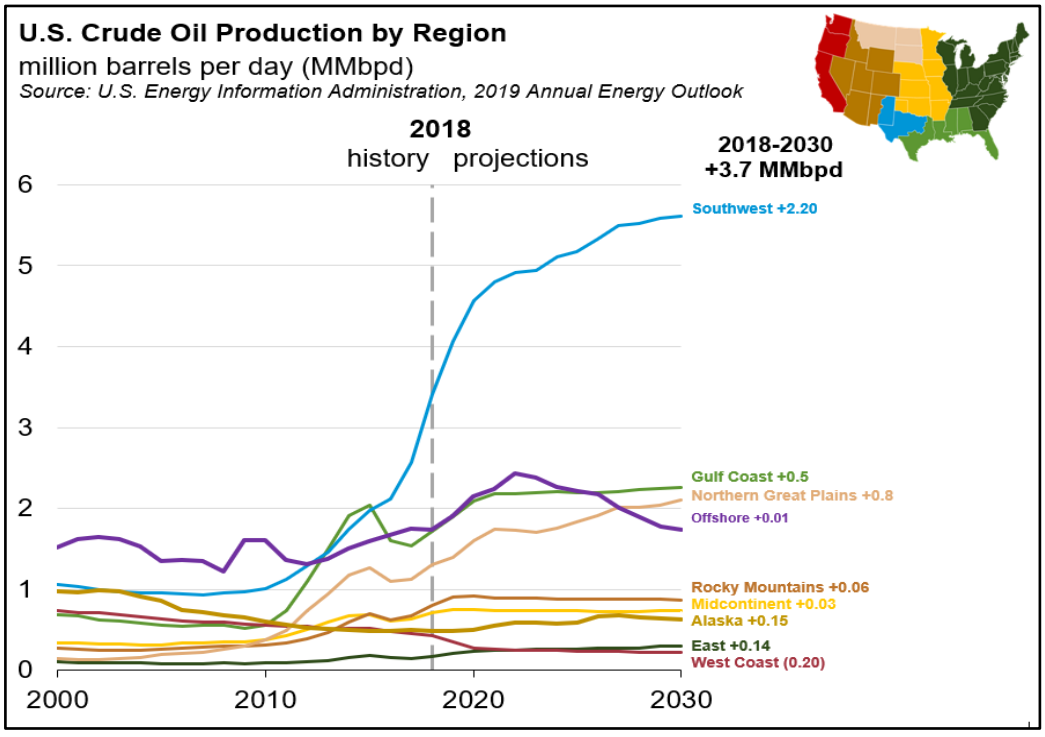


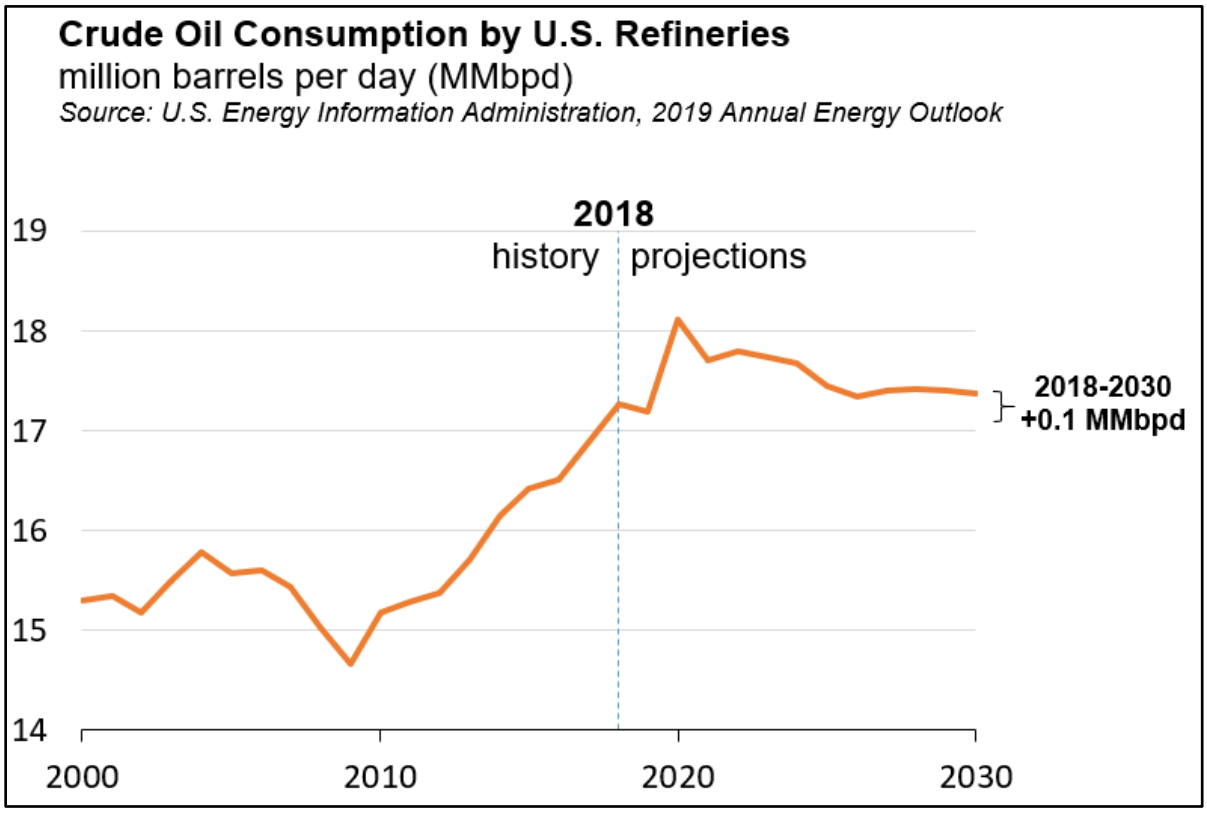
Figure 1-3: U.S. Crude Oil Production by Region 2000-2030



1.2 U.S. Refinery Capabilities and Capacity Limitations

This increase in domestic production is primarily sweet crude oil (less than 1% sulfur) from the Southwest region and offshore basins. However, U.S. refineries have historically configured most facilities to process heavy and high sulfur crude oil supplies. These heavier crudes are generally derived from international producers, namely Canada, South America and the Middle East. Running refineries solely on domestic light crude oil or reconfiguring the capabilities of any refinery is generally uneconomical. As a result, the U.S. has more sweet crude oil than it can refine domestically and is increasingly looking to export the surplus to international markets that have the refining infrastructure and growing demand. The U.S. refineries' consumption of crude oil is only expected to increase by 0.1 MMbpd (Figure 1-4). Domestic crude oil production is expected to increase by 3.7 MMbpd from 2018-2030 (Figure 1-3). Therefore, producers and shippers are looking for alternative destinations for the growing U.S. production and supply.

Figure 1-4: Crude Oil Consumption by U.S. Refineries 2000-2030



1.3 U.S. Crude Oil Exports

The export of crude oil from the U.S. had been limited since 1975 due to the export restrictions associated with the Energy Policy and Conservation Act of 1975 and Export Administration Act of 1979 (Crude Oil Export Ban). The ban was lifted when the Consolidated Appropriations Act of 2016 was signed into law in December of 2015. Since the export ban was lifted, crude oil exports have increased from 350,000 barrels per day (bpd) in 2014 to more than 2.0 MMbpd in 2018. It is anticipated that the U.S. will become a net exporter of crude oil by 2020, surpassing 3.5 MMbpd.

VLCCs are the preferred mode of international maritime transport of crude oil because they are the most efficient and economical way to transport very large volumes of crude oil for long distances. A VLCC has a hull capacity of approximately 2,000,000 barrels and can measure up to 1,500 feet (ft.) in length and 200 ft. in width. However, due to this significant size and transport capacity, a VLCC requires a minimum draft depth of up to approximately 75 ft. when fully loaded. Existing navigation channels associated with inland maritime ports on the U.S. Gulf Coast cannot support the required draft depths to allow for the full loading of these vessels (Table 1-1). Furthermore, a majority of the existing inland dock facilities are not equipped with the necessary vessel engagement infrastructure to support the loading of VLCCs due to their size and navigation requirements.

Table 1-1: Existing Inland Gulf Coast Port Draft Restrictions

Port Name	Current Reported Max Port Draft (ft)
Brownsville	35.8
Corpus Christi	45.0
Matagorda	35.1
Freeport	42.0
Texas City	39.7
Houston	44.9
Sabine/Beaumont	40.0
New Orleans	46.9

Currently, the export of crude oil from the U.S. primarily relies on ship to ship transfer (STS) in an offshore environment to fully load VLCCs. STS is a multiday process involving the anchoring of a VLCC offshore and using multiple smaller vessels to ferry crude oil from an inland port to the anchored VLCC. This process involves multiple loading and discharge operations to obtain a fully laden vessel. Relying on STS techniques for the export of crude oil presents significant economic disadvantages, potential navigational concerns, and exposure to workforce hazards.

The Louisiana Offshore Oil Port (LOOP) is a DWP located within the Gulf of Mexico. Currently, LOOP is the only U.S. facility capable of directly accommodating a fully laden VLCC. However, LOOP was originally designed and purposed as a heavy crude import facility. As such, LOOP lacks direct pipeline connectivity and access to existing infrastructure to efficiently support current and projected domestic crude oil production.

The full loading of a VLCC provides the most efficient and cost-effective means for the export of domestic crude oil. Currently, no inland port on the U.S. Gulf Coast is capable of directly and fully loading a VLCC. With the rapid increase in domestic crude oil production in excess of domestic refinery demand, there is an important need for the establishment of a safe, economic, and environmentally sustainable solution for the export of abundant domestic crude oil supply from major shale basins.

1.4 Project Purpose and Need Summary

Current and projected crude oil production estimates indicate that the U.S. will become a net exporter of crude oil by 2020. Additionally, the U.S. is producing more sweet crude oil than it can refine domestically and therefore there is a need for an efficient export solution to international markets with growing demand and the refining infrastructure for that crude type. Current U.S. crude oil export infrastructure is constrained and inefficient, presenting significant economic disadvantages, potential navigational concerns and exposure to workforce hazards. As such, there is an important need for the establishment of a safe and environmentally sustainable solution for the export of an abundant and increasing domestic crude oil supply which supports job and economic growth in the U.S.

1.5 Benefits of the Proposed Project

Failure to develop a solution for the export of U.S. crude oil in fully laden VLCCs from a DWP would result in reduced opportunities for U.S. domestic producers and shippers to capitalize on international market demand coupled with domestic crude oil production.

The Applicant's proposed Project provides a safe and environmentally sustainable solution for the export of abundant and increasing domestic crude oil supply in support of those U.S. domestic producers and shippers allowing them to capitalize on international market demand coupled with domestic crude oil production by allowing the simultaneous and full loading of VLCCs at the proposed DWP. These objectives serve as the basis for consideration throughout the alternative analysis process detailed in Section 2.0.

1.6 References

U.S. Energy Information Administration (EIA). 2019. Petroleum and Other Liquids. January 2019

U.S. Energy Information Administration (EIA). 2019 Annual Energy Outlook. January 2019