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

Volume IIa – Offshore Project Components Environmental Evaluation (Public)
Topic Report 1: Project Description, Purpose, and Need

Submitted to:

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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*)
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ABBREVIATIONS AND ACRONYMS

Applicant	Blue Marlin Offshore Port LLC
ACHP	Advisory Council on Historic Preservation
AHT	Anchor Handling Tugs
APE	area of potential effect
Applicant	Blue Marlin Offshore Port LLC
ARPA	Archeological Resources Protection Act
ATBAs	Areas to be Avoided
ATM	Asynchronous Transfer Mode
AtoN	Aids to Navigation
ATWS	Additional Temporary Workspace
BGAN	Broadband Global Area Network
BGEPA	Bald and Golden Eagle Protection Act
bpd	barrels per day
bph	barrels per hour
BMOP	Blue Marlin Offshore Port
BOEM	United States Bureau of Ocean Energy Management
CAA	Clean Air Act
CALM	Catenary Anchor Leg Mooring
CEQ	Council on Environmental Quality
CFCs	chlorofluorocarbons
CFR	Code of Federal Regulations
CO	carbon monoxide
COLREGS	Convention on the International Regulations for Preventing Collisions
CUP	Coastal Use Permit
CWA	Clean Water Act
CWC	Concrete Weight Coating
CZWA	Coastal Zone Management Act
DOI	United States Department of Interior
DWP	Deepwater Port
DWPA	Deepwater Port Act
EC	East Cameron
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIA	United States Energy Information Administration
EIS	environmental impact statement
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
FBE	Field Joint Fusion Bonded Epoxy
FERC	Federal Energy Regulatory Commission
FMP	Fishery Management Plan
GOM	Gulf of Mexico
gpm	gallons per minute
GPS	Global Positioning Systems
HAPs	hazardous air pollutants
IMO	International Maritime Organization
IP	Internet Protocol

LAC	Louisiana Administrative Code
LDEQ	Louisiana Department of Environmental Quality
LDNR	Louisiana Department of Natural Resources
LDWF	Louisiana Department of Wildlife and Fisheries
LOCD	Louisiana Office of Cultural Development
LQ	living quarters
MARAD	United States Maritime Administration
MBTA	Migratory Bird Treaty Act
MLV	mainline valve
MMPA	Marine Mammal Protection Act
MP	milepost
MPLS	Multiprotocol Label Switching
MPMS	Manual for Petroleum Measurement Standards
MPRSA	Marine Protection, Research, and Sanctuaries Act
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NAA	No Anchorage Area
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act of 1990
NDE	Non-destructive Examination
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NGA	Natural Gas Act
NGPL	Natural Gas Pipeline Co.
NMSA	National Marine Sanctuary Act
NOAA Fisheries	National Oceanic and Atmospheric Administration, National Marine Fisheries Service
NOI	Notice of Intents
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSR	New Source Review
NT	Nederland Terminal
OCS	Outer Continental Shelf
OCSLA	Outer Continental Shelf Lands Act
OD	outer diameter
OEM	original equipment manufacturer's
OPA	Oil Pollution Act of 1990
OSB	onshore support base
PHMSA	Pipeline and Hazardous Materials Safety Administration
PLEMs	Pipeline End Manifolds
PM	particulate matter
Project	Blue Marlin Offshore Port Project
PSD	Prevention of Significant Deterioration
RHA	Rivers and Harbors Act
ROW	right-of-way
RRC	Texas Railroad Commission
RTU	remote terminal unit
SCADA	Supervisory Control and Data Acquisition
SDV	Emergency Shutdown valve
SHPO	State Historical Preservation Office

SIPs	state implementation plans
SO_2	sulfur dioxide
SOLAS	International Convention for the Safety of Life at Sea
SVM	Service Vessel Mooring
TAC	Texas Administrative Code
TC	TC Energy
TCEQ	Texas Commission on Environmental Quality
TEMPSC	Totally Enclosed Motor Propelled Survival Craft
THC	Texas Historical Commission
THPOs	Tribal Historic Preservation Officers
TPWD	Texas Parks and Wildlife Department
TX DOT	Texas Department of Transportation
U.S.	United States
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
USP	universal supply power
VBT	Vent Bridge Tripod
VHF	very high frequency
VOCs	volatile organic compounds
VSAT	Very Small Aperture Terminal
WAN	Wide Area Network
WC	West Cameron

PROJECT FAST FACTS

General Project Terminology	
Applicant	Blue Marlin Offshore Port LLC
Project Name	Blue Marlin Offshore Port (BMOP)

BMOP Location and General Information	
Nederland Terminal (NT)	The location where the oil for BMOP originates. This is the existing Sunoco Partners Marketing & Terminals L.P. facility located in Nederland, Jefferson County, Texas
New 42-inch Pipeline	37.02 miles of 42-inch pipeline from NT to Station 501
Existing Mainline from Cameron parish Louisiana to WC 509	Cameron Parish, Louisiana Louisiana State Blocks: WC 11, 20, 21 OCS Blocks: WC 21, 44, 43, 58, 79, 78, 95, 114, 113, 132, 133, 148, 169, 170, 183, 196, 205, 212, 213, 224, 230, 241, 245, 246, 255, 258, 259, 266, 269, 276, 275, 277, 282, 408, 431, 432, 433, 456, 459, 482, 483, 484, 508, 509
Deepwater Port Location (Platform – CALM Buoys)	West Cameron Block 509 (WC 509) West Cameron 508 (WC 508) East Cameron 263 (EC 263)
Deepwater Port Water Depth	156 to 162 feet water depth
Loading Capacity	80,000 barrels per hour (bph)

BMOP Deepwater Port Components	
Existing Stingray Pipeline (Mainline)	One existing 36-inch Outer Diameter (OD) pipeline, approximately 104 miles long from Station 501 in Cameron Parish, Louisiana to WC 509. This line consists of the existing 36-inch OD subsea line from WC 509 to Station 701 and the existing 36-inch OD onshore line from Station 501 to Station 701.
Deep Water Port (DWP)	The offshore loading facility site located in WC 509, WC 508, and EC 263. The facilities consist of the existing WC 509 Platform Complex; two new PLEMs and CALM Buoys in WC 508 and EC 263; two new Crude Oil Loading Pipelines from the WC 509 Platform Complex to the PLEMs and the flexible hoses attached to the CALM Buoys. The WC 509 Platform Complex will be converted from gas service to oil and gas service. The converted platforms will support oil export and natural gas transportation.
WC 509 Platform Complex (509 Complex)	The existing WC 509 Platform Complex consists of three platforms and two Vent Boom Tripods (VBT). The WC 509A Platform is the natural gas gathering platform. This will also house the 36-inch riser and pig barrel of the crude oil Mainline. The WC 509B Platform currently is the natural gas compression and control platform. It houses natural gas compressors, separators, the Control Room and Platform Complex's utilities. The WC 509B Platform will continue to house the natural gas separation facilities and the Platform Complex's utilities. It will also house the crude oil Control Room, metering facilities, and pig barrels for the two Crude Oil Loading Lines. The WC 509C Platform is the Living Quarters (LQ) platform and will continue in that role. The WC 509 VBTs are utilized to bridge the natural gas vent piping to a point approximately 660 feet from the 509B Platform and will continue in this role for any planned and emergency natural gas blowdowns.

BMOP Deepwater Port Components	
WC 148 Platform	The existing WC 148 Platform will be converted from natural gas transportation service to oil transportation service. All gas piping facilities on the deck will be removed and replaced with new pipe and a new Mainline Valve (MLV). This valve will be able to be remotely operated.
Catenary Anchor Leg Mooring (CALM) System	There will be two floating Calm Buoys installed approximately 4,710 feet and 6,085 feet from the WC 509B Platform. The CALM Buoys will be installed with a minimum of 5,000 feet separation. Each Buoy will be moored in place with 6 or more anchor chains connected to engineered anchors installed at locations around the Buoy. Flexible hoses will be connected from the PLEMs to the Calm Buoys. Floating flexible hoses will also be connected to the CALM Buoy and, during loading, the opposite end will be connected to the ship. CALM Buoy No. 1 will be installed in WC 508 and CALM Buoy No. 2 will be installed in EC 263.
Crude Oil Loading Pipelines	Two 36-inch diameter pipelines from the existing WC 509B Platform to the PLEMs.
Pipeline End Manifold (PLEM)	One PLEM will be installed on the seafloor at each CALM Buoy. Each PLEM will be connected to a 36-inch Crude Oil Loading Pipeline from the WC 509B Platform and a CALM Buoy floating above the PLEM. The two PLEMs will be in WC 508 and EC 263.
VLCC or other Crude Carrier	Very Large Crude Carriers (VLCCs), Suezmax, Aframax or other large capacity seafaring vessels.
Meter for Measuring Departing Crude Oil	The DWP will have two-meter stations with associated prover and lab facilities. One of the meter stations will be located at the new BMOP Pump Station adjacent to the NT and one will be located on the offshore crude export platform (WC 509B Platform).
Pre-fabrication Yards	Existing yards will be used along the northern Gulf of Mexico (GOM) coast.
Support Facility	An onshore support base will be established at an existing port facility to provide the necessary security to support the DWP operations.

BMOP Onshore Pipeline Components	
BMOP Pump Station	The onshore metering, pumping, and pig launcher station will be located in Nederland, Texas, adjacent to the existing NT.
Onshore Crude Oil Pipeline	A new, approximate 37.02-mile, 42-inch OD pipeline connecting the existing NT in Jefferson County, extending across Orange County, Texas to the existing 36-inch OD Mainline at Station 501 in Cameron Parish, Louisiana.
Station 501	The existing NGPL/Stingray interconnect facility (Station 501) will be abandoned and demolished. A new pig receiver and launcher will be installed to connect the new 42-inch OD onshore pipeline with the existing 36-inch OD onshore Stingray Mainline.
Station 701	The existing compressor Station 701 in Cameron Parish, Louisiana will be demolished. All existing natural gas equipment will be removed from the Station except for several large 10,000-barrel storage tanks. Approximately 1,000 feet of new 36-inch pipe, surge tanks, surge valves, and a new MLV will be installed. . The existing 10,000-barrel tanks located at Station 701 will be converted to surge relief tanks.
Stingray ANR Tap Removal Site	BMOP will remove the tap and install 36-inch pipe in its place.

BMOP Onshore Pipeline Components	
Mainline Valves (MLV)	Six new MLVs will be installed within the permanent pipeline right-of-way (ROW) of the new build pipeline. MLVs will also be installed at the BMOP Pump Station, Station 501, and Station 701. These valves will be used for isolation and spill control purposes.
Pipeline Pig Launchers and Receivers	Pig Launchers/Receivers will be located at the BMOP Pump Station, Station 501, and the DWP. These are utilized for cleaning the pipelines and running intelligent devices to assess pipeline integrity.
Access Roads and Canals	The Project will utilize existing access roads and canals. One new temporary access road and four new permanent access roads will be required.
Pipe and Contractor Yards	BMOP will utilize existing facilities along the northern GOM coast, U.S. or international locations for manufacturing pipe and for fabricating the PLEMs, CALM Buoys, and end connectors. Pipe coating activities will be performed at existing facilities along the northern GOM coast. Selection of the marine contractor will be completed after the MARAD filing; however, the successful contractor(s) will utilize existing fabrication and logistical facilities located along the northern GOM coast.

1.0 PROJECT DESCRIPTION, PURPOSE, AND NEED

1.1 PROJECT OVERVIEW

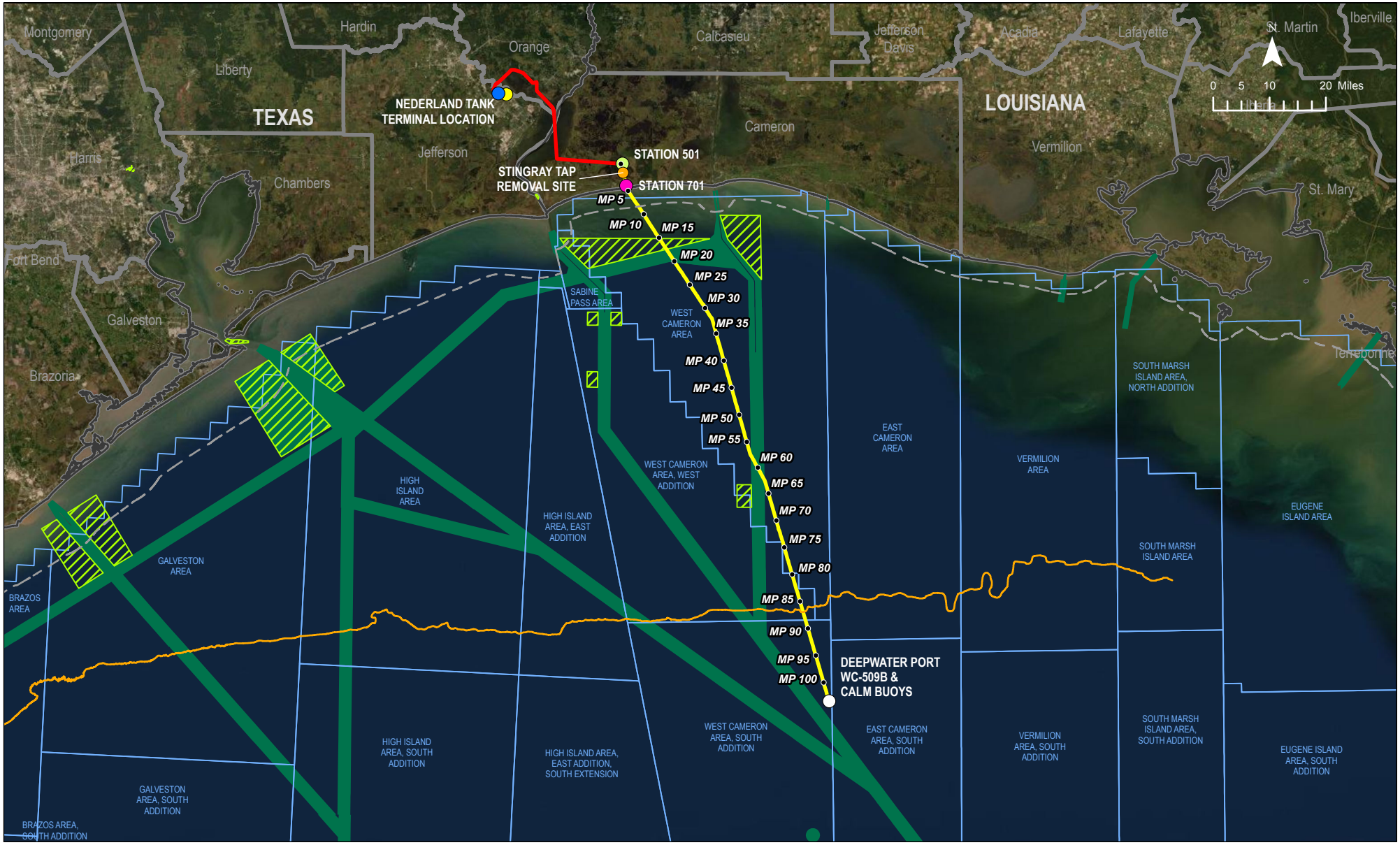
Blue Marlin Offshore Port LLC (the Applicant) is proposing to develop the Blue Marlin Offshore Port (BMOP) Project (Project) in the Gulf of Mexico (GOM) to provide crude oil transportation and loading services for crude oil produced in the continental United States (U.S.). A Project overview map is provided in **Figure 1-1**. The Deepwater Port (DWP) will be utilized to load the transported crude oil onto very large crude carriers (VLCCs) (and other crude oil carriers) for export to the global market. The Applicant is filing this application for a license to construct, own, and operate the DWP pursuant to the Deepwater Port Act (DWPA) of 1974, as amended, and in accordance with U.S. Coast Guard (USCG) and U.S. Maritime Administration (MARAD) implementing regulations.

The primary purpose of the Project will be to provide for safe and reliable long-term supply of crude oil for export to the global market. Oil for export will be transported out of the existing Sunoco Partners Marketing and Terminals, L.P. terminal and storage facility in Jefferson County, Texas (Nederland Terminal or NT). This terminal is connected to multiple crude oil pipelines connecting to production from across the U.S. In addition, an affiliate of the Applicant owns the Stingray Pipeline System and has confirmed that its subsea pipeline and offshore platforms are suitable for converting to facilitate crude oil export from a DWP in the northern GOM. The Applicant has the exclusive right to lease or purchase the Stingray Pipeline System for use in the Project.

The DWP will be located in federal waters within and adjacent to the Outer Continental Shelf (OCS) in West Cameron Lease Blocks (WC) 509 and 508 and East Cameron (EC) Block 263 (see **Figure 1-2**). Following the existing Stingray pipeline, the DWP will be approximately 99 statute miles off the coast of Cameron Parish, Louisiana, with an approximate water depth of 162 feet. Crude oil will be routed from pumps at Nederland, through a new 42-inch outer diameter (OD) onshore pipeline to the existing Stingray Mainline at Station 501, and from there through the existing Stingray Mainline to the DWP. The crude oil will be metered at the BMOP Pump Station on the NT and on the existing WC 509B Platform and routed through two Crude Oil Loading Lines to Pipeline End Manifolds (PLEMs) located on the seafloor below two Catenary Anchor Leg Mooring (CALM) Buoys located in WC 508 and in EC 263. From each PLEM, the crude oil will be routed to its respective floating CALM Buoy through submerged flexible hoses. VLCCs (or other large seafaring crude oil vessels) will moor at a CALM Buoy, retrieve and connect the floating crude oil hoses connected to the CALM Buoy and the crude oil will then route from the Buoy to the VLCC for loading. Up to 365 VLCCs (or other crude oil carriers) will load per year.

In summary, the BMOP facilities consist of the pumps and meters at NT; a new approximate 37-mile, 42-inch OD pipeline; the existing 36-inch OD Mainline; an existing fixed, manned platform complex at WC 509; an existing platform at WC 148; two new Crude Oil Loading Pipelines; and two new PLEM and CALM Buoys located in WC 508 and EC 263. A process flow diagram is provided in **Figure 1-3** and schematics of the proposed DWP are provided in **Figure 1-4**. The crude oils that would be exported range from light to heavy grade crudes from the existing the NT facility.

BMOP PROJECT - FIGURE 1-1 - PROJECT OVERVIEW MAP



LEGEND

- EXISTING OFFSHORE PIPELINE MILEPOSTS
- STINGRAY TAP REMOVAL SITE
- NEDERLAND TANK TERMINAL LOCATION
- NEDERLAND PUMP STATION
- STATION 701 (TO BE CONVERTED TO OIL SERVICE)
- STATION 501 (TO BE CONVERTED TO OIL SERVICE)
- DEEPWATER PORT WC-509B AND CALM BUOYS
- EXISTING PIPELINE TO BE CONVERTED TO OIL SERVICE
- PROPOSED ONSHORE PIPELINE (NEW BUILD)
- DEPTH CONTOUR -108'
- STATE WATERS BOUNDARY
- SAFETY ANCHORAGES
- PROTRACTION AREA
- SHIPPING FAIRWAY
- COUNTY / PARISH
- STATE BOUNDARY

BLUE MARLIN OFFSHORE PORT PROJECT

PROJECT OVERVIEW MAP

COUNTY/PARISH:	VARIOUS	DRAWN BY:	CA
STATE:	TX/LA	CHECKED BY:	CW

DATE:	2020/09/17	PROJECTION:	NAD 1983 UTM Zone 15N

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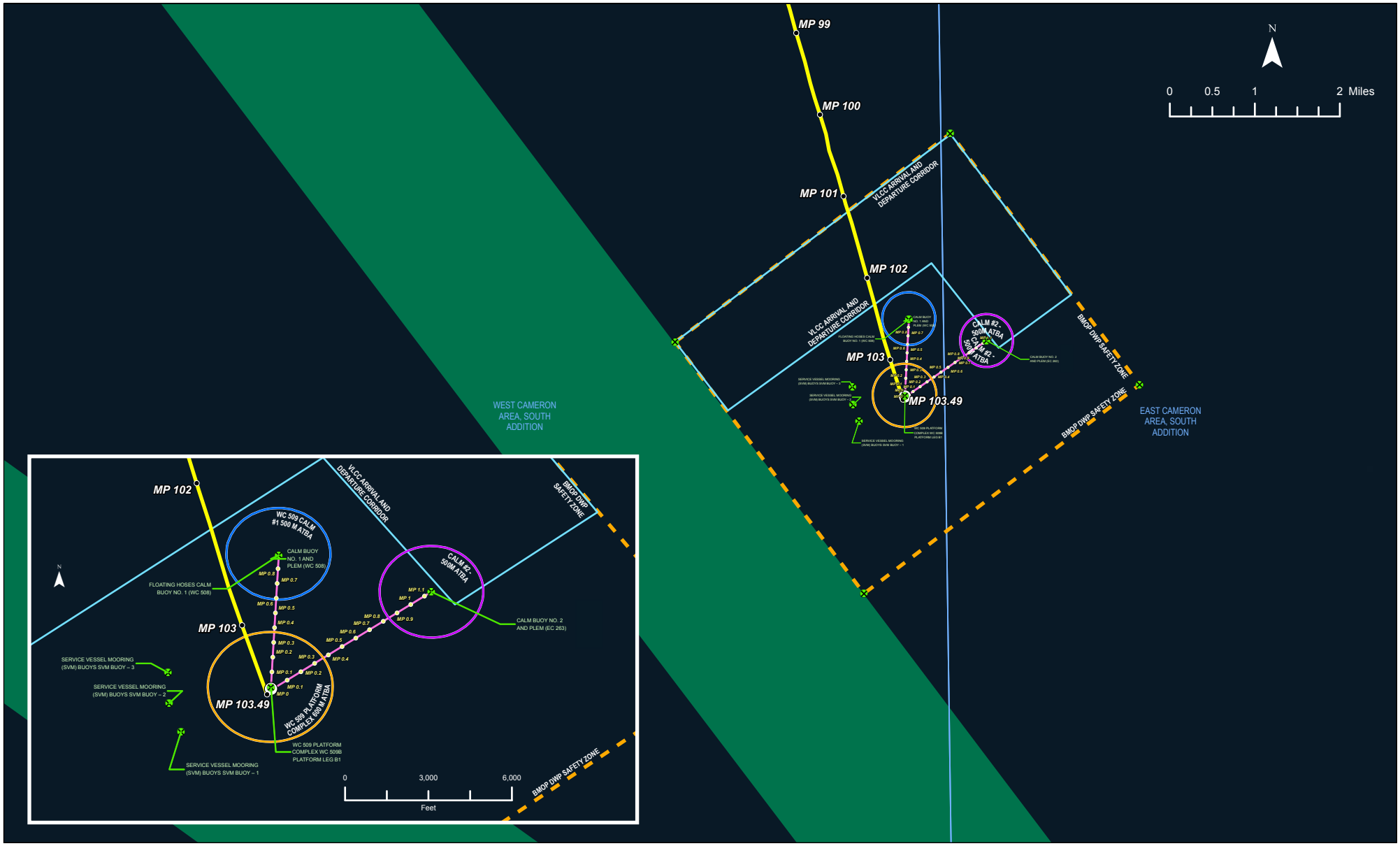
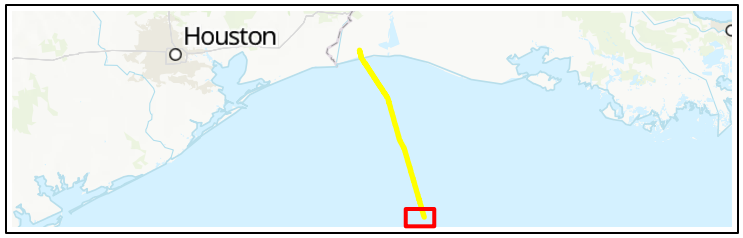
BLUE MARLIN OFFSHORE PORT PROJECT
FIGURE 1-1

DWG:	0802-01-005	SHEET:	1 OF 1

BMOP PROJECT - FIGURE 1-2 DWP OVERVIEW





LEGEND

- EXISTING OFFSHORE PIPELINE MILEPOSTS
- PLATFORM PIPELINE MILEPOSTS
- LOCATION OF NAVIGATION AIDS
- DEEPWATER PORT WC-509B AND CALM BUOYS
- EXISTING PIPELINE TO BE CONVERTED TO OIL SERVICE
- BMOP DWP SAFETY ZONE
- PLATFORM RISER JACKET
- VLCC ARRIVAL AND DEPARTURE CORRIDOR
- WC 509 CALM #1 500 M ATBA
- WC 509 PLATFORM COMPLEX 600 M ATBA
- CALM #2 - 500M ATBA
- SHIPPING FAIRWAY

BLUE MARLIN OFFSHORE PORT PROJECT
DWP OVERVIEW

COUNTY/PARISH:	N/A	DRAWN BY:	JRA
STATE:	TX/LA	CHECKED BY:	CW
DATE:	2020/09/21	PROJECTION:	NAD 1983 UTM Zone 15N

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BLUE MARLIN OFFSHORE PORT PROJECT
FIGURE 1-2

DWG:	0802-01-063	SHEET:	1 OF 1

FIGURE 1-3 - BMOP DWP PROCESS FLOW DIAGRAM

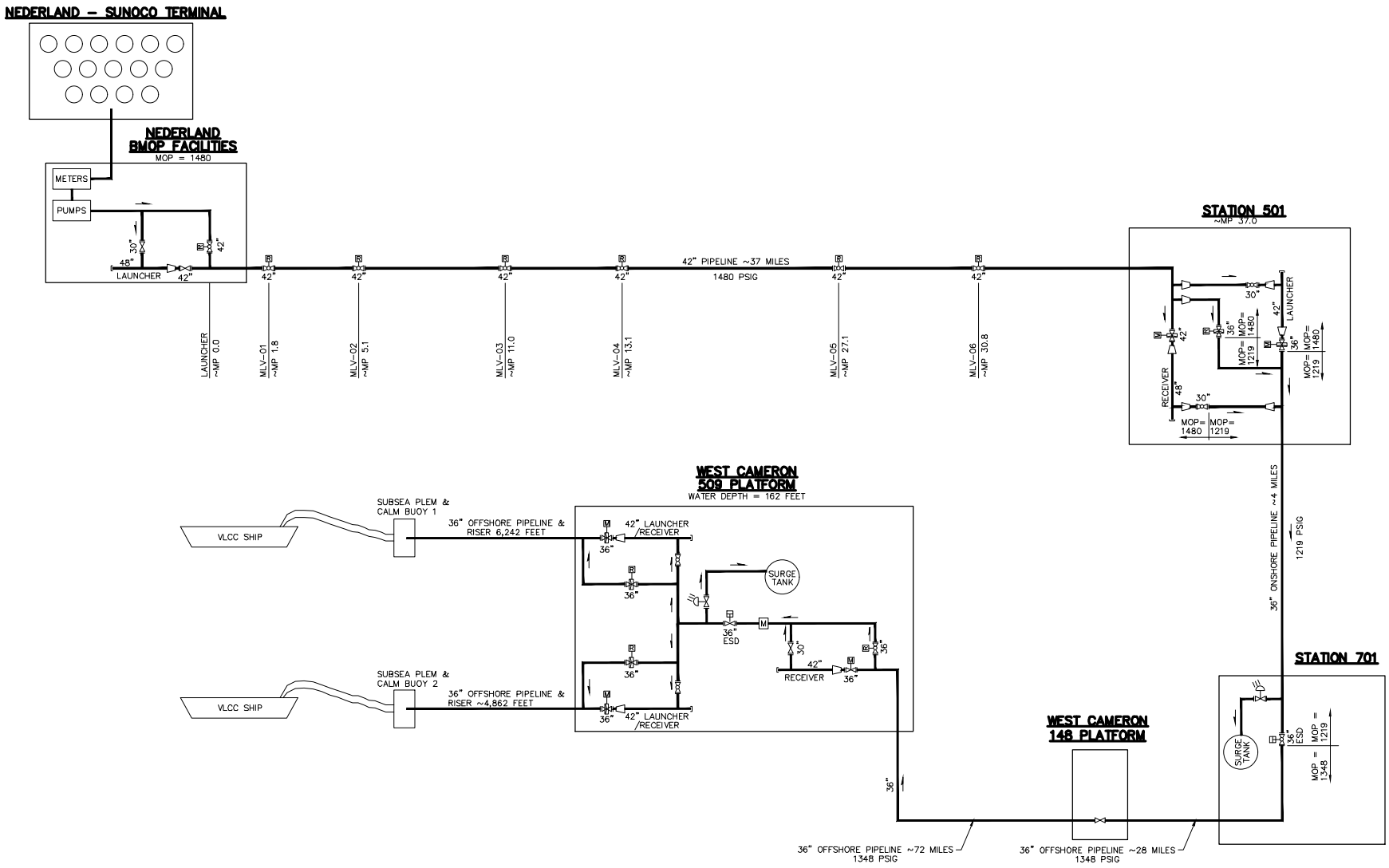
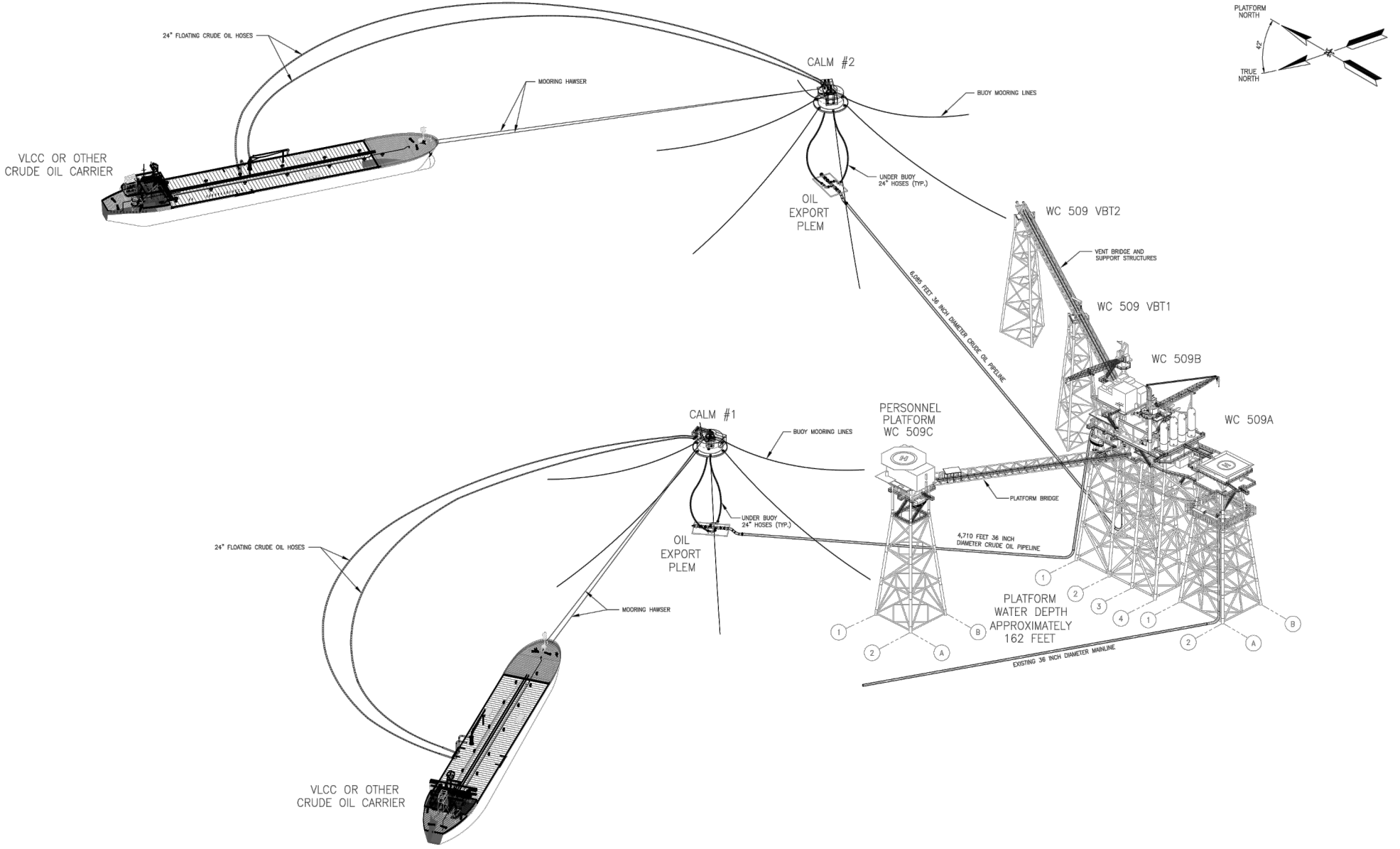


FIGURE 1-4 - BMOP DWP SCHEMATIC WITH VLCCs



1.1.1 Abandonment and Conversion of Existing Facilities

The Stingray Pipeline is currently comprised of a 36-inch pipeline (Mainline) that is fed natural gas and natural gas liquids by multiple lateral pipelines from various suppliers and producers. Stingray transports natural gas and liquids on the Mainline from the WC 509 Platform Complex to the onshore compressor station facility (Station 701) near Holly Beach in Cameron, Louisiana, and northward approximately four additional miles to the Natural Gas Pipeline Co. (NGPL)/Stingray interconnect (Station 501). The Stingray facilities from WC 509 to Station 501 will be abandoned through a FERC 7(b) Order and converted to use as DWP facilities (the filing has been made for abandonment). The Applicant intends to use all existing records and inspection data and perform additional engineering studies to obtain the appropriate agency approvals for converting all existing, reusable facilities. This includes updating the facilities to meet current regulations and guidelines, where appropriate. Abandonment under FERC 7(b) will be considered complete when the Mainline is completely isolated from all-natural gas sources and all-natural gas and produced liquids have been removed from the pipeline. This work will be completed by Stingray. Stingray will assign the existing right-of-way (ROW) Grant (and associated facilities—platforms at WC 148 and WC 509) to BMOP or another affiliate of ET for use in the BMOP Project. The Applicant intends to operate the new facilities under 49 Code of Federal Regulations (CFR) Part 195.

Conversion of the Stingray facilities involves converting service to crude oil and changing flow direction in the Mainline; converting the platform at WC 148, herein referred to as the WC 148 Platform, to crude oil service from natural gas service (see **Figure 1-5**); and converting the platform complex at WC 509, herein referred to as the WC 509 Platform Complex, to crude oil and natural gas service (see **Figure 1-6**).

1.1.2 Major Project Components

All facilities for the proposed BMOP Project will be designed, constructed, tested, operated, and maintained in accordance with the U.S. Department of Transportation (USDOT) regulations in 49 CFR Part 195 (Transportation of Hazardous Liquids by Pipeline) and all other applicable federal and state regulations. The Project will consist of both onshore supply components and offshore/marine components. Offshore components are described below and depicted in **Figure 1-1**.

The BMOP Project will consist of construction and operation of the following facilities:

New Onshore Facilities

- A new, approximate 37.02-mile, 42-inch OD pipeline connecting the existing NT in Jefferson County, Texas, to the existing 36-inch OD Mainline at Station 501 in Cameron Parish, Louisiana.
- A new pump station (BMOP Pump Station) located in Jefferson County, Texas, adjacent to the existing NT in Jefferson County, Texas at milepost (MP) 0.0. The pump station will include:
    - A pipeline header;
    - MLV;
    - Metering and pump equipment;
    - Electrical substation; and
    - Permanent access road.
- Six new MLVs will be installed within the permanent pipeline ROW of the new build pipeline. MLVs will also be installed at the BMOP Pump Station, Station 501, and Station 701. These valves will be used for isolation and spill control purposes.

FIGURE 1-5 - SCHEMATIC OF THE WC 148 PLATFORM

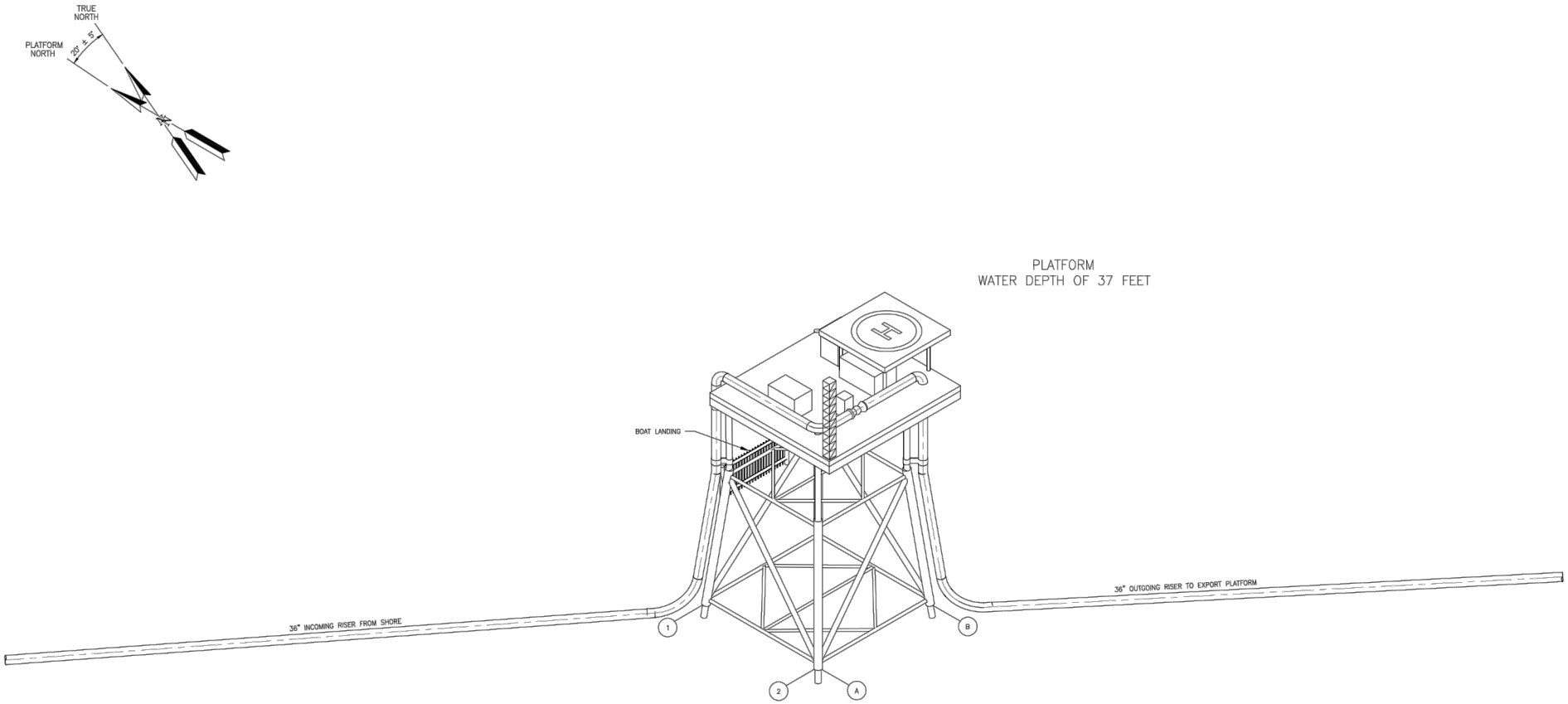
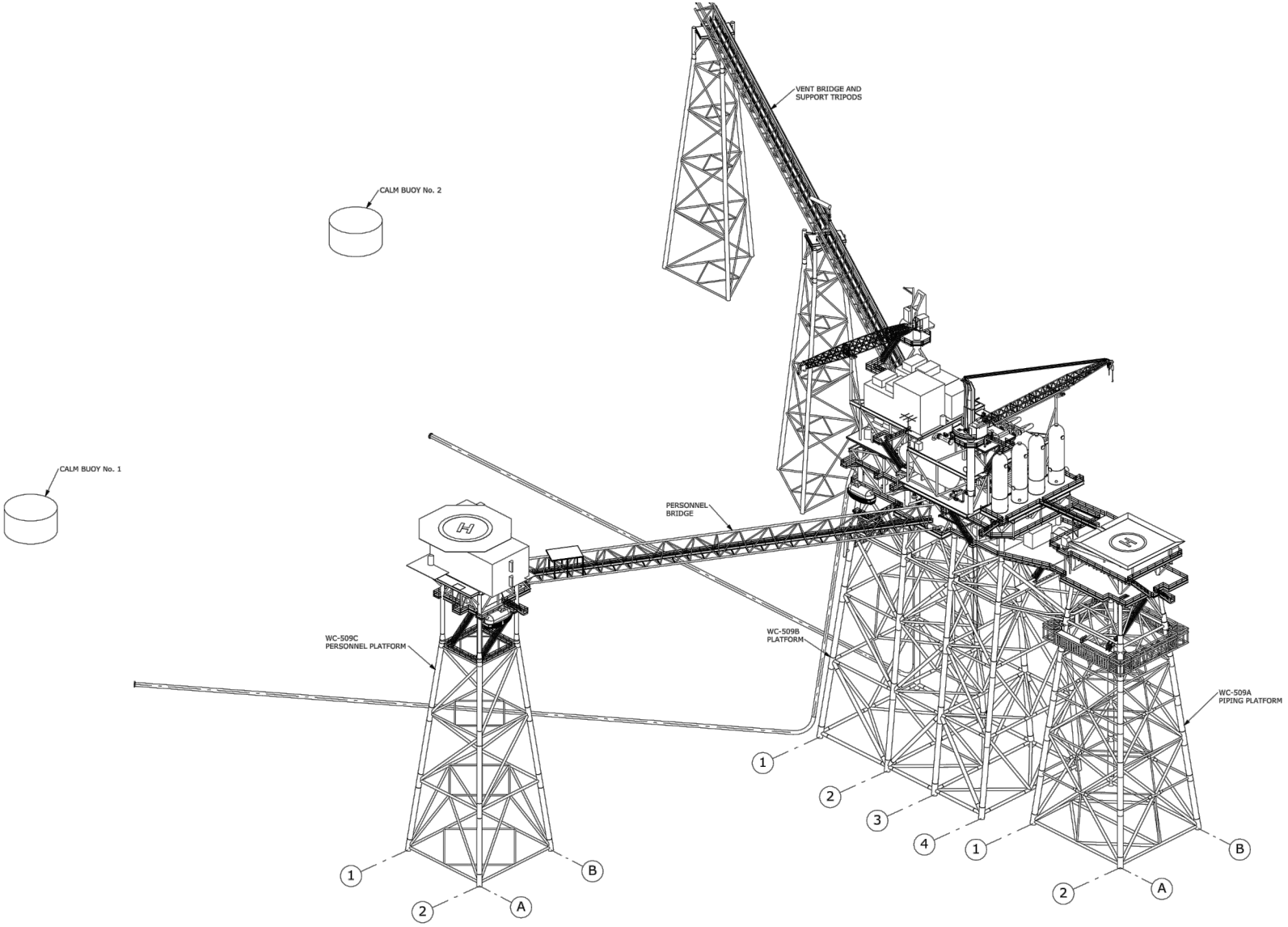


FIGURE 1-6 - WC 509 PLATFORM COMPLEX OVERVIEW



Conversion of Existing Facilities

- The existing Station 501 is located at approximate MP 37 of the new 42-inch pipeline in Cameron Parish, Louisiana. All existing natural gas-related equipment owned by BMOP will be removed from the Station and new pipeline facilities will be installed. The new 42-inch pipeline will tie into the existing 36-inch Mainline at the site. The conversion of Station 501 will be expanded to include:
    - New pig receiver for the new 42-inch pipeline termination;
    - New pig launcher for existing 36-inch Mainline; and
    - New MLV.
- The existing compressor Station 701 in Cameron Parish, Louisiana, will be demolished. All existing natural gas equipment will be removed from the Station except for two 10,000-barrel storage tanks. The new facility will maintain office space, a natural gas interconnect, and surge tanks. Approximately 1,500 feet of new pipe, surge tanks, surge valves, and a new MLV will be installed. The existing 10,000-barrel tanks located at Station 701 will be converted to surge relief tanks.
- The existing ANR Tap (Stingray Tap Removal Site) is located at approximately Stingray Mainline MP 1.61 on the Stingray Mainline in Cameron Parish, Louisiana (approximate MP 38.6 on the BMOP pipeline system). BMOP will install a 36-inch OD pipe segment following removal of the tap.
- The existing Mainline from Station 501 to the WC 509 Platform Complex will be converted to crude oil service.
- The WC 148 Platform will be converted to crude oil service and a new mainline valve installed (see **Figure 1-5**).
- The existing WC 509 Platform Complex will be converted from a gas transmission facility to a dual-purpose gas transmission and crude oil export facility (see **Figure 1-3**). The existing equipment that will remain at the converted Platform Complex will include:
    - Existing natural gas piping and risers on WC 509A Platform;
    - Natural gas Vent Boom on WC 509 VBTs;
    - Natural gas separation facilities on WC 509B Platform; and
    - Heliport and helicopter fuel tank on WC 509A Platform.

New Offshore Facilities

- Two new CALM Buoys installed, one in WC 508 (CALM Buoy No. 1) and the other in EC 263 (CALM Buoy No. 2). The CALM Buoys will be anchored to the seafloor via an engineered mooring system capable of accommodating mooring forces exerted by a VLCC or other large seafaring vessels during loading operations. Two 24-inch diameter floating hoses will be connected to each CALM Buoy. The hoses will be approximately 1,500 feet long and used for loading operations.
- Two new PLEMs installed and anchored on the seafloor under the CALM Buoys. Two 24-inch undersea flexible hoses will be connected to each PLEM and associated CALM Buoy.
- Two Crude Oil Loading Pipelines, approximately 4,710 feet long to PLEM / CALM Buoy No. 1 and 6,085 feet long to PLEM / CALM Buoy No. 2, installed from the WC 509 Platform Complex
- to the PLEM and CALM locations, one for each PLEM and CALM Buoy (see **Figure 1-4**). The pipelines will be installed with the top of pipe at least three feet below the natural seafloor.
- New MLV on WC 148 Platform;
- Two new 36-inch risers connected to the Crude Oil Loading Pipelines on WC 509B Platform;

- New control room on WC 509B Platform;
- Three new pig barrels, one on the WC 509A and two on WC 509B Platform;
- Meter station for crude oil on the WC 509B Platform;
- New living quarters (LQ) and heliport on the WC 509C Platform;
- Surge valves and tank on the WC 509B Platform; and
- New ancillary equipment for the 509 Platform Complex (e.g., power generators, instrument/utility air system, fuel tanks, ac units, freshwater makers, firewater system, seawater and freshwater system, sewage treatment unit, fuel gas system, diesel system, closed drain system, open drain system, hydraulic power unit, hypochlorite system, cranes, communications tower and system, radar) to support operation of the offshore facilities.

Offshore Support Facilities

Support facilities for the Project will include:

- Safety Zone - The Applicant is requesting that the USCG Captain of the Port establish a Safety Zone around the entire DWP operations area. 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.
- Anchorage area – Existing USCG-designated anchorage areas will be utilized for VLCCs (or other crude carriers) awaiting mooring at a CALM Buoy or if they must disconnect from the CALM Buoys for safety reasons.
- Support vessel mooring area – A designated Service Vessel Mooring Area will be established in proximity to the offshore WC 509 facilities.
- Temporary pre-fabrication yards – Component fabrication will occur at multiple existing fabrication facilities within the GOM coastal region.
- Support facilities – Facilities within the GOM coastal region providing support for offshore operations and maintenance activities (e.g., helicopters, supply vessels, work boats, equipment suppliers, and maintenance workers).

Onshore Support Facilities

- Temporary use of existing pipe and contractor yards; and
- Use of existing access roads and canals.

1.2 PROJECT PURPOSE AND NEED

The Applicant proposes to construct, own, operate, and eventually decommission a DWP in the northern GOM off of the Louisiana coast to be able to fully load VLCCs without the need for ship-to-ship transfers, expansion of already congested GOM ports, and enabling export of domestically produced light to heavy grade crude oil to foreign global markets.

The Applicant has examined the current and projected market conditions in the northern GOM and has determined that there are insufficient outlets for U.S. oil production. Based on the businesses that the Applicant's parent and affiliate entities are engaged in (oil and gas transportation, storage, and port facilities) and the increasing volume of oil being produced in the U.S., there are limited shipping options available in the GOM. Most ports are constrained in one or more ways. Access to onshore ports in the northern GOM is constrained due to navigation channel access not being deep enough to handle VLCC sized oil carriers; insufficient dock space for either additional smaller carriers or larger oil carriers; and existing storage capacity to allow product to wait for refinery space, or ability to be exported.

Fully loaded VLCCs have drafts of approximately 71 feet, which would preclude the use of coastal loading facilities. Although the inland waterways (navigation channels and rivers) are regularly dredged to maintain depth (approximately 45 feet) and enable safe navigation for most ships, they are not deep enough for deep-draft vessels such as fully loaded VLCCs. To circumvent depth restrictions, VLCCs transporting crude oil to or from the GOM coast have typically used partial loadings and ship-to-ship transfers. The ship-to-ship transfer process, known as lightering, requires the use of multiple smaller vessels to ferry oil from ports to offshore VLCCs to fully load/unload a larger vessel (EIA, 2018; MARAD and USCG, 2020).

The Applicant, and affiliate companies, examined existing infrastructure as well as building a new purpose-built system to facilitate export of oil from the U.S. Because of the myriad of abandoned, or under-utilized pipeline systems in the northern GOM, the Applicant has focused on developing a solution that would avoid the impacts of building a completely new export facility in the GOM. The Project is designed to provide a DWP, at a distance from shore and current shipping congestion, to facilitate U.S. producer access to international shipping interests with the capability for full loading of VLCCs. By providing for full loading of VLCCs, the proposed DWP will reduce the need for lightering offshore. In addition, it will reduce the number of required oil carriers as each VLCC is designed to carry approximately two million barrels of crude oil. By comparison, four Aframax vessels or two Suezmax vessels (both of which are used in port or for lightering) would be needed to carry the same amount of crude oil as a single VLCC (EIA, 2018; MARAD and USCG, 2020). With the conversion of an underutilized natural gas pipeline and offshore platform to oil service, the Applicant is able to meet the objectives of the need for oil export capacity in an environmentally benign manner.

U.S. refineries can process a wide range of crude oil qualities; however, there are optimum qualities for each refinery based on its current design. In addition, refinery acquisition costs of a particular crude oil quality can differ for domestic versus imported oil. With U.S crude oil production having grown significantly; U.S. refineries cannot accommodate the additional large volumes that are produced. Therefore, crude oil exports have continued to increase since the restrictions on exporting domestically produced crude were lifted in December 2015, increasing from 591,000 barrels per day (bpd) in 2016 to 3.0 million bpd in 2019 (EIA, 2020a).

According to the U.S. Energy Information Administration (EIA), in May 2020, the U.S. exported and imported nearly equal amounts of energy. However, the U.S. had been a net exporter of energy in several months previously in 2020. The reduction in export is due to changes in domestic production and declines in global demand for energy since mid-March of 2020 in response to the 2019 Novel Coronavirus (COVID-19) which shifted energy trade balances back in the direction of net imports, especially for U.S. crude oil

and petroleum products (EIA, 2020b). Prior to the COVID-19 response, the EIA's 2020 Annual Energy Outlook reference case projected production of U.S. crude oil to grow with production reaching 14.0 million bpd by 2022, remaining near that level until 2045. With such strong production growth, and decreasing domestic demand, the U.S. was projected to continue to export high volumes of crude oil, resulting in increased export from 2020 to 2033 (EIA, 2020c). COVID-19 and its mitigation efforts are significantly affecting energy demand in the short term and EIA projects that it could continue to do so in the medium and even long term which will be addressed in the upcoming 2021 Annual Energy Outlook (EIA, 2020d).

In accordance with the U.S.'s energy outlook, U.S. production increases, combined with refinery capacities for specific oil types, crude oil production will need to be shipped or shut in. In addition to reducing the need for lightering, the proposed DWP Project will provide a safe, efficient, and reliable facility for the export of crude oil excess to satisfy global market demands at competitive prices.

1.3 LOCATION AND DESCRIPTION OF OFFSHORE PROJECT COMPONENTS

The proposed DWP will be located on the GOM continental shelf off the Louisiana coast and consists of the conversion of a 104-mile pipeline (Mainline); conversion of a fixed platform in WC 148; conversion of a fixed platform complex in WC 509; two new PLEMs and CALM Buoys (WC 508 and EC 263); two new Crude Oil Export Pipelines, one approximately 4,710 feet long and the other 6,085 feet long; and other ancillary facilities necessary to fully load VLCCs or other crude oil carriers at a rate of up to 80,000 barrels per hour (bph).

Table 1-1 presents the proposed location of the different offshore DWP components. A schematic of the DWP is provided in **Figure 1-6,** and additional details of the offshore Project components are provided below.

TABLE 1-1
DWP Components

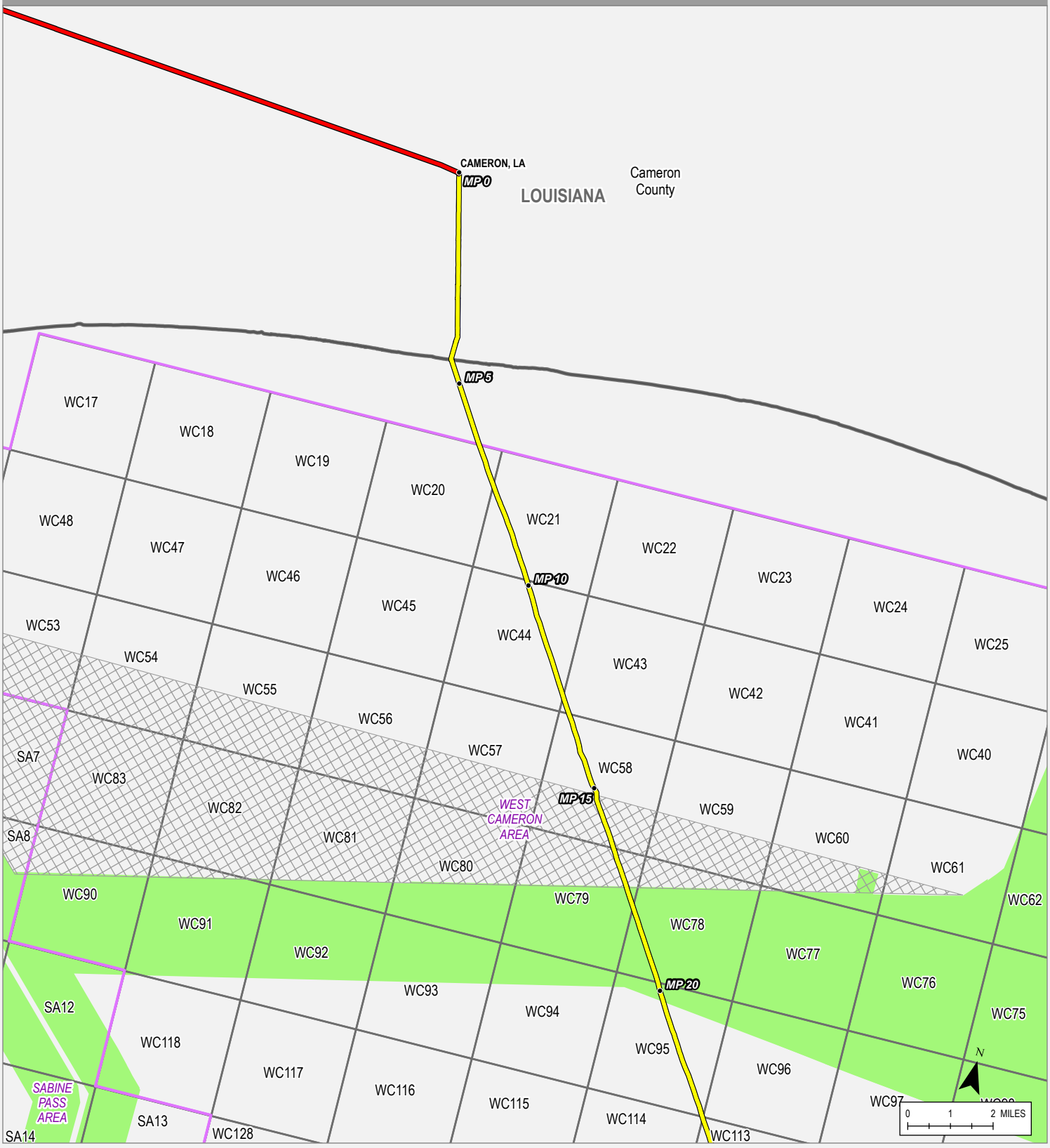
Component		Latitude (N) (degrees minutes seconds)	Longitude (W) (degrees minutes seconds)	Water Depth (feet)
WC 509 Platform Complex[a]		28° 26’ 00.01”	93° 00’ 15.23"	162
Crude Oil Export Pipelines		WC 509 Complex	PLEMs at Calm Buoys	156 - 162
CALM Buoy No. 1 and PLEM (WC 508)		28° 26’ 47.33”	93° 00’ 13.30”	156
CALM Buoy No. 2 and PLEM (EC 263)		28° 26’ 34.37”	92° 59’ 19.21”	159
Service Vessel Mooring (SVM) Buoy 1		28° 25’ 44.75”	93° 00’ 47.89"	162
Service Vessel Mooring (SVM) Buoy 2		28° 25’ 54.86”	93° 0’ 52.16”	162
Service Vessel Mooring (SVM) Buoy 3		28° 26’ 5.75”	93° 0’ 52.51”	162
Safety Zone Buoy Locations	North Corner	28° 28’ 41.76”	92° 59’ 44.41”	162
	East Corner	28° 26’ 07.13”	92° 57’ 32.72”	162
	South Corner	28° 23’ 58.81”	93° 00’ 44.53”	162
	West Corner	28° 26’ 33.47”	93° 02’ 55.90”	162

Notes:
[a] WC 509B Platform leg B1

1.3.1 Existing Mainline

In order to deliver crude oil from the existing NT in Jefferson County, Texas, to the DWP offshore of Louisiana, the existing Mainline will be converted to oil service from Station 501 out to the DWP location in WC 509. The OCS lease blocks crossed by the subsea pipeline are listed in **Table 1-2** and shown in **Figure 1-7**.

BMOP PROJECT - FIGURE 1-7 BLOCK LINE CROSSING SKETCH



VICINITY MAP

LEGEND

- EXISTING OFFSHORE PIPELINE MILEPOSTS
- EXISTING PIPELINE TO BE CONVERTED TO OIL SERVICE
- PROPOSED ONSHORE PIPELINE (NEW BUILD)
- BOEM OCS AREA
- FEDERAL LEASE BLOCK
- COUNTY BOUNDARY
- STATE BOUNDARY
- NAVIGATIONAL FAIRWAYS
- ANCHORAGE AREA

DRAWING INFORMATION

DRAWN BY:	JRA	COUNTY/PARISH:	N/A
CHECKED BY:	CW	STATE:	TEXAS/LOUISIANA
DATE:	9/17/2020	SHEET:	1 OF 5
DWG #:	0802-01-051	SCALE:	1:200,000

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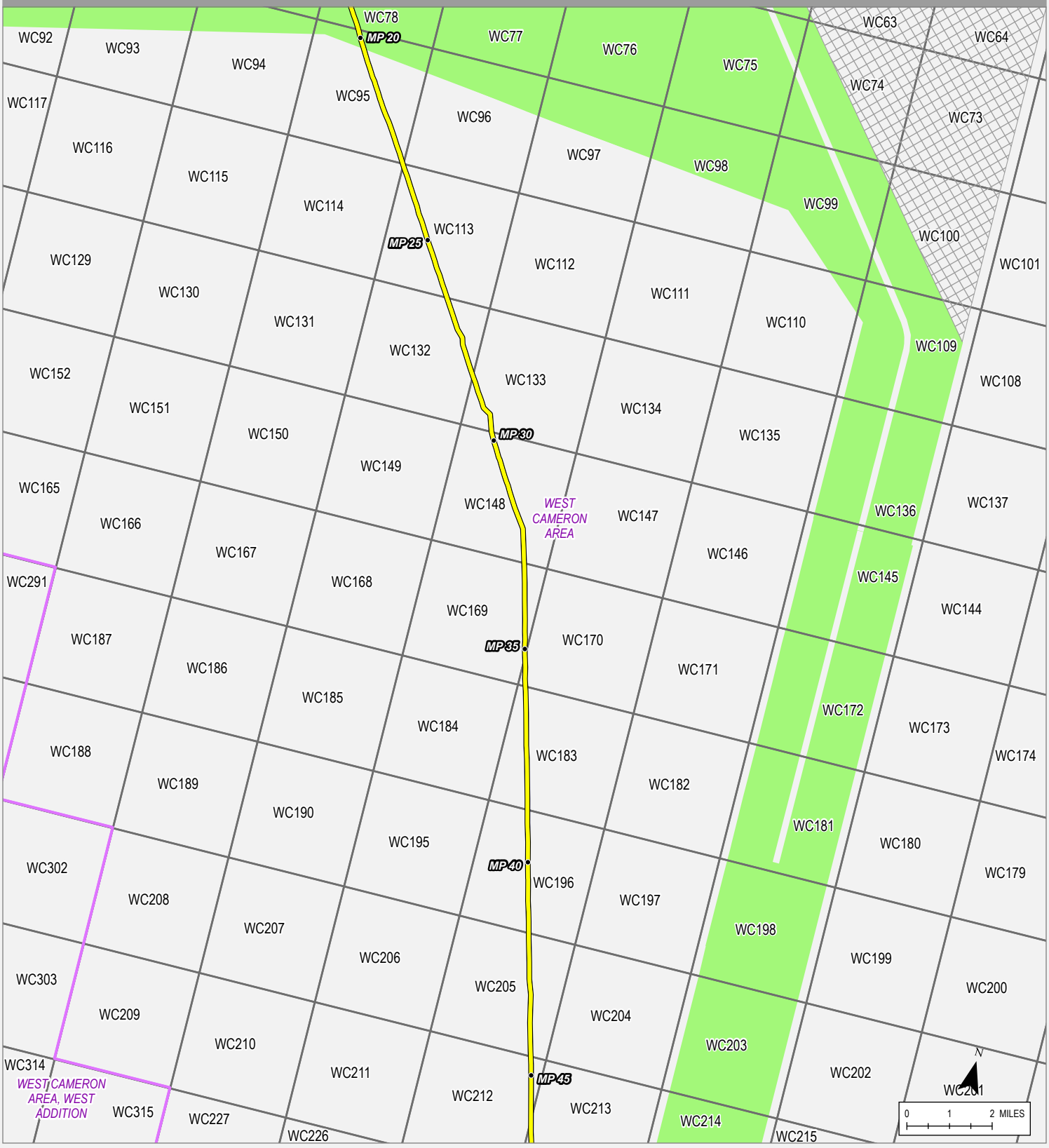
BLUE MARLIN OFFSHORE PORT PROJECT
FIGURE 1-7
Block Line Crossing Sketch

BMOP PROJECT - FIGURE 1-7 BLOCK LINE CROSSING SKETCH



VICINITY MAP

LEGEND

- EXISTING OFFSHORE PIPELINE MILEPOSTS
- EXISTING PIPELINE TO BE CONVERTED TO OIL SERVICE
- BOEM OCS AREA
- FEDERAL LEASE BLOCK
- NAVIGATIONAL FAIRWAYS
- ANCHORAGE AREA

DRAWING INFORMATION

DRAWN BY:	JRA	COUNTY/PARISH:	N/A
CHECKED BY:	CW	STATE:	TEXAS/LOUISIANA
DATE:	9/17/2020	SHEET:	2 OF 5
DWG #:	0802-01-051	SCALE:	1:200,000

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BLUE MARLIN OFFSHORE PORT PROJECT
FIGURE 1-7
Block Line Crossing Sketch

BMOP PROJECT - FIGURE 1-7 BLOCK LINE CROSSING SKETCH

VICINITY MAP

LEGEND

- EXISTING OFFSHORE PIPELINE MILEPOSTS
- EXISTING PIPELINE TO BE CONVERTED TO OIL SERVICE
- DEPTH CONTOUR
- BOEM OCS AREA
- FEDERAL LEASE BLOCK
- NAVIGATIONAL FAIRWAYS
- ANCHORAGE AREA

DRAWING INFORMATION

DRAWN BY:	JRA	COUNTY/PARISH:	N/A
CHECKED BY:	CW	STATE:	TEXAS/LOUISIANA
DATE:	9/17/2020	SHEET:	3 OF 5
DWG #:	0802-01-051	SCALE:	1:200,000

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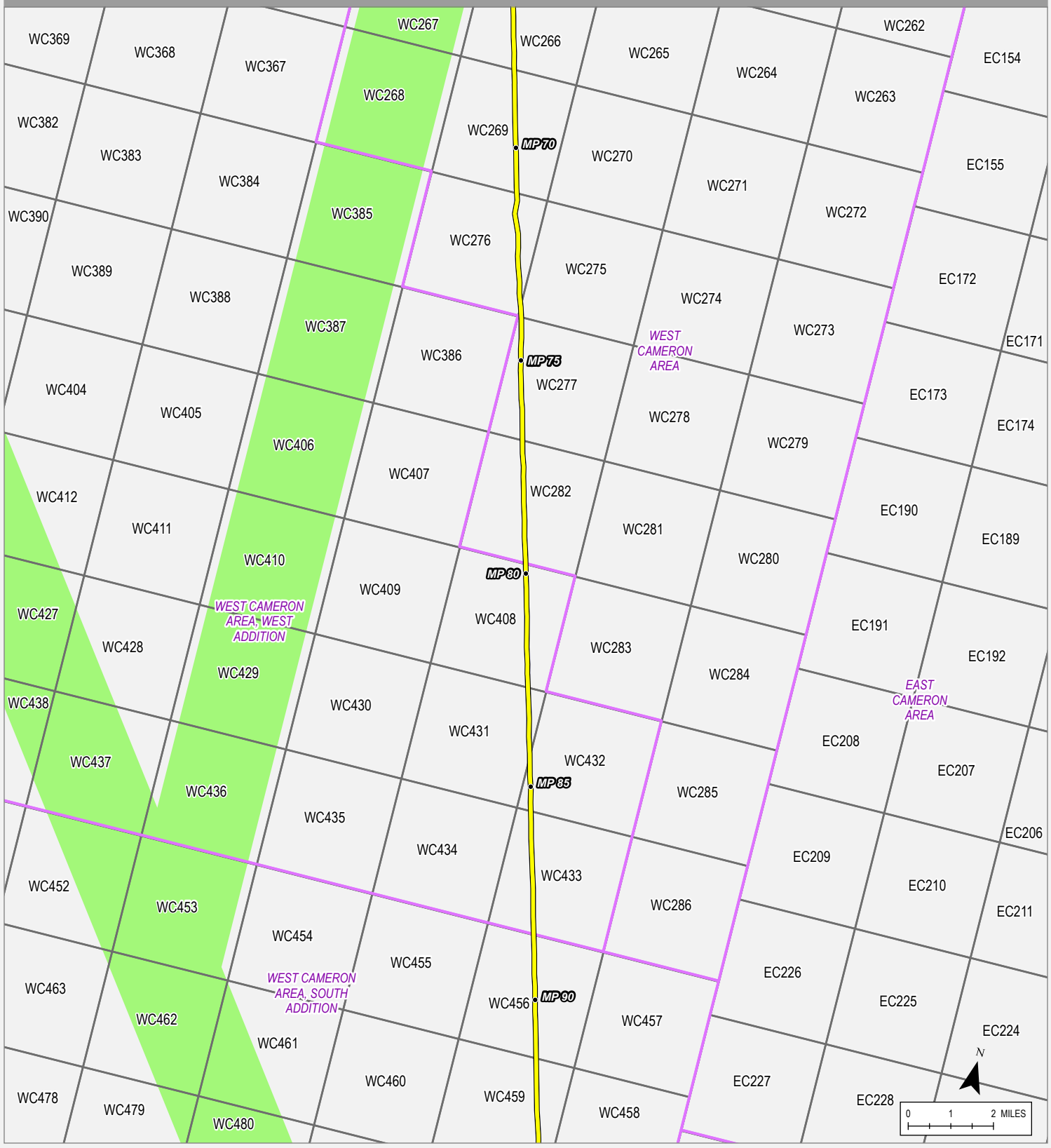
BMOP PROJECT - FIGURE 1-7 BLOCK LINE CROSSING SKETCH



VICINITY MAP

LEGEND

- EXISTING OFFSHORE PIPELINE MILEPOSTS
- EXISTING PIPELINE TO BE CONVERTED TO OIL SERVICE
- BOEM OCS AREA
- FEDERAL LEASE BLOCK
- NAVIGATIONAL FAIRWAYS

DRAWING INFORMATION

DRAWN BY:	JRA	COUNTY/PARISH:	N/A
CHECKED BY:	CW	STATE:	TEXAS/LOUISIANA
DATE:	9/17/2020	SHEET:	4 OF 5
DWG #:	0802-01-051	SCALE:	1:200,000

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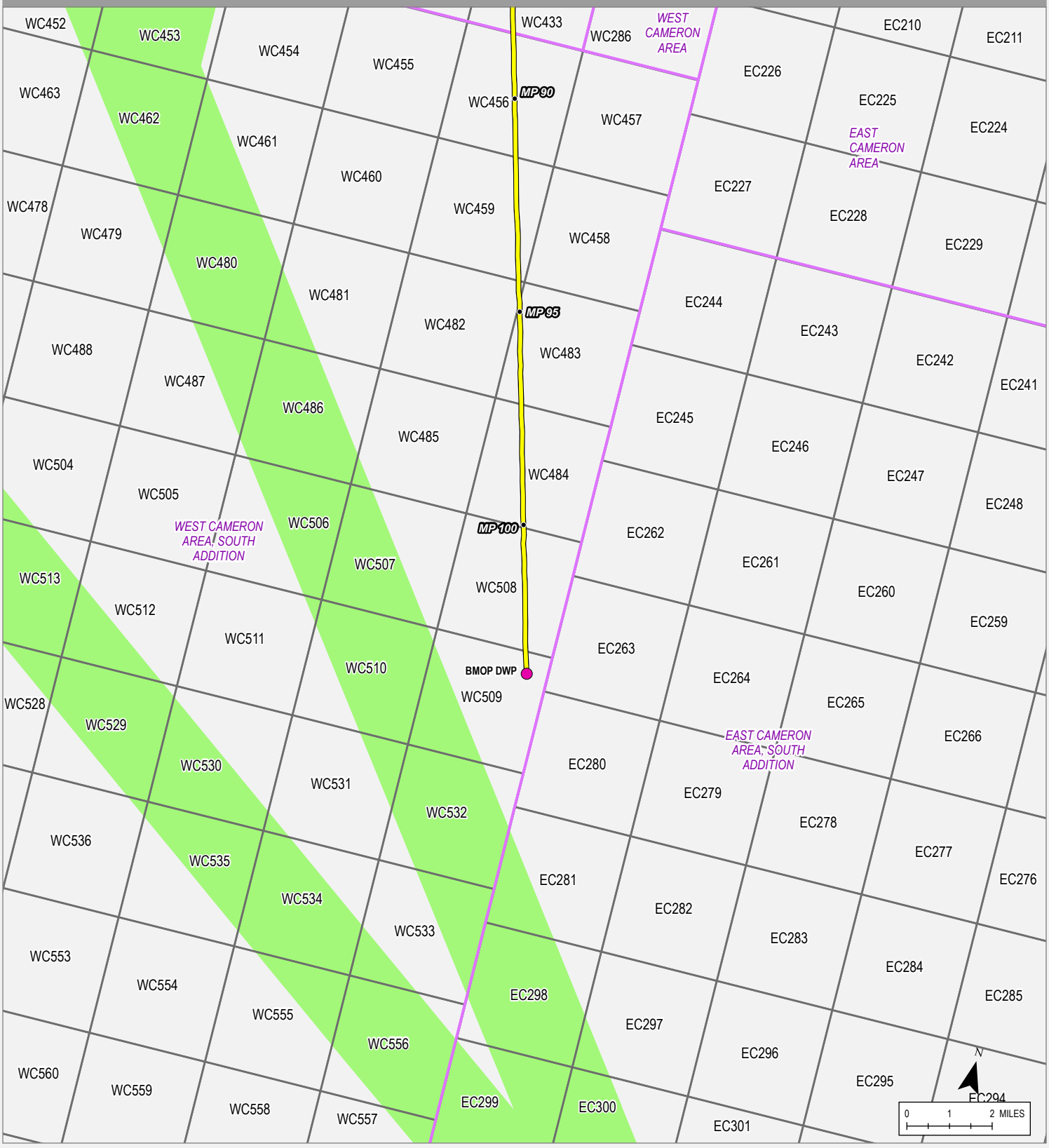
BLUE MARLIN OFFSHORE PORT PROJECT
FIGURE 1-7
Block Line Crossing Sketch

BMOP PROJECT - FIGURE 1-7 BLOCK LINE CROSSING SKETCH



VICINITY MAP

LEGEND

- EXISTING OFFSHORE PIPELINE MILEPOSTS
- BMOP DEEPWATER PORT
- EXISTING PIPELINE TO BE CONVERTED TO OIL SERVICE
- BOEM OCS AREA
- FEDERAL LEASE BLOCK
- NAVIGATIONAL FAIRWAYS

DRAWING INFORMATION

DRAWN BY:	JRA	COUNTY/PARISH:	N/A
CHECKED BY:	CW	STATE:	TEXAS/LOUISIANA
DATE:	9/17/2020	SHEET:	5 OF 5
DWG #:	0802-01-051	SCALE:	1:200,000

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BLUE MARLIN OFFSHORE PORT PROJECT
FIGURE 1-7
Block Line Crossing Sketch

TABLE 1-2 Outer Continental Shelf (OCS) / State Area Lease Blocks Crossed by the DWP	
Component	**Blocks**
Blocks traversed by existing Mainline	Louisiana State Blocks: WC 11, 20, 21 OCS Blocks: WC 21, 44, 43, 58, 79, 78, 95, 114, 113, 132, 133, 148, 169, 170, 183, 196, 205, 212, 213, 224, 230, 241, 245, 246, 255, 258, 259, 266, 269, 276, 275, 277, 282, 408, 431, 432, 433, 456, 459, 482, 483, 484, 508, 509
Existing WC 509 Platform Complex Location	WC 509
New CALM Buoys and Interconnections	WC 509, EC 263
Notes: WC = West Cameron; EC = East Cameron; OCS = Outer Continental Shelf	

The Mainline currently transports natural gas and natural gas liquids from the WC 509A Platform to Station 501 in Cameron Parish, Louisiana. Stingray will abandon the pipeline through Section 7(b) of the Natural Gas Act administered by FERC. Abandonment under FERC 7(b) will be considered complete when the Mainline is completely isolated from all-natural gas sources and all-natural gas and produced liquids have been removed from the pipeline by Stingray. Stingray would then lease or sell the abandoned facilities to BMOP, or an affiliate of BMOP, for use in this Project.

Conversion of the Mainline from natural gas service to crude oil service will include:

- Reversing the flow direction to north to south;
- Cleaning the Mainline;
- Removing existing natural gas equipment at Station 501 and installing a new pig launcher, a new pig receiver and new MLV;
- Removing existing natural gas facilities and equipment at Station 701 and installing approximately 1,500 feet of 36-inch OD pipe, a new MLV, surge valves and utilizing existing liquid storage tanks as surge tanks;
- Removing pig traps and deck piping on the platform in WC 148 and installing a new MLV;
- Converting the existing platform in WC 148 from natural gas to crude oil service;
- Removing the MLV at WC 276 and installing new pipe in the place of the MLV;
- Epoxy sealing all side taps located at WC 44, WC 95, WC 196, WC 224, WC 230, WC 245, WC 258, WC 269, WC 277, WC 408, WC 456, WC 459, and WC 483; and
- Hydrostatically testing the pipeline from Station 501 to WC 509.

For abandonment under FERC 7(b), the entire Mainline from Station 501 to WC 509 will be disconnected from all other natural gas shipper pipelines, be completely isolated, and de-inventoried of all-natural gas and liquid product in the pipeline. Following the abandonment work described above, the WC 509A Platform will continue in its current service with all-natural gas and natural gas liquids redirected into the Sea Robin Gas System. The 36-inch OD Mainline riser pipe on 509A will be reused for the BMOP project. Subsequent to the isolation and de-inventory process performed under the FERC 7(b) Order, the Stingray facilities will be considered abandoned. BMOP would then commence the conversion process by filling the Mainline with seawater between Station 701 and the WC 509 Platform Complex. Once the line is filled, work will commence on removing the existing MLV in WC 276, removing and installing equipment on the

WC 148 Platform, epoxy sealing all of the side taps, and hydrostatic testing of the Mainline from WC 509 to Station 701.

The Mainline between Station 501 and Station 701 will be isolated, ANR tap removed and replaced with pipe, and filled with water at Station 501 and hydrostatically tested.

1.3.2 DWP Overview

The WC 509 Platform Complex will be converted to crude oil and natural gas transportation (see **Table 1-3**). The majority of the natural gas pipeline facilities on the WC 509B Platform (compressor station and auxiliary equipment) will be removed and new oil export facilities installed. The new facilities will consist of 36-inch piping, oil metering facility, new control room, new workshop, new electrical building, lab for custody transfer analysis, pig traps, cranes, surge tank, and other auxiliary equipment that support the operation. Natural gas pipeline facilities on the WC 509A Platform will be reconfigured and redirected to the Sea Robin system. The Mainline that is being converted from natural gas to crude oil comes up from the seafloor onto the WC 509A platform and will be routed above the waterline to the WC 509B Platform. Piping and liquid separation facilities, related to planned and unplanned natural gas venting, will remain on the WC 509A and WC 509B Platforms with the natural gas releases occurring at the end of the Vent Boom Tripod (VBT) located approximately 660 feet south and east of the WC 509B platform. On the WC 509B Platform, crude oil will be metered and then piped to two CALM Buoys located approximately 4,710 feet and 6,085 feet from the Platform. Plans and schematics of the WC 509A and 509B Platforms are provided in Appendix I of Volume III (*Confidential*).

TABLE 1-3
WC 509 Platform Complex

Platform	Description and Power Source (if applicable)
WC 509A	Primarily used for natural gas transportation. The Mainline will traverse the WC 509A and WC 509B Platforms. The Mainline riser and pig receiver will remain on the WC 509A Platform.
WC 509B	Primarily used for crude oil export but some natural gas facilities will remain. The control room, pig traps for the Crude Oil Export Lines, workshop, electrical building, cranes, generators, air compressors, natural gas fuel and crude oil meters, surge tank, natural gas liquid separation facilities, and utilities.
WC 509C	This platform will be used to house personnel. The living quarters will house up to 28 people at one time, have a galley and entertainment center. The roof of the quarters will be a helipad.
Vent Bridge Tripods	Utilized to route natural gas blowdown piping 660 feet from the WC 509B platform.

1.3.2.1 *DWP Platform*

The existing WC 509 Platform Complex will be converted to a dual-purpose gas transmission and oil export facility. The WC 509A Platform will continue its purpose as a gas transmission platform after being reconfigured to redirect the gas to the Sea Robin Pipeline. As noted above, it is anticipated the riser and pig barrel for the converted Mainline will be located on the WC 509A Platform. The barrel will include a containment system for capturing any oil releases during pigging operations. The WC 509B Platform will continue to have natural gas separation facilities to support emergency and controlled natural gas releases but will mainly be utilized for the crude oil loading operations. The WC 509B Platform will have crude oil metering, a new control room, electrical room, surge tank, and pigging facilities located on the main deck. The WC 509C Platform will continue its purpose as a manned quarters platform but will require construction and installation of a larger living quarters. The WC 509 VBT will remain as a natural gas

venting facility for emergency and controlled natural gas releases. See **Table 1-4** for additional details of the equipment and systems that will be on the WC 509 Platform Complex (DWP Platforms).

TABLE 1-4
DWP Platforms Equipment and Systems

Equipment/System	Subcomponents	Description and Power Source (if applicable)
Process Safety and Control	Monitoring	Supervisory Control and Data Acquisition (SCADA) System.
	Shutdown valves	Incoming pipeline will be equipped with an Emergency Shutdown (SDV) valve between the riser and process facilities. An SDV will be located downstream of the crude oil meter and upstream of the Crude Oil Pig Launchers.
	Surge Relief Valve Skid	Two 16-inch nitrogen loaded Surge Relief Valves provided downstream of the metering skid based to protect the system in case of pipeline surge event from closing SDV.
	Emergency Response	Automated SCADA systems and continuous primary and backup communications systems with the Nederland Terminal and Energy Transfer Central control room in Houston. Additionally, a surge tank will be installed on the WC 509B Platform to accommodate over-pressure conditions in the incoming pipeline.
Metering		Meters will be installed at BMOP Pump Station and the WC 509B Platform to measure volumes and be a part of the leak detection system. The meters will be sized to achieve maximum rates of 80,000 bph. Crude oil metering skid will include four 16" meter runs each of which will be provided with a helical turbine meter and a control valve which will be configured to maintain oil delivery header pressure and flow through the meter run as needed. API Manual for Petroleum Measurement Standards (MPMS) recommendations.
Pipeline Maintenance	Pig launchers and receivers	Three launcher / receivers, one on the incoming crude pipeline (Mainline) and one each on the two outgoing Crude Oil Loading Lines to the PLEMs.
Utilities	Power	Two primary natural gas-driven generators with diesel-driven backup on the WC 509B Platform
	Hydraulic power unit	The Hydraulic power unit will provide the hydraulic oil at required pressure and flow rate for the hydraulic actuators of the large size shutdown valves on the incoming oil receiving and crude oil export system which are part of the new crude oil system. The system will also provide hydraulic oil for the hydraulic valve actuators of the subsea valves located at the PLEM/loading buoys
	Crane	Two primary cranes on the WC 509B Platform (one small located on the northeast corner and another large one located on the southwest corner), and one utility crane located above the WC 509C Platform boat landing.
	Instrument/Utility air system	Two air compressors on the WC 509B Platform to provide compressed air for pneumatically powered systems and for general platform maintenance.
	Fresh water system (potable water)	A potable water system to convert seawater to potable water on the WC 509B Platform. The potable water system will consist of: water maker, storage tanks, treatment, and distribution.

TABLE 1-4
DWP Platforms Equipment and Systems

Equipment/System	Subcomponents	Description and Power Source (if applicable)
	Firewater pumps	Two firewater pumps to supply seawater to the fire suppression system.
	Sewage treatment unit	All black and gray water generated on the crude export facility (e.g. human waste) will be processed by the sewage treatment system on the WC 509C Platform to meet regulatory requirements prior to discharge.
	Seawater system	The seawater system will be supplied by the Seawater Pumps. The Seawater Pumps will be submersible type and provide a current-free volume of seawater. This system will be located in platform 509B Seawater will be used for: • Feed to the water maker; • Pressurizing the Firewater System; • Fire water for hose reels; and • Feed to the Hypochlorite System.
	Fuel gas systems	The fuel gas system will be placed on the WC 509B Platform and will supply fuel gas to the two, gas engine driven generators on this platform besides the purge gas for facility vent system and blanket gas for Surge Tank.
	Hypochlorite system	The hypochlorite generator package located in WC 509B will be designed to supply hypochlorite solution to all pump caissons on the platform.
Surge Tank		A 1,000-barrel horizontal surge tank will be located on the WC 509B Platform.
Buildings and Structures	Control room	A new module containing DWP monitoring facilities and communications facilities will be installed on the WC 509B Platform. This building includes control room, conference room, I/O room, Emergency Response Base.
	Living quarters	A new living quarters module will be installed on the WC 509C Platform. This living quarters will be capable of housing 28 people and have a roof that also supports helicopter landings. The helipad may be a separate structure from the living quarters module.
	Lab	A lab building will be provided in WC 509B for crude-testing laboratory.
	Workshop	A workshop building will be provided in WC 509B.
Boat Landings		Will remain on the WC 509A, WC 509B, and WC 509C Platforms for various operations and maintenance activities.
	General	Telecoms and Telemetry communication systems will be installed to meet regulatory and operational requirements of the Project in support of daily and emergency voice and data. The communication systems are designed based on minimizing latency and maintaining high system operational reliability. The communication systems will provide: • Voice services through redundant networked infrastructure in addition to Marine VHF and Sat-Comm (voice) services for operational and emergency.

TABLE 1-4
DWP Platforms Equipment and Systems

Equipment/System	Subcomponents		Description and Power Source (if applicable)
Communications			• Data systems and equipment deployment leveraging terrestrial and orbital lease and owned infrastructure. • Networked Communications infrastructure electrical power to be supported by dedicated DC-based USP systems that are interfaced to commercial AC power or on-site Generation as available / deployed for each site / station. • Systems development based on a minimum of primary (1st) and secondary (2nd) communications design leveraging automatic routing failover. In addition, a tertiary (3rd) SCADA Telemetry services may be leveraged at offshore critical service locations.
	WC 509B Platform		The communication system at the WC 509 Platform will leverage existing redundant Network and Communications infrastructure. The communication system will leverage multiple Service Providers including Lease Microwave – WAN service, VSAT-WAN service, and Low Earth Orbit "BGAN" service, further enhancing operational reliability . Refer to WC 509 "DWP Design Basis" for further description of each system (see Appendix F of Volume III [*confidential*]).
	Linked systems	Nederland Terminal	The communication system at the Nederland Facilities will leverage existing redundant Network and Communications infrastructure "MPLS & VSAT." Multiprotocol Label Switching (MPLS) provides high-performance communications networks suitable for a data center's communication needs. It is protocol independent and able to integrate with Internet Protocol (IP) networks, Frame Relay, Asynchronous Transfer Mode (ATM), or Ethernet networks. MPLS allows satellite networks to connect with terrestrial networks effectively, for efficient and secure communication. The benefits of MPLS are scalability, performance, better bandwidth utilization, reduced network congestion and a better end-user experience. A Very Small Aperture Terminal (VSAT) communication system with a two-way satellite dish antenna is often the ideal solution to connect modular data centers in remote locations to the enterprise. VSAT equipment can be deployed quickly and connect your data center to broadband data communications, regardless of the local network infrastructure available. New plant cabling and equipment will be installed, as required.
		MLV and Pump Station	The MLVs and BMOP Pump Station will utilize VSAT and cellular communication systems.
		Station 501	The communication system at Station 501 will leverage existing redundant Network and Communications infrastructure "MPLS & VSAT." New plant cabling and equipment will be installed, as required.
		Station 701	The communication system at Station 501 will leverage existing redundant Network and Communications infrastructure "MPLS &

TABLE 1-4
DWP Platforms Equipment and Systems

Equipment/System	Subcomponents	Description and Power Source (if applicable)
		VSAT." New plant cabling and equipment will be installed, as required.
Helideck		New helideck will be installed above the living quarters on the WC 509C Platform. WC 509A helideck will continue in service.
Navigational Aids and Safety	Lighting	All structures will continue to be equipped with perimeter and highest point lighting to meet all regulatory requirements.
	Sound	The facility will continue to be equipped with sound devices to meet all regulatory requirements for navigational safety.
	General safety	The structures are well lighted and meet industry codes and standards to support personnel performing routine maintenance and monitoring operations. The structures also meet industry standards and codes with regards to emergency alarms that will warn platform personnel of emergency or process upset conditions.
	Emergency power	A back-up diesel generator on the WC 509B Platform.
	Firewater system	Two firewater pumps on the WC 509B Platform will be automatically activated when a drop in pressure is detected in the fire suppression header. The firewater system will be capable of providing 4,000 gallons per minute (gpm) output per pump. The intake and discharge locations for the firewater system during testing will be contained within the export platform jacket framing.
	Life support	The WC 509 Platform Complex will be equipped with Life Jackets, 2 x 28 person SOLAS-approved TEMPSC (one which is dual-listed as a Rescue Boat) life rafts to meet regulatory requirements and industry standards.
Drains	Deck	Rainwater will be captured with a system of drain piping that routes the run-off into the capture sump and then into the oily water separator system. Hydrocarbons removed from the deck drain system will be returned to the crude oil Mainline and clean water will be routed to the overboard discharge system. Water from miscellaneous operations including platform washdown will also be captured in the deck drain system for subsequent treatment in the oily water separator system.
	Open drain system	The open drain system on the main platform (WC 509B) will collect and treat liquids collected in the open drains on the platforms. These liquids generally consist of rain, wash down water and firewater drainage.
	Facilities equipment skids	All hydrocarbon-containing facilities skids will be equipped with a capture system and piping that will be routed to the sump tank and oily water separator system prior to discharge.
	closed drain system	A closed drain system on the WC 509B will be provided to collect drains from equipment such as the Oil Receiver and Export Oil Launchers, Fuel Gas Skid, etc.

TABLE 1-4
DWP Platforms Equipment and Systems

Equipment/System	Subcomponents	Description and Power Source (if applicable)
Storage Tanks	diesel system	Diesel is supplied to the following users from the main platform (WC 509B): • One Diesel Engine Generator • Firewater Pump Day Tanks • Platform Cranes on Platform WC 509B • Survival Crafts (one on WC 509B and one on WC 509C) Diesel will be stored on two new Crane Pedestal Diesel Tanks.
	Aviation fuel	Two new skids will be installed to provide aviation fuel for helicopter re-fueling at WC 509A Platform helipad. The primary skid will contain an aviation fuel storage tank and transfer pump with filter / separator. The second, downstream skid will be the fuel dispensing skid. The primary skid will be located on the WC 509B Platform and dispenser skid will be located at the filling station near the helideck on the WC 509A Platform.
	Waste Oil	All hydrocarbon containing equipment/ skids will be equipped with a capture system and piping to route drains from such equipment during operational service or maintenance to a Waste Oil Collection Tank from where liquids will be pumped to the Closed Drain Tank.
Other (e.g., compressors, vents, scrubbers, sumps)	Natural gas liquid separation equipment	Used to separate liquids prior to venting natural gas. The liquids will be pumped into an unvented pipeline after separation. Existing scrubbers are retained to facilitate pigging operations and to allow controlled blowdown of any of the pipelines. Condensate pumps will be installed to pump condensate from scrubber into the gas export pipeline. Other miscellaneous equipment (skimmer and sump pile) will be retained in the facility to segregate drains from oil system and to collect condensate back to the condensate pumps.
	Vents	High pressure and low-pressure vents system will remain in place to provide safety emergency releases.

Jacket and Piles Supporting the DWP Platforms

The jacket is the structure that supports the topside infrastructure and equipment of a platform. Minor modifications (e.g., replacement anode assemblies, above waterline painting, some marine growth removal, one repair on a missing subsea member on 509A and grouting several members for strengthening on 509A and B) will be made to the existing jackets of the DWP Platforms; however, installation of new jackets or piles will not be required. Strength and Fatigue analysis following API RP-2A was conducted and provided in a Permit Application to BSEE (See Volume III, Appendix K).

1.3.2.2 *CALM Buoys, PLEM, and Crude Oil Loading Pipeline*

The Applicant has designed the Project with two, anchored CALM Buoys to which VLCCs (or other crude oil carriers) will moor for loading. A mooring hawser will be used to moor the vessel to the CALM Buoy. The intent is for only one CALM Buoy to be used for loading at any one time but there could be a possibility that both CALM Buoys could be used at the same time. **Figure 1-8** depicts a typical mooring of a crude carrier at a CALM Buoy.

The successful supplier will be required to perform the engineering design which will be based on the following:

- The meteorology and oceanography characteristics and history of the DWP site;
- Geotechnical analysis of the cores taken at the CALM locations (see Section 1.4.2); and
- Geophysical evaluations performed at the CALM locations (see Section 1.4.2).

FIGURE 1-8 CALM Buoy with Moored VLCC (Not Project-Specific)

The CALM Buoys will be moored with chains to the seafloor where driven pile anchors (or an engineered equivalent for the sedimentary conditions at the site) will provide the necessary holding ability for mooring of up to a VLCC class tanker. Anchors and associated anchor chain will be installed to provide the mooring for each of the CALM Buoys. Conservatively, for each CALM mooring system there will be eight 36-inch OD pin piles driven to 150 feet below the seafloor, using an underwater piling hammer (Menck 150 kj or similar), and associated anchor chain installed to provide the mooring for each of the CALM Buoys. Final anchor locations, the size of the chains, pile diameter, and piling depth will be determined by the CALM Buoy provider during detailed design.

Each CALM Buoy system will have a PLEM located as listed in **Table 1-1**. Each PLEM will be connected to their respective CALM Buoy with flexible underwater hoses. Two Crude Oil Loading Pipelines, approximately 4,710 and 6,085 feet in length, will be installed from the WC 509B Platform to the PLEM locations, one pipeline to each PLEM. The pipe will have a corrosion resistant outer coating and a Concrete Weight Coating (CWC). The details of the coatings will be developed during the Project's detailed engineering phase. Each PLEM system will have pigging capabilities between the WC 509B Platform and the PLEM. The PLEMs will be installed on foundation piles or mud-mats to distribute the weight of the PLEM to the seafloor. Details will be developed by the CALM Buoy provider during the Project's detailed engineering phase, including piling diameter and depth or mud-mat design.

Floating and flexible 24-inch diameter hoses, approximately 1,500 feet long, will be installed for loading from the CALM Buoy to the VLCC (or other large seafaring crude carrier). During loading, the floating hoses will be recovered by one of the DWP support vessels, lifted to the VLCC (or other crude carrier) loading manifold, and connected to the receiving flange. The floating hoses will simply float on the surface of the water and will weathervane dependent on the current when not being used for loading. The floating hoses will contain a butterfly valve on the end that will be utilized to isolate the hose after loading is complete and prior to placing the hoses back in the water. Additionally, a blind flange will be installed to further prevent any potential contamination or leakage while the hose is floating and waiting for the next VLCC (or other large seafaring crude carrier) to be loaded.

1.3.3 Service Vessel Mooring Area

The Applicant currently plans to provide, either directly or through a contracted service provider, two tugs to assist arriving VLCCs with transiting the BMOP DWP operations area, mooring, stabilization during loading, and departure operations. The tugs and other service vessels (e.g., loading line tender vessel, crew boat) provided as part of BMOP DWP services, either directly or through a contracted service provider, are required for all VLCCs and other crude carriers entering the DWP operations area. The BMOP DWP intends to keep tugs and support vessels on location and will provide three dedicated support vessel mooring buoys located near the WC 509 Platform Complex within the secured area of the port.

Mooring buoys will be sized to accommodate the largest support vessel anticipated to call on the BMOP DWP and in accordance with recognized industry design criteria and standards. Each support vessel mooring buoy will consist of concrete anchors, bridle chain with shackle and swivel, chain with shackle and swivel to surface, mooring buoy, and mooring pendant with pick-up buoy.

The area within which the service vessels may safely moor is shown in **Figure 1-2**.

1.3.4 Anchorage Area

The Applicant will utilize USCG-designated anchorage areas for VLCCs (or other crude carriers) awaiting mooring at a CALM Buoy or if they must disconnect from the CALM Buoys for safety reasons. Specifically, the federally regulated safety anchorage area located approximately 33 nautical miles north of the BMOP DWP and on the east inbound side of the Calcasieu Pass, Port of Lake Charles Safety Fairway will be used (see **Figure 1-9**).

1.3.5 Safety Zone, No Anchorage Areas, and Area to be Avoided

The Applicant is requesting that the 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 Safety Zone surrounding the BMOP DWP operations area will be marked by private lighted buoys at four corners (see **Table 1-1**).

The Applicant will also assist the USCG and MARAD with submissions to the International Maritime Organization (IMO) to establish Areas to be Avoided (ATBAs) and a No Anchorage Area (NAA) that will designate areas where anchoring will be avoided except in the case of immediate danger to vessels or persons. In accordance with 33 CFR § 148.5, the Applicant is requesting the designation of an ATBA in the waters surrounding the WC 509B Platform (DWP Platform) and 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 (see **Figure 1-2**). Moored vessels in the Support Vessel Mooring Area are within the proposed BMOP DWP operations

area Safety Zone and will not require additional restrictions. In consideration of extensive subsea pipelines and associated subsea equipment for the CALM Buoys, the applicant is requesting to establish the entire Safety Zone as a NAA with the exception of emergency situations requiring a VLCC or other crude oil carrier to drop anchor.

Additional information regarding the requested Safety Zone, NAAs, and ATBAs is provided in Topic Report 12, "Safety and Security" (Volume IIa).

1.3.6 Supporting Infrastructure

The equipment on the WC 509 Platform Complex is currently powered by natural gas, electricity and diesel. The facilities on the converted WC 509 Platform Complex will continue to be powered by these three power sources.

1.3.7 WC 148 Platform

The existing WC 148 Platform will be converted from natural gas transportation service to crude oil transportation service. The WC 148 Platform structure will be designed as an unmanned MLV facility. See **Appendix I** of Volume III (*Confidential*) for an overview of the converted WC 148 Platform. All gas piping facilities on the deck will be removed and replaced with new pipe and a new MLV. The new equipment will consist of the following:

- New MLV with remote terminal unit (RTU) and solar powered array;
- Nitrogen Bottle skid, and Microwave Communication/Repeater Tower.

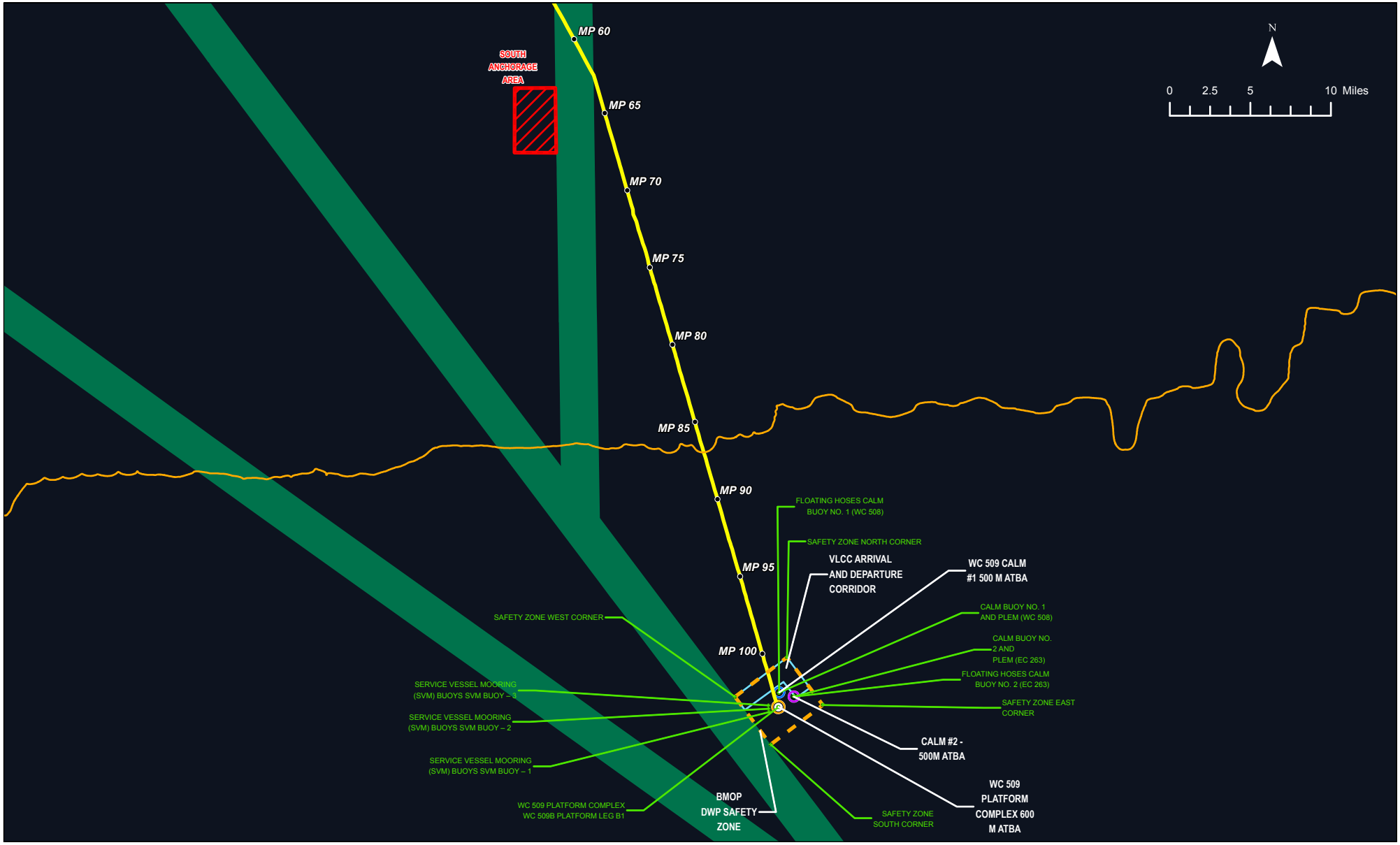
Access to the structure will be by either boat or helicopter, which will remain on-site while personnel are on the platform.

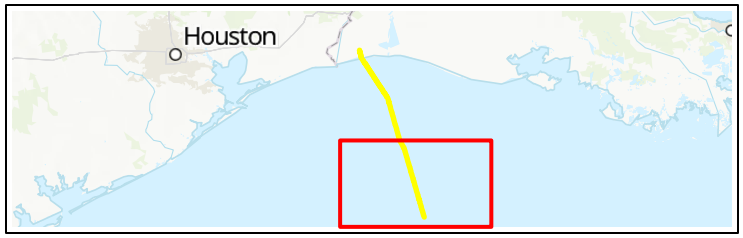
1.4 CONSTRUCTION AND INSTALLATION

To minimize potential construction delays and environmental impacts, the Applicant will utilize onshore prefabrication yards to reduce the offshore footprint during construction of the DWP components. The prefabricated components will then be transported offshore for installation on location. Pre-existing prefabrication yards are planned to be utilized for the onshore prefabrication operations.

Construction vessels may anchor within two overlapping areas surrounding the WC 509 Platform Complex, the Crude Oil Loading Pipelines, PLEMS, and CALM Buoys (see **Figure 1-10**). These areas were included in the geophysical and archeological survey conducted for the BMOP Project and encompass approximately 1,748 acres. However, the amount of actual seafloor disturbance within these areas is significantly much less. An overview of the estimated seafloor disturbance that will occur during construction of the proposed DWP is provided in **Table 1-5**.

BMOP PROJECT - FIGURE 1-9 - OFFSHORE APPROACH AND DEPARTURE - EXISTING USCG ANCHORAGE AREA





LEGEND

- EXISTING OFFSHORE PIPELINE MILEPOSTS
- LOCATION OF NAVIGATION AIDS
- DEEPWATER PORT WC-509B AND CALM BUOYS
- EXISTING PIPELINE TO BE CONVERTED TO OIL SERVICE
- DEPTH CONTOUR -108'
- BMOP DWP SAFETY ZONE
- VLCC ARRIVAL AND DEPARTURE CORRIDOR
- WC 509 CALM #1 500 M ATBA
- WC 509 PLATFORM COMPLEX 600 M ATBA
- CALM #2 - 500M ATBA
- SAFETY ANCHORAGES
- SHIPPING FAIRWAY

BLUE MARLIN OFFSHORE PORT PROJECT

USCG DESIGNATED ANCHORAGE AREA

COUNTY/PARISH:	N/A	DRAWN BY:	JRA
STATE:	TX/LA	CHECKED BY:	CW

DATE:	2020/09/21	PROJECTION:	NAD 1983 UTM Zone 15N

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BLUE MARLIN OFFSHORE PORT PROJECT
FIGURE 1-9

DWG:	0802-01-063	SHEET:	1 OF 1

TABLE 1-5
Seafloor Disturbance Associated with DWP Construction

Project Component	Activity	Construction Method	Area of Impact (Acres)			Total Acreage (Volume [cubic yards])
			Cable Sweep	Anchor Drop	Trenching	
Installation Crude Oil Export Pipelines[a] (WC 509B Platform to PLEMs)	Pipelay	Laybarge	310.0	0.2	0	310.2 (0)
	Pipeline Lowering	Jetting (1st Pass)[b]	62.0	0.2	27.0	89.2 acres (36,629)
		Jetting (2nd Pass)[b]	62.0	0.2	5.4	67.6 (7,326)
Existing Mainline	Conversion - Sealing of Subsea Tie-ins[c], Replace MLV[d]	Hand jetting	0.0	0.0	0.2	0.2 (756)
		Total	434.0	0.6	32.6	467.2 (44,711)

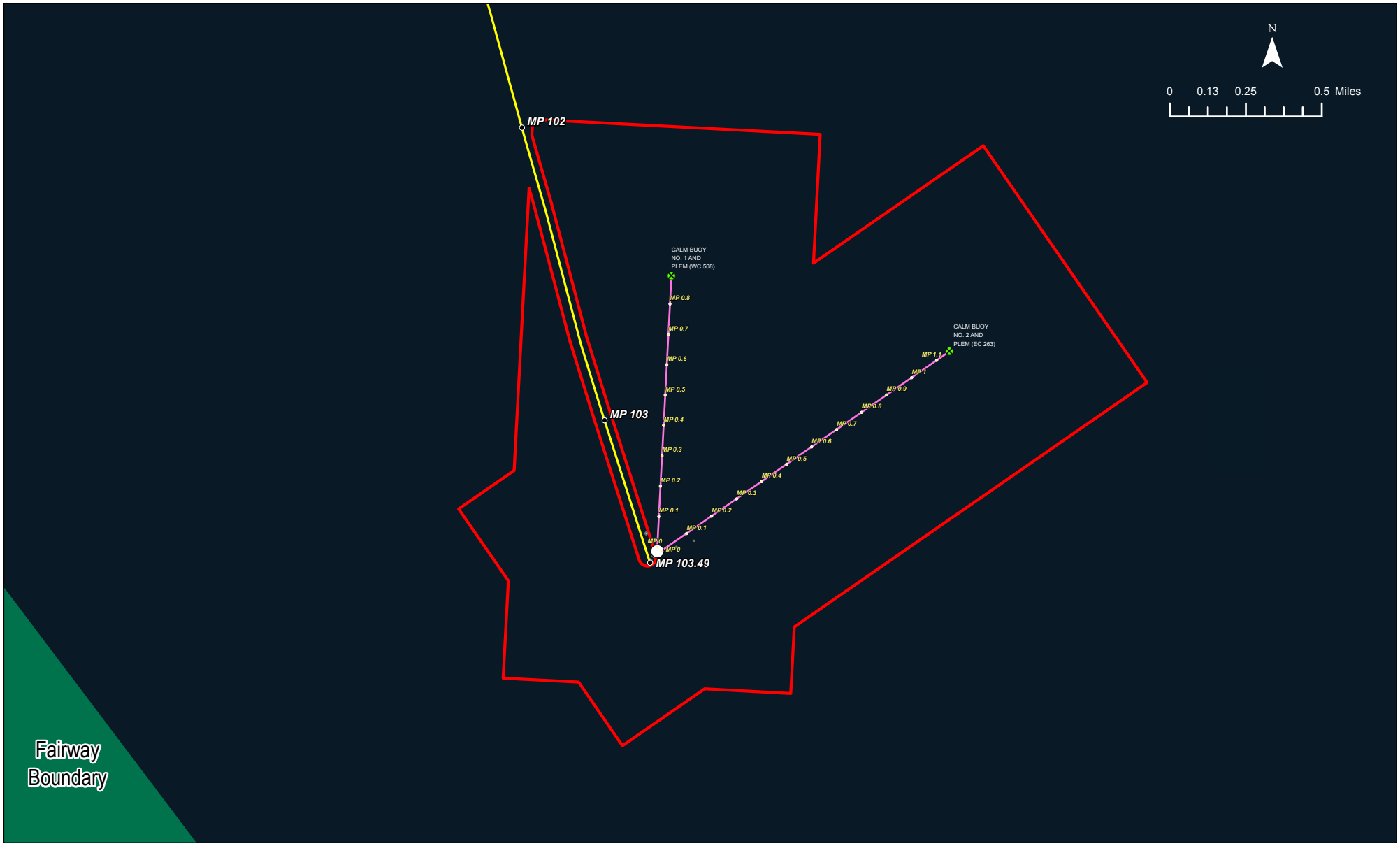
Notes:
[a] Total for both pipelines, one to each PLEM. The impacts are the same for both pipelines.
[b] Area impacted due to jetting assumes jetted material will settle out of the water column within 50 feet on both sides of route centerline.
[c] 4 feet by 4 feet work area at bottom, 8 feet deep. Dive vessel will remain stationary on maximum 4-point mooring; therefore, anchor impacts are negligible.
[d] 4 feet by 200 feet work area at bottom, 8 feet deep. Dive vessel will remain stationary on maximum 4-point mooring; therefore, anchor impacts are negligible.

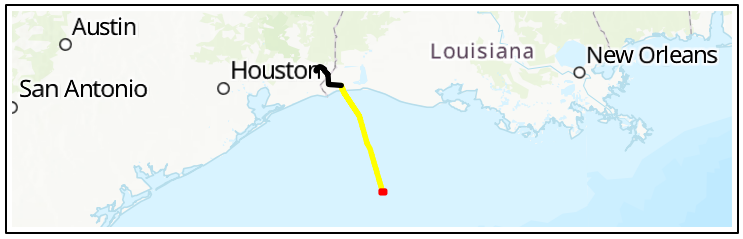
1.4.1 Construction Schedule and Workforce

1.4.1.1 *Construction Schedule*

An overview of the anticipated construction schedule for the Project is provided in **Figure 1-11**. Construction of the Project is planned to begin in November 2021 for onshore fabrication and August 2022 for offshore installation with Project completion and commissioning scheduled for July 2023. Procurement of major platform equipment is expected to take 10 months. Deck fabrication, outfitting, and onshore pre-commissioning are expected to take 11 months with delivery to the offshore sites staggered to accommodate the tasks of the primary installation vessels. Loadout, transport, and installation will take approximately 3 months. Conversion of the Mainline to oil service, which will occur concurrently with prefabrication and construction of the other DWP components, will take approximately 6 months. Final offshore commissioning and startup activities will take approximately 2 months. Onshore pipeline construction, including the BMOP Pump Station, is planned to begin March 2022 and be complete by April 2023.

BMOP PROJECT - FIGURE 1-10 AREA WHERE CONSTRUCTION VESSEL ANCHORING MAY OCCUR





LEGEND

- EXISTING OFFSHORE PIPELINE MILEPOSTS
- BUOY LOCATION
- PLATFORM PIPELINE MILEPOSTS
- CONVERTED STATION 501
- DEEPWATER PORT WC-509B
- PIPELINE PORTION CONVERTED TO OIL SERVICE
- SHIPPING FAIRWAY
- AREA WHERE CONSTRUCTION VESSEL ANCHORING MAY OCCUR

BLUE MARLIN OFFSHORE PORT PROJECT

FIGURE 1-10

COUNTY/PARISH:	N/A	DRAWN BY:	CW
STATE:	N/A	CHECKED BY:	DH

DATE:	2020/09/17	PROJECTION:	NAD 1983 UTM Zone 15N

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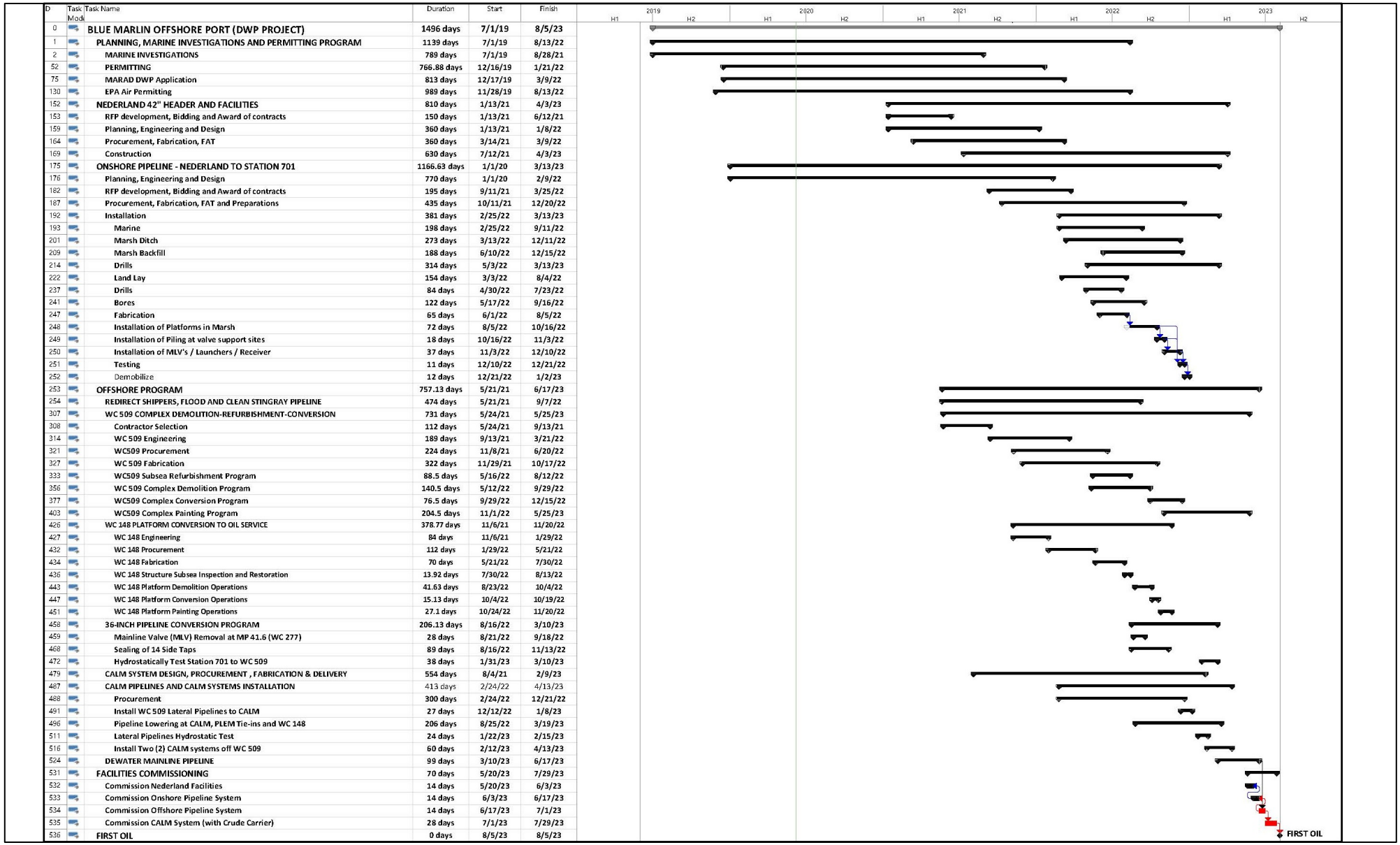
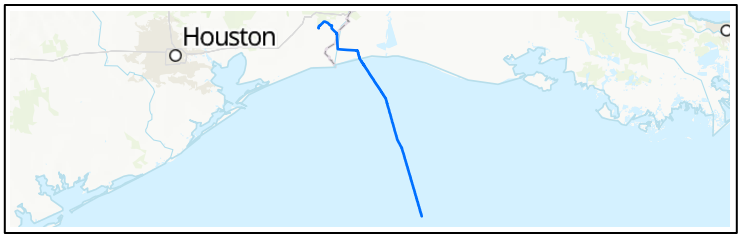
BLUE MARLIN OFFSHORE PORT PROJECT
FIGURE 1-10

DWG:	0802-01-065	SHEET:	1 OF 1

BMOP PROJECT - PERMITTING, PROCUREMENT AND INSTALLATION SCHEDULE - WC 509 COMPLEX EXPORT TERMINAL

ID	Task Mode	Task Name	Duration	Start	Finish
0		**BLUE MARLIN OFFSHORE PORT (DWP PROJECT)**	**1496 days**	**7/1/19**	**8/5/23**
1		**PLANNING, MARINE INVESTIGATIONS AND PERMITTING PROGRAM**	**1139 days**	**7/1/19**	**8/13/22**
2		**MARINE INVESTIGATIONS**	**789 days**	**7/1/19**	**8/28/21**
52		**PERMITTING**	**766.88 days**	**12/16/19**	**1/21/22**
75		**MARAD DWP Application**	**813 days**	**12/17/19**	**3/9/22**
130		**EPA Air Permitting**	**989 days**	**11/28/19**	**8/13/22**
152		**NEDERLAND 42" HEADER AND FACILITIES**	**810 days**	**1/13/21**	**4/3/23**
153		**RFP development, Bidding and Award of contracts**	**150 days**	**1/13/21**	**6/12/21**
159		**Planning, Engineering and Design**	**360 days**	**1/13/21**	**1/8/22**
164		**Procurement, Fabrication, FAT**	**360 days**	**3/14/21**	**3/9/22**
169		**Construction**	**630 days**	**7/12/21**	**4/3/23**
175		**ONSHORE PIPELINE - NEDERLAND TO STATION 701**	**1166.63 days**	**1/1/20**	**3/13/23**
176		**Planning, Engineering and Design**	**770 days**	**1/1/20**	**2/9/22**
182		**RFP development, Bidding and Award of contracts**	**195 days**	**9/11/21**	**3/25/22**
187		**Procurement, Fabrication, FAT and Preparations**	**435 days**	**10/11/21**	**12/20/22**
192		**Installation**	**381 days**	**2/25/22**	**3/13/23**
193		**Marine**	**198 days**	**2/25/22**	**9/11/22**
201		**Marsh Ditch**	**273 days**	**3/13/22**	**12/11/22**
209		**Marsh Backfill**	**188 days**	**6/10/22**	**12/15/22**
214		**Drills**	**314 days**	**5/3/22**	**3/13/23**
222		**Land Lay**	**154 days**	**3/3/22**	**8/4/22**
237		**Drills**	**84 days**	**4/30/22**	**7/23/22**
241		**Bores**	**122 days**	**5/17/22**	**9/16/22**
247		**Fabrication**	**65 days**	**6/1/22**	**8/5/22**
248		**Installation of Platforms in Marsh**	**72 days**	**8/5/22**	**10/16/22**
249		**Installation of Piling at valve support sites**	**18 days**	**10/16/22**	**11/3/22**
250		**Installation of MLV's / Launchers / Receiver**	**37 days**	**11/3/22**	**12/10/22**
251		**Testing**	**11 days**	**12/10/22**	**12/21/22**
252		Demobilize	**12 days**	**12/21/22**	**1/2/23**
253		**OFFSHORE PROGRAM**	**757.13 days**	**5/21/21**	**6/17/23**
254		**REDIRECT SHIPPERS, FLOOD AND CLEAN STINGRAY PIPELINE**	**474 days**	**5/21/21**	**9/7/22**
307		**WC 509 COMPLEX DEMOLITION-REFURBISHMENT-CONVERSION**	**731 days**	**5/24/21**	**5/25/23**
308		**Contractor Selection**	**112 days**	**5/24/21**	**9/13/21**
314		**WC 509 Engineering**	**189 days**	**9/13/21**	**3/21/22**
321		**WC509 Procurement**	**224 days**	**11/8/21**	**6/20/22**
327		**WC 509 Fabrication**	**322 days**	**11/29/21**	**10/17/22**
333		**WC509 Subsea Refurbishment Program**	**88.5 days**	**5/16/22**	**8/12/22**
356		**WC 509 Complex Demolition Program**	**140.5 days**	**5/12/22**	**9/29/22**
377		**WC509 Complex Conversion Program**	**76.5 days**	**9/29/22**	**12/15/22**
403		**WC509 Complex Painting Program**	**204.5 days**	**11/1/22**	**5/25/23**
426		**WC 148 PLATFORM CONVERSION TO OIL SERVICE**	**378.77 days**	**11/6/21**	**11/20/22**
427		**WC 148 Engineering**	**84 days**	**11/6/21**	**1/29/22**
432		**WC 148 Procurement**	**112 days**	**1/29/22**	**5/21/22**
434		**WC 148 Fabrication**	**70 days**	**5/21/22**	**7/30/22**
436		**WC 148 Structure Subsea Inspection and Restoration**	**13.92 days**	**7/30/22**	**8/13/22**
443		**WC 148 Platform Demolition Operations**	**41.63 days**	**8/23/22**	**10/4/22**
447		**WC 148 Platform Conversion Operations**	**15.13 days**	**10/4/22**	**10/19/22**
451		**WC 148 Platform Painting Operations**	**27.1 days**	**10/24/22**	**11/20/22**
458		**36-INCH PIPELINE CONVERSION PROGRAM**	**206.13 days**	**8/16/22**	**3/10/23**
459		**Mainline Valve (MLV) Removal at MP 41.6 (WC 277)**	**28 days**	**8/21/22**	**9/18/22**
468		**Sealing of 14 Side Taps**	**89 days**	**8/16/22**	**11/13/22**
472		**Hydrostatically Test Station 701 to WC 509**	**38 days**	**1/31/23**	**3/10/23**
479		**CALM SYSTEM DESIGN, PROCUREMENT , FABRICATION & DELIVERY**	**554 days**	**8/4/21**	**2/9/23**
487		**CALM PIPELINES AND CALM SYSTEMS INSTALLATION**	413 days	2/24/22	4/13/23
488		**Procurement**	**300 days**	**2/24/22**	**12/21/22**
491		**Install WC 509 Lateral Pipelines to CALM**	**27 days**	**12/12/22**	**1/8/23**
496		**Pipeline Lowering at CALM, PLEM Tie-ins and WC 148**	**206 days**	**8/25/22**	**3/19/23**
511		**Lateral Pipelines Hydrostatic Test**	**24 days**	**1/22/23**	**2/15/23**
516		**Install Two (2) CALM systems off WC 509**	**60 days**	**2/12/23**	**4/13/23**
524		**DEWATER MAINLINE PIPELINE**	**99 days**	**3/10/23**	**6/17/23**
531		**FACILITIES COMMISSIONING**	**70 days**	**5/20/23**	**7/29/23**
532		**Commission Nederland Facilities**	**14 days**	**5/20/23**	**6/3/23**
533		**Commission Onshore Pipeline System**	**14 days**	**6/3/23**	**6/17/23**
534		**Commission Offshore Pipeline System**	**14 days**	**6/17/23**	**7/1/23**
535		**Commission CALM System (with Crude Carrier)**	**28 days**	**7/1/23**	**7/29/23**
536		**FIRST OIL**	**0 days**	**8/5/23**	**8/5/23**





Task
Summary
Critical Task
Milestone
Project Summary

BLUE MARLIN OFFSHORE PORT PROJECT

TOPIC REPORT 1 (VOLUME IIA) FIGURE 1-11

COUNTY/PARISH: N/A	DRAWN BY: JC
STATE: N/A	CHECKED BY: CW
DATE: 2020/09/17	PROJECTION: N/A

BLUE MARLIN OFFSHORE PORT PROJECT

DWG: 0802-01-067 | SHEET: 1 OF 1

Updated to include Offshore Modifications to BMOP SoW Rev. Date: 5/16/20. Revised to include WC 509 modifications and WC 148 Repurposing. Includes Nederland and Onshore Pipeline Updates

1.4.1.2 *Workforce Estimate*

The estimated workforce that will be required for Project construction is listed in **Table 1-6**. The construction workforce for the offshore components is expected to range from approximately 72 to 738 persons per month during periods of peak construction, with an average of 338 persons per month. Given the nature of the offshore oil and gas industry in the region and associated trained work crews, it is estimated that over 95 percent of the construction workers will be hired from existing labor pools in Louisiana and Texas, with the exceptions being Subject Matter Experts for specialty equipment and design and fabrication of the CALM Buoys by overseas contractors. The majority of hired workers will be skilled laborers, and salaries are expected to average $125,000 to $130,000 per year.

TABLE 1-6
Estimated Project Construction and Decommissioning Workforce

Component / Activity	Average Workforce (monthly)	Peak Workforce (monthly)	Work Cycle	Duration[a]	Estimated Construction Period[b]	Average Annual Salary
Offshore Construction						
Clean and Flush Mainline Pipeline	125 persons	252 persons	2 x 12-hr. shifts, 7 days per week	114 days	May 22 - Sept. 22	$150,000
Conversion of WC 509 Complex	64 persons	371 persons	2 x 12-hr. shifts, 7 days per week	381 days	Dec. 21 - Dec. 22	$124,000
Conversion of WC 148 Platform	76 persons	157 persons	2 x 12-hr. shifts, 7 days per week	183 days	May 22 - Nov. 22	$126,000
36-inch Mainline Conversion	55 persons	145 persons	2 x 12-hr. shifts, 7 days per week	84 days	Aug. 22 - Nov. 22	$123,000
Install WC509 Lateral Pipelines	95 persons	220 persons	2 x 12-hr. shifts, 7 days per week	97 days	Dec. 22 - Mar. 23	$120,000
CALM System Installation	162 persons	162 persons	2 x 12-hr. shifts, 7 days per week	60 days	Feb. 23 - Apr. 23	$115,000
Dewater Mainline Pipeline	109 persons	109 persons	2 x 12-hr. shifts, 7 days per week	99 days	Mar. 23 - Jun. 23	$121,000
DWP Commissioning	260 persons	260 persons	2 x 12-hr. shifts, 7 days per week	70 days	May 23 - Jul. 23	$211,000

TABLE 1-6
Estimated Project Construction and Decommissioning Workforce

Component / Activity	Average Workforce (monthly)	Peak Workforce (monthly)	Work Cycle	Duration[a]	Estimated Construction Period[b]	Average Annual Salary
Onshore Construction						
Onshore Pipeline[c]	280	495	6-12-hour days per week (288 hours per month)	360 days	Jan. 2022 - March 2023	$114,000
Decommissioning						
Deinventory System	205 persons	205 persons	24 / 7	83 days	TBD	$116,000
WC509 Demolition	226 persons	226 persons	24 / 7	121 days	TBD	$124,000
WC148 Demolition	181 persons	181 persons	24 / 7	38 days	TBD	$118,000

Notes:
[a] Estimated days of work, as opposed to the total period of construction.
[b] Includes period of construction/installation, commissioning, and start-up. Also includes allowance for weather-related delays. Dates are subject to change.
[c] New build 42-inch, 37.02-mile pipeline with associated MLVs and pig launcher/receiver.

The Applicant has not identified which fabrication entities will construct the Project's offshore components; however, component fabrication will occur at multiple pre-existing fabrication facilities, most within the coastal region of the GOM. It is estimated that fabrication of the offshore components will require up to 160 workers, primarily existing employees of the fabrication groups, for 11 months.

The construction workforce for the onshore components is estimated to range from approximately 280 to a maximum of 495 persons per month during peak construction periods. Similar to the offshore workforce, given the nature of the oil and gas industry in the region and associated trained work crews, it is estimated that over 95 percent of the construction workers will be hired from existing labor pools in Louisiana and Texas. The majority of hired workers will be skilled laborers, and salaries are expected to average $114,000 per year.

A workforce will also be required for decommissioning activities; however, the number of workers will be less than that of Project construction. The estimated workforce for decommissioning of the different Project components is provided in **Table 1-6**.

1.4.2 Pre-Construction Surveys

The Applicant conducted a geophysical and hazards survey of the DWP location and any areas of anticipated seafloor disturbance. The purpose of the survey was to acquire data that met or exceed the U.S. Bureau of Ocean Energy Management (BOEM) Notice to Lessees and archeological assessment requirements. A geotechnical survey and follow-on laboratory testing were also performed to evaluate the sediments for foundational considerations in engineering design. The pre-construction surveys were conducted in agreement with:

- BOEM Guidelines for Providing Geophysical, Geotechnical, and Geohazards Information Pursuant to 30 CFR Part 585;

- BOEM Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585;
- The National Historic Preservation Act, as amended in 36 CFR Part 800; and
- USCG DWP Regulations pursuant to 33 CFR § 148.05(o) – Archeology.

The USCG and the Louisiana Office of Cultural Development Division of Historic Preservation (State Historic Preservation Office [SHPO]) were notified of all pre-construction surveys.

A summary of where the reports for the offshore pre-construction field survey are located is provided in **Table 1-7**. Onshore pre-construction surveys, including surveys of Sabine Lake, are discussed in Topic Report 1, "Project Description and Purpose and Need" (Volume IIb).

TABLE 1-7
Offshore Pre-Construction Surveys

Survey	Survey Report Location
Offshore Geotechnical Investigation	Volume III, Appendix C [*Confidential*]
Offshore Geophysical and Hazard Survey	Volume III, Appendix D [*Confidential*]
Offshore Archeological Survey	Volume III, Appendix E [*Confidential*]

1.4.3 Construction Plan

The majority of the offshore components will be fabricated along the GOM Coast, including the major DWP equipment (e.g., generators, cranes, utility systems, living quarters). As feasible, these components will be shipped pre-commissioned and ready to install. The location of the CALM Buoy, PLEM and floating and subsea hose manufacturer(s) is unknown at this phase of the Project. The candidates which have been identified are located overseas, primarily in Europe or Southeast Asia.

1.4.3.1 *Deepwater Port Components*

The existing WC 509 Platform Complex is located adjacent to the southern end of the existing Mainline within WC 509 in a water depth of approximately 162 feet. Two Crude Oil Loading Pipelines will be installed from the WC 509B Platform (DWP Platform) to a PLEM at the location of each of the two CALM Buoys. An overview of the vessels that are anticipated to be needed during DWP construction is provided in **Table 1-8**.

TABLE 1-8
Estimated Vessel Use during DWP Construction

Vessel Type	Stingray Pipeline Conversion	DWP Platform Conversion	CALM Buoy Construction	Pipeline Construction (Platform to PLEM)	Facilities Commissioning	Total
Anchor Handling Tug	0	5	1	4	1	11
Cargo Barge with Tug	0	3	1	0	1	5
Crew Boat	4	5	1	2	2	14

TABLE 1-8
Estimated Vessel Use during DWP Construction

Vessel Type	Stingray Pipeline Conversion	DWP Platform Conversion	CALM Buoy Construction	Pipeline Construction (Platform to PLEM)	Facilities Commissioning	Total
Derrick Barge	0	3	1	0	1	5
Dive Support Boat	3	1	0	1	0	5
Hydrotest Boat	1	0	0	0	0	1
Jet Barge	0	0	0	1	0	1
Lift Boat	0	0	0	0	1	1
Nitrogen Boat	0	0	0	0	0	0
Pipe Haul Tug	0	1	0	1	0	2
Pipe Lay Barge	0	1	0	1	0	2
Supply Vessel	4	5	1	2	2	14
Trawler	0	0	0	0	1	1

Platform Reconfiguration and Conversion

The existing WC 509 Platform Complex will be converted for crude oil and natural gas transportation service. The WC 509 Platform Complex consists of five fixed structures (see **Figure 1-12**). The WC 509A Platform currently serves as a natural gas junction platform and will continue in that capacity. The WC 509B Platform is a liquid separation and gas compression platform and will be used for crude oil export service while retaining its current capacity to provide fuel gas to natural gas-driven components as well as housing components for the natural gas venting system. The WC 509C Platform is the personnel platform (living quarters) and will continue in that capacity with a new, larger capacity quarters module. The 509C platform is connected to the 509B with an approximate 300-foot bridge. The WC 509 VBT component includes two fixed tripod structures and two tripod bridges connecting the WC 509B Platform to the natural gas vent approximately 660 feet from the manned platforms. The VBT structures will continue service in their current capacities.

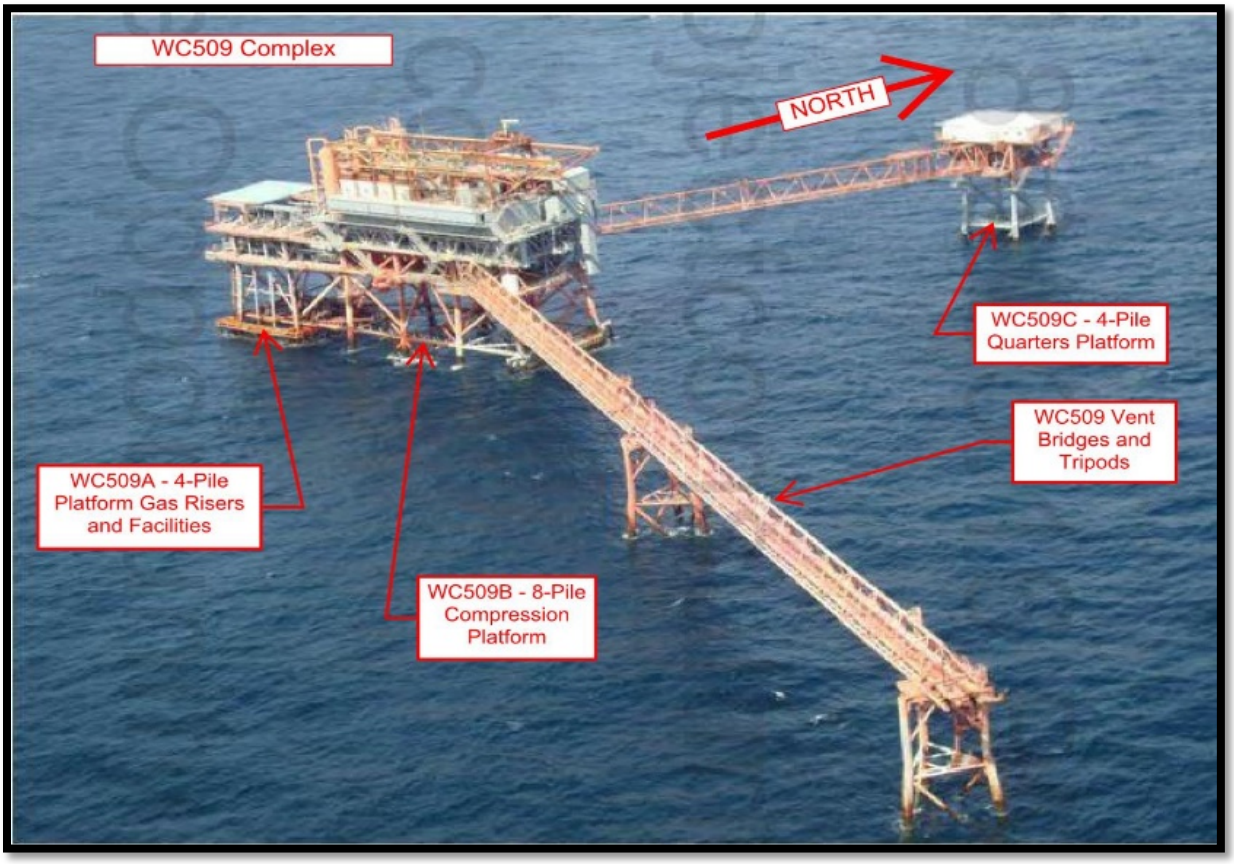
The WC 509 Platform Complex will be converted from natural gas transportation service to crude oil and natural gas transportation service and will contain all equipment and components required to manage the DWP crude loading operations. To convert the existing WC 509 Platform Complex for the DWP, natural gas platform piping not required after conversion will be purged and cleaned of natural gas, hydrocarbons and other materials. All free liquids in the components to be removed will be pumped into downstream gas piping for transport to Sea Robin system. Equipment and other components to be removed will also be transported to shore via cargo barge for recycling or disposal. Once removal of the existing equipment and components has been completed, the new equipment and components will be transported via cargo barge to the site, lifted, and installed onto the crude oil export platform. Schematics of where the new platform components will be installed are provided in Appendix A, “Offshore Project Mapping” (Volume IIa).

Derrick barges will be used to assist in both removing and placing the different components and equipment onto the platform. Derrick barges will remove components that are being taken off of the platforms. Specific construction activities for the conversion include:

WC 509A Platform

- Removal of the platform riser guard along Row 1 of the structure;
- Removal of the platform boat landing along Row 2 of the structure;
- Disconnection of the 36-inch piping on WC 509A from natural gas sources, modifying 36-inch deck piping to accommodate routing to the WC 509B Platform, and the removal of WC509A piping components not required for conversion purposes;

FIGURE 1-12 Existing WC 509 Platform Complex



- Repairing/replacement of underwater jacket members and appurtenances;
- Installation of jacket replacement anode assemblies; and
- Grouting of one jacket member at Elevation (+)12 feet and five jacket members at Elevation (-)19 feet.

WC 509B Platform

- Removal of existing platform equipment (i.e. compressor buildings, control room, utility building, etc.) at Elevation (+)89 feet;
- Removal of piping off the Elevation (+)74 feet;
- Removal of existing equipment and replace with new equipment and piping spools on the Elevation (+)56 feet deck and perform piping and E&I tie-ins;
- Installation of new components required for crude oil export;
- Grouting of four jacket members at Elevation (-)41 feet and four jacket members at Elevation (-)99 feet (as determined by 2019 Level III diver inspection);
- Installation of jacket replacement anode assemblies;
- Installation of two new diesel-powered cranes;
- Installation of fabricated riser clamps and risers (piping to transfer product from the WC 509B platform to the seafloor and connect to the platform-to-PLEM/CALM Buoy facility) on the jacket and deck sections of the platform and protective riser guard on jacket at Leg A1, for the export lines transporting the crude oil from the platform to the CALM Buoys;
- Installation of new riser guards; and
- Installation of new oil export equipment and perform piping and E&I tie-ins at Elevation (+)89 feet.

WC 509C Platform

- Removal of existing living quarters building, platform equipment, and helideck;
- Installation of jacket replacement anode assemblies;
- Installation of new living quarters/galley building, platform equipment and helideck; and
- Hook-up and commissioning of new quarters, platform equipment and helideck.

WC 509 VBT

- Installation of tripod jacket replacement anode assemblies.

WC 148 Platform

The existing WC 148 Platform will also be converted from gas to crude oil service and will contain one MLV. The work to be performed includes:

- Removal of launchers and receivers;
- Removal of piping and risers not required for oil service;
- Cutting both risers and reconnecting with prefabricated and tested spool sections
- Installation of one MLV with nitrogen operated actuator;
- Installation of jacket replacement anode assemblies;
- Installation of an RTU;
- Installation of a new solar array panel system;

- Installation of a nitrogen bottle skid;
- Installation of a microwave communications/repeater tower.

Reconfiguring and conversion of the existing structures will also include cleaning of marine growth, painting of above-water sections of the structure, and diving inspections with potential repair of jacket structural components.

Onshore procurement and fabrication work will be performed at established GOM coastal facilities, including the replacement anode assemblies, piping spool assemblies, and platform equipment components. In addition, instrumentation hook up and pre-commissioning testing will be done at the existing fabrication yards.

Pipeline Installation

The new offshore pipelines from the WC 509B Platform to the PLEMs will be installed using a conventional, anchored pipelay barge with workstations for pipe welding, weld inspection, and field joint application. The following activities will be conducted during pipeline construction:

- Pipe will be concrete coated at an onshore coating yard;
- Cathodic protection anodes will be installed on the pipe joints in the coating yard;
- Cargo barges, towed by tugs, will be used to transport the coated pipe to the installation location and will be secured alongside the pipelay barge for transfer of pipe joints;
- Pipe joints will be welded, externally coated, and inspected on the pipelay barge;
- The pipelay barge will move ahead with the use of anchor winches, essentially pulling the barge from beneath the pipeline as it is assembled in the firing line and allowing it to settle to the seafloor;
- The pipelines will be lowered with the top of pipe approximately three feet below the natural seafloor;
- The pipelines will be flooded and hydrostatically tested; and
- The pipelines will be dewatered and commissioned for crude oil service.

An overview of typical pipelay is provided in **Figure 1-13**.

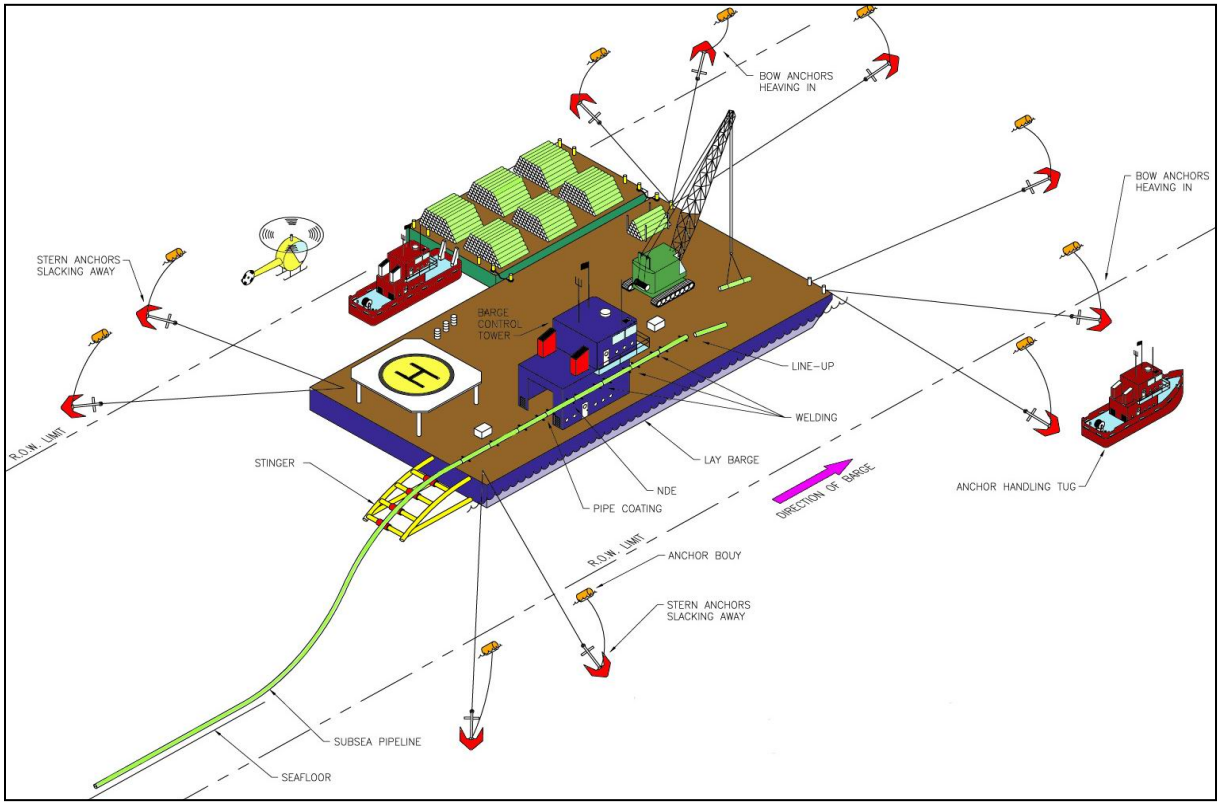
The laybarge will be towed to the worksite by one or two Anchor Handling Tugs (AHT). When the barge nears the work site, one of the AHTs will receive anchors and anchor buoys, in turn, from the barge and will place each anchor in a pre-determined location while the second AHT maintains control of the barge. When four anchors are installed and the barge can maintain station on anchors, the second AHT will assist with placing the remaining barge anchors until all are positioned. After each anchor is tested, the barge will be maneuvered astern toward the WC 509B Platform to a predetermined location to initiate pipelay operations. Anchors will be positioned in safe locations away from man-made or natural obstructions based on data acquired during the pre-construction geophysical hazard survey. The width of the anchor corridor will be 3,000 feet on each side of the route centerline as well as 3,000 feet beyond both pipeline end points.

A pipeline pulling cable will be run from the laybarge through a turning sheave attached to the WC 509B Platform and back to the pipeline string on the laybarge. The laybarge will finalize maneuvering to the planned pull location and will then commence adding joints of pipe as the pulling cable is tensioned to pull the pipeline toward the platform, one pipe joint (40-feet long) at a time. Once the pipeline is close enough

to the platform, the pull head will be secured to the platform leg and the pulling cable released from the sheave and recovered to the barge.

The laybarge will continue to add 40-feet long joints of pipe. The Line-u p Station will be used to align the newly introduced joint of pipe to the end of the pipeline, spacing the faces of the joining ends for correct separation for welding and initiate the welding process There will be multiple "work-stations" spaced 40-feet apart starting at the stern of the laybarge. Although the number of workstations varies between barges, they will be set up to perform the following functions:

FIGURE 1-13 Typical Pipelay Operations



- Line-up Station;
- Welding Stations;
- Non-destructive Examination (NDE) Station; and
- Field Joint Fusion Bonded Epoxy (FBE) Coating and Foam In-fill Stations (for welded joints).

Each joint of pipe added to the pipeline is placed on a rack forward of the Line-up Station. The rack is hydraulically operated and allows the operators to move the joint in all directions to obtain an acceptable alignment to the existing end of pipe. The pipeline installation barge moves forward for each joint added to the line by tensioning the bow anchor cables as tension on the stern anchor cables is relaxed. The breast anchors are used to maintain alignment and barge heading as the barge moves the required 40 feet. As the barge advances, a new joint is added and this weld advances along the barge until it arrives at the stern of the barge and enters the pipeline stinger. The stinger supports and assists in maintaining the minimum required radius of curvature for the pipeline as it transitions from the stern of the laybarge to the seafloor.

A component of the process is the tension machine, which applies squeeze and drag pressure to the pipeline to maintain the pipeline's position in the water column without burdening the pipeline already on the seafloor. The combination of the tensioner and the stinger are configured to maintain an acceptable and safe pipeline profile during installation operations.

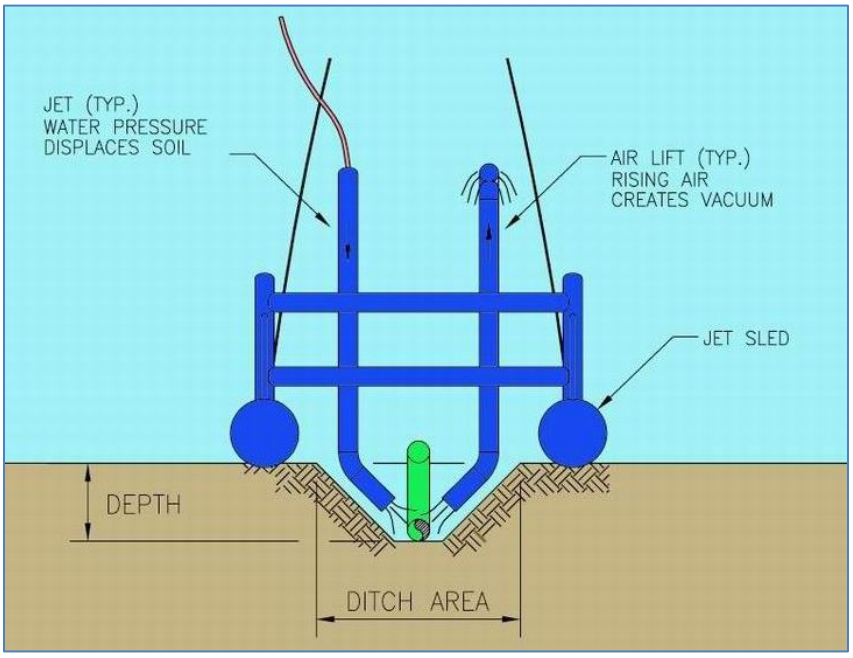
As the barge nears the targeted laydown area at the PLEM location, the surveyors will identify the position on the pipeline where the barge crew will install the lay down head. A flange will be welded to the end of the pipeline which needs to be positioned in the target area. The laydown head will be connected to the pipeline with a flanged end connection and the A & R cable will be attached to the lay down head. The lay down head will progress toward the stern of the barge as the barge moves ahead and held with the combination of the A & R winch and the tension machine. When the lay down head passes through the tensioner, pipeline tension will be transferred to the A & R winch. The barge will continue to move forward as the A & R winch gradually lowers the pipeline to the seabed and inside the target area. The A & R cable will then be unshackled from the pipeline.

The pipeline will be filled with untreated seawater prior to removing the temporary pipeline pull head on either end of the pipe string on the seafloor.

Pipeline Lowering

Upon completion of pipeline installation on the seafloor and prior to connection with the PLEM and WC 509B Platform risers, an anchor-moored jetting vessel, equipped with a jet sled or similar pipe burial device, will return to the starting point. An overview of a typical jet sled is provided in **Figure 1-14**.

FIGURE 1-14 Typical Jet Sled Operations



Anchor hoist operators monitor the load cell readings and adjust the barge heading and position as required when in-hauling and paying out anchor cables to move the jet barge ahead, which in turn tows the jet sled. Anchoring of the jet barge is accomplished similarly to the pipelay barge, using AHTs that place anchors as required by the pipeline route and wind and weather conditions at the work site. The anchors will be placed with the same 3,000-foot anchor corridor used for pipelay.

The jet sled, suspended from an A-frame located at the stern of the vessel, will be lowered to the seabed and positioned over the pipeline with diver assistance. The jet pumps on the barge will be energized to start the jetting operation as will the water eductors (or air lifts). Upon initiation and termination of a jetting pass, the jet sled typically requires some distance to transition from the surface of the seabed to the required trenching depth. Divers will utilize hand jetting methods to attain targeted lowering depth through the transition zones.

A jetted trench typically has a V-shaped cross section, ranging in width from approximately 30 feet at the trench top to 10 feet at the trench bottom (MARAD and USCG, 2016). The composition of the seabed sediments will determine the rate at which the sled will be moved along the pipeline and the quantity of required passes. Using the jet sled, the offshore pipelines will be lowered to a depth where the top-of-pipe is at least 3 feet below natural bottom elevation. A post-lay pipeline survey will be conducted to ensure that the target pipeline depth has been met.

PLEM Installation and Pipeline End Connections

Once the offshore pipelines have been installed from the WC 509B Platform location to the CALM Buoy location, an installation vessel will install each PLEM on the seafloor. The PLEMs will be secured in place in the designated orientation with pin piles (conservatively) to prevent MetOcean forces from shifting the PLEM.

Divers will remove the pipeline head and measure the distances and angles between the PLEM and pipeline. The prefabricated and tested spool sections will then be trimmed on the deck of the installation vessel to match the diver's measurements. The spool piece will then be lowered to the seabed and connected to the pipeline and the PLEM.

The installation vessel will then return to the WC 509B Platform and repeat the process to complete installation of the spool piece between the platform risers and the pipelines. After the pipeline tie-ins are completed the seawater in the pipeline will be displaced by pushing pigs from the PLEM back to the WC 509B Platform or from the WC 509B platform to the PLEMs. The pipelines will remain filled with seawater until pipeline jetting and diver hand-jet lowering has been completed. Any residual chemicals injected into the seawater during the pipeline filling process will be neutralized prior to discharge.

CALM Buoy Installation

The two CALM Buoys will be installed at separate locations in proximity to the PLEMs. After the PLEM has been installed, its final on-bottom position will be coordinated by the survey team and then used to calculate the positions of the CALM Buoy's mooring pile locations in accordance with the predetermined orientation developed during the design engineering program based on Meteorology and Oceanography (MetOcean) criteria.

During the CALM Buoy mooring pile lifting and lowering process, one end of the associated mooring chain will be attached to the preinstalled padeyes on the pile. Once in position, confirmed by the surveyors, the underwater pile driving equipment will be lowered and stabbed over the top of pile. The mooring chain will be held in tension on the installation barge to minimize the likelihood of interference during the pile driving process. The pile will be driven to the required depth within tolerances specified during the pile design process. The mooring chain will be lowered as the pile is driven. After pile driving is completed the installation vessel will move away from the pile location toward the CALM position while the chain is lowered to the seabed under tension. The end of the chain will be lowered to the seabed with a recovery buoy and wire rope attached.

The installation vessel barge will then proceed to each CALM Buoy mooring pile location and repeat the pile and anchor chain installation process. This process will be performed at each CALM mooring pile location until all piles are driven and the ends of the mooring chains are buoyed off and positioned near the designed CALM location.

The CALM Buoy will then be towed alongside the installation barge and the installation vessel will recover diagonally opposite mooring chains, which will be lifted, pre-tensioned and then attached with chain stoppers to the CALM Buoy. After each set of diagonally opposite chains are tensioned and connected to the CALM Buoy, divers will measure each chain departure angle to ensure that the calculated angle has been achieved. This may require addition lifting and tensioning of individual chain legs to obtain the chain configuration determined during CALM Buoy design.

When the installation of each Calm Buoy is complete, the two under buoy hoses will be connected between the PLEM and CALM Buoy by divers. The three floating delivery hoses that will connect the CALM Buoys to the crude carrier will then be installed to the CALM Buoy turret discharge flanges. The mooring hawser that will secure the crude carrier during the loading operations will be attached to the CALM Buoy in readiness to recover and commence loading operations.

1.4.3.2 *Existing Mainline*

Shut-in and De-inventory

Following receipt of the FERC 7b Authorization for abandonment, all-natural gas production currently connected to the Stingray Pipeline System will be isolated from the Mainline. All production that is currently being transported through the Mainline will be redirected per the FERC 7b Authorization to Sea Robin pipeline system. Any liquids in the line will also be addressed per the FERC 7b Authorization.

Filling of the Mainline

Subsequent to abandonment and prior to starting any subsea construction activities, the Mainline will be filled with seawater. Cleaning pigs will be pushed through the Mainline with seawater. The filling/cleaning pigs will be pushed until a spike in pressure occurs at the end points or until 110 percent of the pipeline volume has been injected into the pipeline. The excess volume received at the end point(s) will be captured and trucked to an off-site facility approved for handling and disposal. No seawater is expected to be discharged from the pipeline during this process. The Mainline will be filled with seawater for the duration of the conversion and new construction activities. The seawater may be treated with chemicals to prevent corrosion during the time the Mainline is filled with seawater. The chemicals may include biocides, oxygen scavengers and/or inhibitors, all of which will be neutralized in accordance with regulatory permits prior to discharging the water from the pipeline at the end of the conversion process.

MLV Removal

The MLV located along the Mainline in WC 277 will be removed and replaced with prefabricated and tested pipe spools. Divers will locate the pipeline, remove any protective mats, and excavate the required work area with hand jet and hand-held air lift equipment. CWC will be removed on both sides of the MLV. The pipeline will be cut, and the valve assembly will be recovered to the surface for onshore recycling or disposal. Divers will then install a flanged pipeline end-gripper on the pipe ends and take measurements between the two flange faces. The measurements will be used to make final cuts and welds on the prefabricated pipe spools on the deck of the dive vessel. The completed spool will be lowered into position and the flanges made up and tensioned.

Permanent Sealing of Sidetaps

All sidetaps along the Mainline between the shore crossing and WC 509 Platform Complex will be permanently sealed. All permanent sidetaps have a tee welded in the Mainline, a 90-degree elbow welded to the tee, a valve, flange and blind flange and are located at WC 44, WC 95, WC 196, WC 224, WC 230, WC 245, WC 258, WC 269, WC 277, WC 408, WC 456, WC 459 and WC 483. Divers will locate the pipeline, remove any protective mats, and excavate the required work area with hand jet and hand-held air lift equipment. New blind flanges will be tapped, threaded and drilled on the top and bottom of the blind flange. Small nipples and valves will be installed in the threaded holes for epoxy injection and venting of the cavity between the closed ball valve and the blind flange, permanently sealing the cavity in the sidetap. Concrete mats, sandbags, or other protective cover will then be reinstalled over the gooseneck assembly. See **Figure 1-15** for typical epoxy filled sidetap.

1.4.3.3 *Hydrostatic Testing*

Mainline

The hydrotest of the Mainline between Station 701 and WC 509 Platform Complex will be conducted after all conversion tasks of the Mainline and the WC 148 Platform have been completed. As noted above, the Mainline will already be filled with water, so only a nominal volume of water will be added into the pipeline to achieve test pressures.

Upon successful completion of the hydrostatic tests, the Mainline will be dewatered from Station 701 to the WC 509 Platform Complex with natural gas, nitrogen, or air. Water to be discharged at the WC 509 Platform Complex will meet the National Pollutant Discharge Elimination System (NPDES) permit requirements prior to discharge. Discharge volumes are provided in **Table 1-9**.

Crude Oil Loading Pipelines

The final hydrostatic test of the newly constructed Crude Oil Loading Pipelines that extend from the WC 509B Platform to the PLEMs at the CALM Buoy locations will be conducted after all installation tasks have been completed. Hydrotest pumps and test monitoring instrumentation will be set up on the WC 509B Platform. The test will require a nominal volume of seawater, which will be added into the pipelines to achieve test pressure.

Upon successful completion of the hydrostatic test, the Crude Oil Loading Pipelines will be dewatered with air or nitrogen. Estimated discharge volumes are provided in **Table 1-9**. The pipelines will be purged with nitrogen prior to introduction of crude oil into the system if air is used as the dewatering medium. All water to be discharged will meet the NPDES permit requirements prior to discharge. If necessary, based on regulatory requirements, the seawater will be discharged through a neutralization and filtration spread adjacent to the WC 509 Platform Complex and discharged overboard or retained in frac tanks and disposed of onshore.

FIGURE 1-15 - TYPICAL MAINLINE SIDETAP

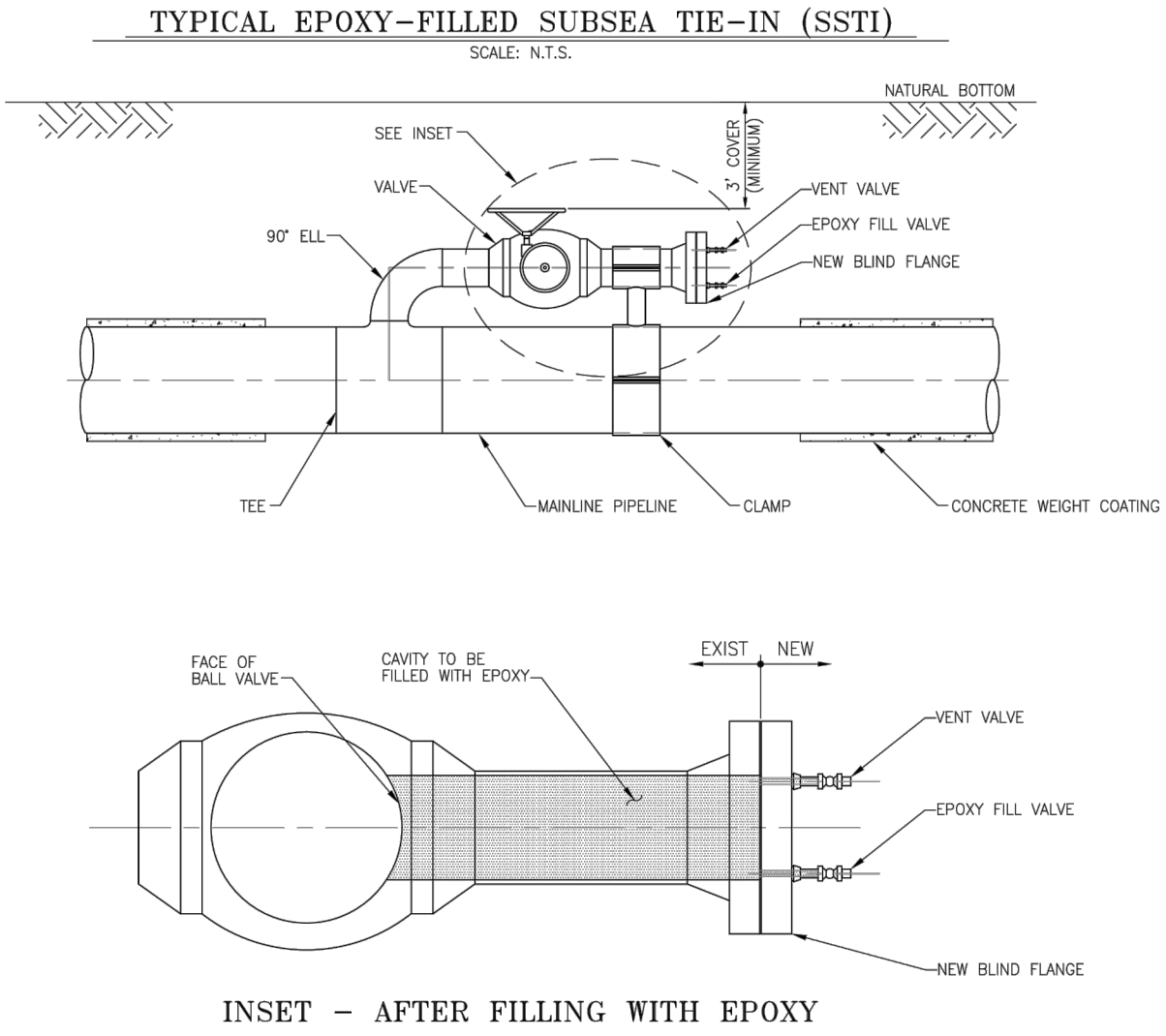


TABLE 1-9
Hydrostatic Test-Water Discharge Information and Volumes

Pipeline Segment	Withdrawal Location	Discharge Location	Approximate Volume (gallons)
Hydrostatic Testing of the Mainline (Station 701 to WC 509)	WC 509A Platform or WC 148 Platform	WC 509A Platform	26,005,000
Crude Oil Loading Pipeline: WC 509B Platform to PLEM No. 1	WC 509 or WC WC 508	WC 509 or WC 508	229,000
Crude Oil Loading Pipeline: WC 509B Platform to PLEM No. 2	WC 509 or EC 263	WC 509 or EC 263	296,000

Prefabricated Components

All new pipe assemblies and skids containing pressurized pipe, whether destined for onshore or offshore locations, that were pre-fabricated in an onshore third party fabrication yard (e.g., pipe assemblies, DWP platform piping, WC 148 Platform piping, PLEMs, tie-in spools, risers) will have already been hydrostatically pressure tested prior to transport offshore. Therefore, hydrostatic testing and dewatering of these components will occur at existing fabrication facilities onshore and will not result in dewatering activities directly impacting construction sites.

1.4.3.4 *Start-up and Commissioning*

Final hookup, testing, and pre-commissioning activities of the DWP equipment will commence once the facilities have been installed. Startup and commissioning activities will occur at the BMOP Pump Station, all the MLVs installed on the BMOP facilities, Station 501, Station 701, the WC 148 Platform, and the WC 509 Platform Complex. The activities will include mechanical, electrical, and communications tests. These activities will be accomplished by crews at NT; roving crews along the new 42-inch Mainline pipe and at Station 501 and Station 701; and crews quartered on the WC 509C Platform or on derrick barges or lift boats positioned adjacent to the WC 509 Platform Complex and WC 148 Platform. Communications and control checks of the WC 509 Platform Complex, including those integrated with the MLVs, the ESD system, the leak detection system, the surge process, the BMOP Pump Station at NT, and the main control room, will be completed as part of the commissioning process. First fill of the completed system will occur progressively from Nederland, through the onshore and offshore pipeline segments, and onto the DWP facilities. Final commissioning of the Crude Oil Loading Pipelines, PLEMs, and CALM Buoys will occur during the loading of the first crude carrier.

Following completion of construction, the Applicant will undertake several activities for start-up and commissioning of the DWP. After water has been removed and the line is purged and packed with natural gas, nitrogen, or air, the Applicant will fill the line with oil. If natural gas was used to dewater the Mainline, the natural gas will be discharged into the natural gas system on the WC 509A Platform. If nitrogen or air was used to dewater the Mainline, the nitrogen or air will be discharged to atmosphere at the WC 509 Platform Complex.

During start-up and commissioning activities, the Applicant will conduct work in accordance with Energy Transfer-approved operating and lock-out tag-out procedures. Specifically, the Applicant will use USDOT-qualified operators to conduct valve alignment. The Applicant will stop work any time a failure in the process is detected until the system can be repaired or the issue is rectified.

After all mechanical completion and commissioning checks are completed, start-up will commence with the introduction of hydrocarbons from the NT to the WC 509 Platform Complex.

1.5 OPERATIONS

An overview of the estimated seafloor disturbance that will occur during proposed DWP operations is provided in **Table 1-10**. The design life for the CALM Buoys, PLEMs, and Crude Oil Loading Pipelines from the WC 509B Platform to PLEMs is 25 years.

TABLE 1-10
Seafloor Affected by DWP Operations

Project Component	Acres		
	Mooring	Cable Sweep	Total
CALM Buoys[a,b]	2.1	0.0	2.1
PLEMs[a]	<0.1	0.0	<0.1
Crude Carriers[c]	0.0	0.0	0.0
Support Vessels[d]	<0.1	3.0	3.0
Total	2.1	3.0	5.1

Notes:

[a] Total for both CALM Buoys or PLEMS; the impacts are the same for both.

[b] Based on a conservative use of 16.4 feet diameter suction pile plus 500 feet anchor chain contacting seabed. If 36-inch outer diameter pin piles are used instead, the impacts would be reduced to 1.6 acres.

[c] Crude carrier loading will be scheduled such that there are no delays in connecting to the CALM Buoy. In the event that a crude carrier may have to anchor prior to loading, it will be directed to a USCG-designated anchorage, thus no additional impact due to the BMOP DWP.

[d] Six anchors with pennant buoys will be place around the DWP Platform for temporary mooring of the three support vessels when they are not in operation.

During operations, crude oil will be transferred from the NT through the new 42-inch onshore pipeline and into the Mainline. Once in the Mainline, the oil will flow to the DWP. At the DWP, the oil will be metered, sent through the Crude Oil Loading Pipelines to the PLEMs, and then sent up through the subsea flexible lines to the CALM Buoys. From the CALM Buoys the oil will go through the floating flexible crude oil hoses that will be connected to the VLCCs or other large seafaring crude oil carriers. The Applicant anticipates that the DWP will be called on by up to 365 large seafaring crude oil carriers per year. The loading time for a VLCC will be approximately 27.5 hours from mooring to disconnection; however, other crude oil carriers may not take as long to load as a VLCC due to their smaller capacities. If two vessels are being loaded at the same time, the loading duration could change.

The entire BMOP system will be monitored and controlled from control rooms in Nederland, Houston, and on the WC 509 Platform Complex. The control system will be equipped to monitor crude oil pressures and flow rates during loading operations. The control system will provide upset condition alarms throughout the crude oil loading process. Energy Transfer's Control Center in Houston is located at 1300 Main Street, Houston, Harris County, Texas. The facility is manned 24 hours per day, 365 days per year. During evacuation emergencies in Houston, the Control center reverts to an alternate location in Dallas, Texas. This ensures 100 percent coverage, 100 percent of the time.

Upon completion of detailed engineering and design, BMOP operations and maintenance procedures will be developed that provide directions to safely operate all the equipment. The operations and maintenance procedures will be included in the final Port Operations Manual developed for the proposed DWP; a preliminary draft of the operations manual is included in Appendix G of Volume III (*Confidential*). The Port Operations Manual includes health, safety and environmental procedures, including but not limited to:

- Tanker navigation;
- Cargo transfer;
- Aerial operations;
- Communications;
- Personnel management and training;
- Environmental monitoring;
- Waste management;
- Special operations (e.g., diving operations);
- Incident response;
- Emergency procedures and evacuation; and
- Regulatory documentation and reporting requirements.

Personnel will be trained per the regulations for safely maintaining the equipment. Planned maintenance will be executed per the regulatory and equipment requirements by offshore personnel. Regular maintenance and equipment inspection will be monitored and tracked.

In accordance with the Oil Pollution Act of 1990 and USDOT Pipeline and Hazardous Materials Safety Administration's (PHMSA's) implementing regulations in 49 CFR Part 194, the National Oil and Hazardous Substances Pollution Contingency Plan, applicable Area Contingency Plans, the U.S. Environmental Protection Agency (EPA) Region 6 Regional Integrated Contingency Plan, and the One Gulf Plan, the Applicant will modify its affiliate's existing facility response plans to include the BMOP facilities: Energy Transfer's Coastal Louisiana Pipeline Facility Response Plan (PHMSA Sequence 3202) and Energy Transfer's Sea Robin Oil Spill Response Plan (O-726). These plans will assist BMOP personnel with best management practices to quickly, safely, and effectively responding to a crude oil spill, either onshore or offshore, and will be prepared during construction of the proposed Project.

1.5.1 DWP

The DWP will have accommodations available for 24-hours-per-day, 7-days-per-week operations and a central control room to oversee and control the loading operations offshore. It will be designed to accommodate a maximum of 28 operations personnel, including contractors at any one time. Platform operations will utilize a 7 day on 7 day off rotational shift for crew with 6 people on days and 3 people on nights. Support personnel will also be part of the crews with cooks, galley hands, and pilots available at all times.

The DWP personnel and roles are described in the Port Operations Manual (Appendix G, Volume III [*Confidential*]). Key supervisory positions are listed in **Table 1-11**. In accordance with 33 CRF § 150.200, the Applicant will ensure that the individuals filling a position meet the qualifications for that position.

TABLE 1-11 DWP Operations Supervisory Positions	
Title	**Role / Responsibilities**
Operations Manager	Overall authority over the DWP, including all personnel at the DWP and all vessel and aircraft operations at the DWP. In event of an emergency, the Operations Manager will direct all response activities at the DWP.
Operations Supervisor(s)	Daily operating authority over the DWP, including all personnel at the DWP and all vessel and aircraft operations at the DWP. They are the supervisor(s) of cargo loading/discharge.
Platform Operator(s) / Vessel Traffic Controller(s)	Responsible for all vessel movements within the DWP area. The Platform Operator(s) / Vessel Traffic Controller(s) will monitor all traffic in the vicinity of BMOP and will advise vessels not authorized to stay clear of the ATBAs. They will be in constant radio contact with the vessel.
Mooring Master / Assistant Mooring Master (Pilots)	The Mooring Master advises the crude oil tanker's Master on operational and ship control matters and requirements that are peculiar to the port, such as navigational aids, depth of water and current characteristics of the maneuvering area during existing conditions, mooring equipment and procedures, emergency towing procedures, and the port's vessel control procedures. The Mooring Master will maintain communications with the Vessel Traffic Controller, mooring launches, and the Assistant Mooring Master until the mooring operation has been completed. The Assistant Mooring Master is stationed on the forecastle of the crude oil tanker during mooring operations to assist the Mooring Master by reporting position approach data relative to the CALM Buoy and to advise the crude oil tanker's personnel in the handling of mooring equipment peculiar to the DWP. They will assist the master in mooring and unmooring the vessel. The Assistant Mooring Master will remain on board of the crude oil tanker to coordinate the discharge.
Deck Watch	Stands a periodic watch of the crude oil tanker's manifold and bow while the vessel is moored. The deck watch will also maintain a security watch around the perimeter of the ship. The deck watch will be in constant radio contact with the platform.

1.5.1.1 *Fuels, Chemicals, and Lubricants Stored on the DPW Platform*

Various fuels, chemicals, and lubricants will be stored on the WC 509 Platform Complex (DWP Platforms). A summary of the chemicals and lubricants that would be stored is provided in **Table 1-12**.

TABLE 1-12 Fuels, Chemicals, and Lubricants Stored on the DWP Platform					
Type	**Fluid**	**System**	**Platform Source**	**Purpose**	**Supplied By**
Fuel	Fuel Gas	Utilities	ZZZ-6400 Fuel Gas Skid	Fueling Gas Engine Generators, vessel blanket gas, purge gas, power gas for valve actuation	22-inch Gas Export Header
	Diesel	Utilities	ZZZ-7300 Diesel Transfer Skid	Fueling Diesel Generator engine, WC 509B platform crane engines, firewater pump engines, lifeboat engines	Fuel Supplier

TABLE 1-12
Fuels, Chemicals, and Lubricants Stored on the DWP Platform

Type	Fluid	System	Platform Source	Purpose	Supplied By
	Aviation Fuel	Utilities	ZZZ-7000 Aviation Fuel Storage Tank & Pump Skid ZZZ-7020 Aviation Fuel Dispenser Skid	Re-fueling helicopters at WC 509A	Fuel Supplier
Chemical	Process Chemicals	Oil/Gas	ZZZ-2000 Chemical Injection Skid	Requirements will be defined during further design	Chemical Supplier based on export oil/gas quality requirements and system integrity requirements
	Chlorine	Utilities	ZZZ-8000 Hypochlorite Skid ZZZ-4200 Water Maker Package	Treats seawater / potable water as a bactericide	Chemical Supplier based on export oil/gas quality & system integrity requirements
	Calcite Media	Utilities	ZZZ-4200 Water Maker Package	Clean water production	Chemical Supplier based on original equipment manufacturer's (OEM) Recommendations
Lubricants	Engine Oil, Gear Lubricant, Hydraulic Oil, etc.	Utilities	Totes	Diesel engines (generator, cranes, firewater pumps), crane gearbox / bearings, etc. Different types of lubricants will be required.	Lubricant Supplier based on OEM Recommendations
Hydraulic Fluids	Hydraulic Oil	Utilities	ZZZ-5000 Hydraulic Power Unit	Valve actuators (topsides and subsea)	Lubricant Supplier based on OEM Recommendations

1.5.1.2 *Water Use and Discharge on the DWP Platform*

All seawater utilized during DWP operations will be collected, treated, and discharged in accordance with all relevant permits. Water intakes for the DWP will be limited to withdrawal of seawater lifted for seawater pumps and firewater pumps. Details of these intakes are provided in **Table 1-13**.

Firewater pumps are operated only in case of emergency or for regular testing. Firewater pumps are required to be tested for 30-min run per week and 12-hour run per quarter. Firewater pumps will be designed to deliver 4,000 gpm per pump. Thus, the annual volume of intake for the two firewater pumps will be

approximately 35,520,000 gallons per year. The seawater intake and discharge locations for firewater pump during testing will be contained within the platform jacket framing. The seawater intake system for the firewater system will be treated with biocide and will meet the DWP NPDES discharge requirements for release. Details on the discharge are provided in **Table 1-14**.

TABLE 1-13
Seawater Intake During DWP Operations

Water Intake	Volume (gallons)	Intake Location
Firewater System maintenance and proof testing	35,520,000 gallons per year; The two firewater pumps will be capable of supplying 4,000 gpm per pump and tested 30 minutes/week and a 12-hour run per quarter.	DWP Platform jacket framing.
Seawater Pump	Pump will run on demand at a flow rate of approximately 57,456 gallons per day.	DWP Platform jacket framing.

TABLE 1-14
Water Discharges During DWP Operations

Overboard Discharge	Volume (gallons)	Discharge Location	Treatment
Firewater system testing and maintenance	35,520,000 gallons per year	DWP Platform jacket framing.	Treated with biocide.
Seawater Pump	57,456 gallons per day (gpd)	DWP Platform jacket framing.	Treated with biocide.
Seawater to Freshwater (Potable Water) Converter	10,800 gpd	DWP Platform jacket framing.	None.
Marine Sanitation System	5,600 gpd	DWP Platform jacket framing.	Effluent neutralized within system prior to overboard discharge.
Storm Water Run-off and platform washdown from utility water system	111,000 gpd	WC 509.	Into deck drain / sump / oily water separator system.

The Seawater System will be supplied by two seawater pumps (2 x 100 percent) capable of pumping 160 gpm each. The Seawater Pumps will be motor driven submersible type installed within caissons to help strain ocean debris and provide a current-free volume of water. Provisions will be made for the injection of hypochlorite to control marine growth. Hypochlorite will be supplied from the Hypochlorite Generator package.

Seawater will be used for:

- Feeding to the water maker;
- Pressurizing the Firewater System;
- Fire water for hose reels; and
- Feed to Hypochlorite System.

Pressure in the seawater pump discharge header will be maintained via a spill back control valve located on the pump discharge to the sea. The intake and discharge locations for the seawater pump system will be contained within the DWP Platform jacket framing. Details on the discharge are provided in **Table 1-14**. All discharges from these systems will meet the NPDES permit requirements for WC 509.

Water from toilets, sinks, and showers will be directed into the Sewage Treatment System. Details on the discharges are provided in **Table 1-14**. All discharges from the Sewage Treatment System will meet the NPDES permit requirements for the WC 509 Platform Complex. The volume of wastewater to be processed is estimated at 20 gallons per person per day.

The open drain system on the DWP Platform will be designed to collect deck drainage resulting from storm events. Rainwater will be captured with a system of drain piping that routes the run-off into the capture sump and then into the oily water separator system. Hydrocarbons removed from the deck drain system will be returned to the crude oil Mainline and water will be discharged overboard after meeting the NPDES permit requirements. The closed drain system will collect all contaminants not authorized for ocean discharge. Water from miscellaneous operations including platform washdown will also be captured in the deck drain system for subsequent treatment in the open drain system. The estimate volume of rainwater to be treated is based on a maximum of four inches per hour for two hours falling on the upper deck area, conservatively increased by 50 percent to accommodate rainwater which would land on lower decks. **Table 1-14** provides the anticipated overboard water discharges from the drain system.

1.5.1.3 *Emissions Sources*

The types of equipment with emissions that will support DWP operations are described with the air emissions information provided in Topic Report 11 and **Appendix G-1** (Volume IIa).

1.5.2 Subsea Crude Oil Pipelines

The subsea pipelines, including the converted Mainline, and the two Crude Oil Loading Pipelines will be operated in accordance with industry standards and PHMSA regulations in 49 CFR Part 195. The subsea pipelines will be monitored by the Energy Transfer control center 24 hours-per-day, 7 days-per-week for pipeline flowrates, pressures, and operating conditions. In the event of a change in operating conditions, or in the event of an emergency, immediate communication will be made with the control center for response. Maintenance pigging of the subsea pipelines will be conducted on a regular basis but not less than what is regulatorily required. Inspections using smart pigs will be conducted as required by 49 CFR Part 195.

1.5.3 CALM Buoys

The CALM Buoys will be unmanned during normal operations. For maintenance of Buoy equipment, floating hose flushing, and repairs, DWP personnel and/or subcontractor maintenance technicians will be required to board the Buoys from a boat landing area on the CALM.

1.5.4 Very Large Crude Carrier and Other Crude Oil Carrier Operations

The DWP will be able to accommodate (moor) two VLCCs or other crude oil carriers at a time, loading up to 365 vessels per year. Vessels from the existing worldwide fleet are anticipated to call on the BMOP DWP. VLCCs are the largest vessels the DWP has been designed to accommodate; however, it is anticipated that other smaller vessels, such as seafaring oil barges, Suezmax, and Aframax crude oil carriers, will call on the DWP. Characteristics of VLCCs and other smaller crude oil carriers are provided in **Table 1-15**. The vessels calling on the DWP will not be under the control of the Applicant and will not be part of the Project.

TABLE 1-15
Characteristics of VLCCs, Suezmax, and Aframax Vessels

Characteristic	Vessel Type			
	VLCC[a]	Suezmax[a]	Aframax[a]	Articulated Tug Barge[b]
Length Overall (feet)	1,092	900	820	600
Beam (feet)	197	164	105	105
Draft with Maximum Load (feet)	71	66	49	35
Deadweight Tonnage with Maximum Load (metric tonnes)	320,000	220,000	120,000	45,000

Source:
[a] MARAD and USCG, 2020
[b] Representative of a Crowley 750 class (Blenkey, 2012)

Crude oil carriers will enter the U.S. Exclusive Economic Zone (EEZ) from international waters and transit to a shipping fairway, then exit the shipping fairway to approach the DWP. Upon nearing the DWP, the Mooring Master (pilot) will advise the crude oil carrier of operational and ship control requirements specific to the DWP and the pilot will be transferred from the DWP Platform to the approaching vessel. Tugboats will assist the vessels with mooring to their assigned CALM Buoy. The Applicant anticipates two tugboats will assist each vessel in mooring: one tugboat will be responsible for mooring and another will be responsible for managing the loading hose. A third escort tug/pilot boat (support vessel) will be responsible for transferring the pilot to the crude oil carrier. Tugboat personnel will secure the crude oil carrier's messenger line to a pick-up line, which would allow the mooring hawser chafe chains to be winched onboard the vessel and secured to the shipboard mooring fittings.

Once the crude oil carrier is moored at the CALM Buoy, the floating crude oil hoses will be connected to the vessel. The vessel will have a working platform from which to conduct connecting activities, which will have a grated floor and sit on a drip tray with a 50-barrel capacity, per OCIMF guidelines. The drip tray will have drain plugs and outlets with valves to drain to a cargo tank or slop tank onboard the vessel, if necessary. The floating hose will be connected and disconnected on the working platform. The floating crude oil hoses will have manual butterfly valves and blind flanges at the ends. Prior to connection or disconnection, the piping between these two valves will be drained on the crude oil carrier. As such, connection and disconnection will not result in any substantial spill of product, but rather a small release of residual oil, which will be collected by the drip pan under the working platform on the crude oil carrier. Any remaining oil on the working platform or floating hose will be cleaned by the crude oil carrier crew prior to releasing the floating hose back to the water surface.

The final Port Operations Manual (see Appendix G of Volume III [*Confidential*]) will contain details of the operational limits for connection, loading, and disconnection of vessels at the DWP during inclement weather and low visibility conditions. Marine weather forecasts are broadcast regularly by the National Weather Service by telephone or by very high frequency (VHF) weather channels. In addition, the pilot will make the call of when it is safe for mooring.

1.5.5 Support Vessels and Helicopters

In addition to the two tugboats that will be used to assist crude oil carrier maneuvering and loading and the escort tug/pilot boat (support vessel), as described above in Section 1.5.4, service vessels will also be required to provide personnel and supplies, maintenance, and emergency response support. These include

maintenance/dive/firefighting vessels for inspection, servicing, and maintenance of the DWP and a crew/supply boat to make an estimated supply run every two weeks from a port located on the GOM coastline. In addition, helicopter support will be needed daily and will be based along the GOM coastline.

If additional supplies, personnel, or emergency services (e.g., fire suppression, spill control) are required, the Applicant will contract the necessary vessels or helicopters on an as-needed basis from the GOM coastal region.

1.5.6 Communications and Navigation

Telecoms and telemetry communication systems will be installed to meet regulatory and operational requirements of the Project in support of daily and emergency voice and data. The communication systems will be designed based on minimizing latency and maintaining high system operational reliability. The communication systems will provide:

- Voice services through redundant networked infrastructure in addition to Marine VHF and Sat-Comm (voice) services for operational and emergency;
- Data systems and equipment deployment leveraging terrestrial and orbital lease and owned infrastructure;
- Networked Communications infrastructure electrical power to be supported by dedicated DC-based universal supply power (USP) systems that are interfaced to commercial AC power or on-site Generation as available / deployed for each site / station; and
- Systems development based on a minimum of primary (1st) and secondary (2nd) communications design leveraging automatic routing failover. In addition, a Tertiary (3rd) SCADA Telemetry services may be leveraged at offshore critical service locations.

The DWP will have a communication system capable of maintaining communication between the onshore facilities, the DWP Platform, appropriate agencies (e.g., USCG), service vessels, helicopters, and VLCCs (or other crude oil carriers). The communication system at the WC 509 Platform Complex will leverage existing redundant Network and Communications infrastructure including multiple Service Providers, Lease Microwave – Wide Area Network (WAN) service, VSAT- WAN service, and Low Earth Orbit "Broadband Global Area Network" (BGAN) service, further enhancing operational reliability. Additional details of the Project's communication system are provided in **Table 1-3** and **Appendix F** of Volume III (*Confidential*), "DWP Design Basis".

Communication between the DWP Platform and vessels approaching the DWP will be conducted using marine VHF radio and will be established when the vessel is approximately 72, 48 and 24 hours away (see Port Operations Manual, **Appendix G**, Volume III [*Confidential*]) from the Safety Zone on the International Calling Frequency. At that point, the Vessel Traffic Controller will assign a working frequency with that particular vessel. The DWP will also have a radar system to detect aircraft or marine vessels in the vicinity of the DWP Platform.

A number of audio and visual navigational aids will be installed to provide warnings to vessel traffic in the vicinity of the DWP Platform and CALM Buoys. Navigational aids will adhere to 33 CFR Part 149, Subpart E, Aids to Navigation.

The BMOP DWP intends to use marine navigational aids (lights and audible warning systems) to properly mark and intermittently signal to marine traffic navigating the area the presence of the BMOP DWP Safety Zone, Platforms, CALM Buoys, and associated equipment (e.g. hoses, support vessel moorings etc.) at night and during periods of low visibility. The BMOP DWP project does not intend to request federally

regulated aids to navigation under the provisions of 33 CFR § 149.510 to establish or mark formal vessel traffic lanes leading to/from the BMOP DWP.

Marine navigational aids for fixed and floating structures will comply with 33 CFR Part 149, Deepwater Ports: Design, Construction, and Equipment, Subpart E – Aids to Navigation (AtoN) and other applicable USCG regulations and guidance. The navigational aids, at a minimum, will include marine lanterns, audible warning systems (e.g. foghorn), a radar beacon, a lighted rotating beacon, batteries and battery chargers, and control equipment required for its operation.

Floating hoses will have lights (33 CFR § 149.550 – Lights on Floating Hose Strings) to verify that the floating hose strings are visible at night and during periods of restricted visibility. The BMOP DWP complex and CALM Buoys will be lighted (33 CFR § 149.540 – Lights on Single Point Moorings). Any objects extending above the water line will be marked with white reflective tape (33 CFR § 149.575).

The combination of accurate Global Positioning Systems (GPS), redundant radars, radar beacon, and navigation buoys will allow support vessels, VLCCs, and other crude oil carriers to safely approach, navigate within, and depart from the BMOP DWP.

While VLCCs (or other crude oil carriers) are moored to the CALM Buoys, each vessel will display a rotating beacon in accordance with the IMO's 1972 Convention on the International Regulations for Preventing Collisions (COLREGS) at Sea, Part D. Once disconnected from the CALM Buoy, vessels will display standard lights required for transit.

Navigational aids for the DWP will be reviewed and approved by the USCG and will be powered by an independent system. The system will have battery backup.

New communication system equipment and infrastructure will also be installed at the WC 148 Platform to operate the MLV and support operational networked and SCADA services. The communication system will leverage multiple service providers including VSAT - WAN service and BGAN service, further enhancing operational reliability

1.5.7 Service Vessel Mooring Area

As described in Section 1.5.5, a number of service vessels will be required to assist with operation of the DWP. The anticipated service vessels include tugboats, supply/crew vessels, maintenance vessels, dive vessels, and possibly firefighting vessels. The Applicant will provide mooring points for these vessels in the Service Vessel Mooring Area described in Section 1.3.3.

Within the designated Service Vessel Mooring Area, service vessel mooring points will be anchored to the seafloor using two concrete blocks of 20,000 pounds each, joined together with a bridle. An anchor chain will attach to the bridle and connect to the mooring buoy. The Applicant is requesting that the 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 Applicant will also assist the USCG and MARAD with submissions to the IMO to establish ATBAs and an NAA that will designate areas where anchoring will be avoided except in the case of immediate danger to vessels or persons. The three support vessel mooring buoy locations are within the proposed BMOP DWP operations area Safety Zone and will not require additional restrictions.

1.5.8 Anchorage Area

Crude carrier loading will be scheduled such that there are no delays in connecting to a CALM Buoy. If a crude carrier is not able to navigate directly to the CALM Buoys, or if they must disconnect from the CALM Buoys for safety reasons and may have to anchor prior to loading, it will be directed to a USCG-designated anchorage area (see **Figure 1-9**).

1.5.9 Safety Zones, Areas to be Avoided, and No Anchoring Areas for the Deepwater Port

Limited access areas, such as the Safety Zone, ATBAs, and NAA will be established at the DWP, as described in Section 1.3.5, with varying degrees of vessel restrictions and notification requirements. Pursuant to the regulations of the DWPA, the USCG is authorized to establish a mandatory Safety Zone around the DWP. The intent of the NAA will be to prevent damage to the DWP and mooring system or damage to the proposed DWP's equipment from entanglement. The intent of the Safety Zone and ATBAs will be to discourage vessel traffic, and to help prevent other vessels not associated with the Project from interfering with the DWP operations, including the maneuvering of the VLCCs (or other crude oil carriers) and service vessels. The ATBAs and NAA will appear on publicly available nautical charts and the ATBAs and NAA designation would likely apply to bottom trawling and other seafloor-disturbing activities associated with oil and gas or other mineral extraction/exploration or fishing vessels and associated equipment for the mutual protection of the DWP and non-Project vessels and equipment.

1.5.10 Onshore Support Base

An onshore support base (OSB) will be established at an existing and operating port facility, which will be upgraded, if necessary, to provide the required security to support the DWP operations. A preferred location for the OSB would be at an existing marine support base or at the homeport of an experienced marine operator who operates a fleet of vessels. The marine operator's vessels will be utilized as needed by the Applicant during permanent vessel downtime or in emergency situations. In all cases, the area for the DWP marine operations will be separated and secured from non-DWP operations. Key criteria for OSB selection will include:

- Direct access to the GOM;
- Communications with platform and support vessels;
- Minimal transport time to the DWP Platform;
- Dedicated useable waterfront bulkhead or dock length of 300 feet or more;
- Water depth alongside the bulkhead or dock of 20 feet or greater;
- Suitable and structurally sound bulkhead or dock to support a crane for loadout of DWP supplies;
- Access restricted to Transport Worker Identification Credential personnel;
- Fuel and water storage and loadout; and
- Capability for nighttime operations.

1.6 DECOMMISSIONING

Decommissioning will be performed when necessary or at the end of the useful life of the Project. The anticipated life of the Project is 25 years. The Applicant will prepare a decommissioning plan prior to conducting decommissioning activities.

The onshore pipeline and onshore facilities will be abandoned and decommissioned in accordance with applicable rules and regulations in place at that time.

Decommissioning of the offshore components will include conversion or removal of the DWP Platforms (WC 509 Platform Complex), the WC 148 Platform, the Calm Buoys, the service vessel moorings, the PLEMs, and the subsea tie-in spools. All of the offshore subsea pipelines, including the Mainline from shore to the DWP, will be abandoned in place. Vessels and barges will be mobilized to perform the decommissioning activities and transport the materials that are being removed to onshore for disposal.

The floating and under-buoy crude oil hoses will be flushed with seawater from the open end to the PLEMs. The floating hoses and under-buoy lines will then be disconnected and capped by divers before being transported to shore along with the anchors, chains, and CALM Buoys for disposal. Mooring piles will be cut 15 feet below the natural bottom elevation (i.e., below the mudline) and the upper pile sections removed for disposal.

The Crude Oil Loading Pipelines between the platform and the PLEMs will be flushed from the platform to the PLEMs and back again using the pigging system. Any crude oil will be pushed from the subsea pipelines to shore. Following removal of the crude oil, flushing water and chemicals will be run through the lines. The discharge water will be separated until no hydrocarbons are identified in the flushing water. The tie-in spools at either end of the lines will be removed and transported to shore for disposal. The pipeline ends will be capped, lowered to three feet below the natural bottom elevation, and covered with concrete mattresses. The PLEMs will be removed and transported to shore for disposal. The PLEM's mooring piles will be cut 15 feet below the natural bottom elevation and the upper pile sections removed for disposal.

The offshore Mainline from WC 509 to Station 701 will be flushed of hydrocarbons, filled with seawater, capped at both ends, and abandoned in place in accordance with regulatory requirements. First, the crude oil in the Mainline will be removed, then the line will be flushed with seawater until no hydrocarbons are identified in the water discharge. The pipeline ends will then be capped and lowered to three feet below the ground and/or below the natural bottom elevation of the seafloor and covered with concrete mattresses.

The WC 148 Platform will be decommissioned and removed. The topsides will be removed with a derrick barge and transported to shore for disposal. If suitable, the bottom structure will be transported to a Rigs to Reef location. If the Rigs-to-Reef proposal is not accepted, the structure will be transported to onshore facilities for recycling.

To fully decommission the DWP Platforms, crude oil will first be removed from all deck piping. All free liquids on the DWP Platforms, including discharge water, will be drained from piping and vessels into an industry-approved transport container for transport to shore and disposal. Equipment onboard the platforms, such as the cranes, will be tied down. Other components of the platforms, such as the living quarters, main components of the main decks, and the helideck will be removed with a derrick barge and transported to shore for disposal. The deck legs will then be cut at the top of the jacket and each of the decks will be lifted onto a cargo barge for transport to shore and disposal. Jacket piles will be cut from the inside below the natural bottom elevation. The piles above natural bottom will be removed and disposed of onshore. The jacket will then be lifted by a derrick barge and transported to a Rigs to Reef location.

During removal of the piles for the DWP Platforms, CALM Buoys, and PLEMs, the contractor may need to use explosives to cut the piles below the mudline. Alternative and less intrusive cutting methods may be technically feasible and will be adopted as the primary procedure and the use of explosives will only be adopted if the primary methodology is ineffective.

The service vessel moorings will remain in use during the decommissioning process and therefore will be some of the last offshore components to be removed. The mooring buoys will be lifted onto a vessel and the anchor line disconnected. The anchor blocks will then be removed using a crane. If necessary, jetting may be used to loosen the anchor blocks from the seafloor. The mooring buoys, anchor chain, and anchor blocks will all be disposed of onshore.

Following decommissioning of all offshore components, a trawl survey will be conducted to confirm no debris is left behind, as required by the Outer Continental Shelf Lands Act (OCSLA). The Applicant will submit final reports in compliance with the OCSLA to appropriate regulatory agencies.

1.7 PERMITS, APPROVALS, AND REGULATORY REQUIREMENTS

Construction, operation, and maintenance of the BMOP Project facilities will be in accordance with all applicable rules and regulations, permits, and approvals. **Table 1-16** lists major Federal and state permits, approvals, and consultation requirements needed to construct and operate the BMOP Project. The Federal cooperating agencies responsible for those permits advise the USCG and MARAD on National Environmental Policy Act (NEPA) sufficiency with respect to their individual jurisdictions. Applicable federal laws and regulations pertaining to the proposed Project are discussed in the following sections.

1.7.1 Deepwater Port Act

The DWPA of 1974, as amended, establishes a licensing system for ownership, construction, operation, and decommissioning of DWP structures located beyond the U.S. territorial sea for the import and export of oil and natural gas. The U.S. Secretary of Transportation delegated the processing of an application for a DWP to the MARAD and USCG. The USCG must consider adjacent coastal states and relevant federal agencies when a DWP license application is received, review it for completeness, prepare an environmental impact statement (EIS), and make recommendations to MARAD. The DWPA also grants MARAD the responsibility for managing interagency coordination with the USCG to ensure compliance with the NEPA.

Additionally, under the DWPA, the responsibility for ensuring the safety of all marine operations at DWPs, terminals, carriers, and vessels in U.S. coastal waters is granted to the USCG. Furthermore, a Memorandum of Understanding among multiple federal agencies outlines the responsibilities related to the siting and permitting of DWPs and includes the DOI, BOEM. BOEM is responsible for issuing and enforcing regulations to promote safe operations, environmental protection, and resource conservation for all mineral exploration, development, and production activities that are located on the OCS. Per the DWPA, the USCG is authorized to establish federally regulated safety zones around all DWPs to promote marine environmental protection, maintain safety, and reduce risks to navigation.

1.7.2 National Environmental Policy Act

The NEPA was developed as a policy to ensure that proper consideration for the environment is adhered to prior to any proposed construction plan for major infrastructure projects, such as airports, buildings, highways, and any other federal activities. Under NEPA, federal agencies must consider the potential environmental impacts of all proposals, document the analysis, and provide information on the proposals to the public for comment before a decision is made on any major federal action. Issuing permits for construction of the proposed Project would qualify as a major federal action and, therefore, require a NEPA analysis. The initiation of the NEPA under the DWPA is conducted in conjunction with the USCG and MARAD, and these agencies have federal jurisdiction over the entire Project. During the NEPA process, federal agencies must consider all environmental impacts associated with the proposal, document and analyze the environmental assessment, and present all information on the proposal to the public for comment prior to the issuance of the Record of Decision. The USCG and MARAD have made the determination that an EIS will be prepared for the proposed Project.

1.7.3 Natural Gas Act

As discussed in Section 1.1.1, the Project will require abandonment of portions of the existing Stingray Pipeline System and converting a portion of the facilities into oil service. The FERC reviews applications for construction and operation of interstate natural gas pipelines under authority of Section 7 of the NGA. FERC review ensures that applicants certify that they will comply with USDOT safety standards. An application must be filed with FERC pursuant to Section 7(b) of the NGA and 18 CFR Part 157 to abandon

TABLE 1-16
Key Environmental Permits and Approvals for Construction/Operation of the Project

Agency	Permit/Consultation	Project Component	Date Submitted / *Anticipated Submittal*	Date Received / *Anticipated Receipt*
Federal				
U.S. Department of Homeland Security, U.S. Coast Guard (USCG) U.S. Department of Transportation, U.S. Maritime Administration (MARAD)	Deepwater Port Act (DWPA), 33 United States Code (USC) § 1501 et seq.; License application processing, post-licensing design, construction, operations and oversight	All	September 2020	
U.S. Department of Transportation (USDOT), Pipeline and Hazardous Materials Safety Administration (PHMSA)	Consultation on facility/pipeline design, construction, testing, operation and maintenance in accordance to 49 CFR Part 195 - Transportation of Hazardous Liquids by Pipeline	Offshore pipeline Onshore pipeline	Ongoing	
	Notification of Conversion	Stingray Mainline	Information filed August 2020	
U.S. Department of the Interior (DOI), Bureau of Ocean Energy Management (BOEM)	• Outer Continental Shelf Land Act (OCSLA) Consultation regarding potential impacts on OCS lease blocks, pipeline ROW, and lease block issuance • Pipeline ROW application and coordination • Hazard surveys guidance and coordination • Archaeological coordination	Offshore facilities in federal waters	September 2020	
DOI, Bureau of Safety and Environmental Enforcement (BSEE)	• OCSLA Consultation and platform safety review • Advise USCG and MARAD concerning the potential impacts of DWPA terminals on OCS lease blocks • Oil Pollution Liability Adjustment Consultation • ROW Grant modification for Stingray ROW Grants, including modification of associated platforms (WC 148 and 509)	Offshore facilities in federal waters	September 2020	
	• New ROW Grant for new pipelines from WC 509 and associated PLEMs and CALM buoys		2021	

TABLE 1-16
Key Environmental Permits and Approvals for Construction/Operation of the Project

Agency	Permit/Consultation	Project Component	Date Submitted / *Anticipated Submittal*	Date Received / *Anticipated Receipt*
Federal Energy Regulatory Commission (FERC)	Authorization to abandon pipeline under Section 7(b) of the Natural Gas Act (NGA) by Stingray Pipeline Company LLC	Stingray Pipeline Abandonment	September 2020	
U.S. Department of Defense, U.S. Army Corps of Engineers (USACE), New Orleans District / USACE Galveston District	Rivers and Harbors Act (RHA), Section 10 Authorization	Galveston District: Onshore pipeline. New Orleans District: Onshore pipeline in Cameron Parish; Offshore facilities	September 2020	
	Clean Water Act (CWA), Section 404 Permit (Dredge and Fill Permit)	Galveston District: Onshore pipeline New Orleans District: Onshore facilities, onshore pipeline, offshore facilities, offshore pipeline		
	Civil Works Section 408 review	Galveston District: Onshore pipeline	September 2020	
U.S. Environmental Protection Agency (EPA)	CAA, 112g Case by Case MACT Application	Offshore facilities	September 2020	
	CAA, Prevention of Significant Deterioration Permit (if applicable)	Offshore facilities	September 2020	
	CAA, Title V Operating permit for emissions sources	Offshore facilities	September 2020	
	CWA, Section 401 Water Quality Certification review	All	Concurrent with MARAD Application processing	
	CWA NPDES Individual Permit for facility construction and operations		Draft with MARAD application; Permit application 2021	
	Oil Spill Contingency Plan review		Prior to operations	

TABLE 1-16
Key Environmental Permits and Approvals for Construction/Operation of the Project

Agency	Permit/Consultation	Project Component	Date Submitted / *Anticipated Submittal*	Date Received / *Anticipated Receipt*
U.S. Fish and Wildlife Service (USFWS)	ESA Section 7 consultation	All	Concurrent with MARAD Application processing	
	Fish and Wildlife Coordination Act consultation			
	Migratory Bird Treaty Act Coordination			
National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA Fisheries)	ESA Section 7 consultation	Offshore facilities and onshore pipeline	Concurrent with MARAD Application processing	
	Magnuson-Stevens Fishery Conservation and Management Act consultation / Essential Fish Habitat (EFH) consultation			
	Marine Mammal Protection Act (MMPA) consultation / Incidental Take Authorization (not anticipated)			
	Section 304(d) National Marine Sanctuary Act (NMSA) consultation (not anticipated)			
Advisory Council on Historic Preservation (ACHP)	National Historic Preservation Act (NHPA) Section 106 consultation: *Official actions are coordinated between the lead federal agency and the ACHP.*	All	Concurrent with MARAD Application processing	
Native American Tribes/Tribal Historic Preservation Officers (THPOs)	NHPA Section 106 Consultation Consultation with Federally Recognized Native American Groups	Onshore facilities	Concurrent with MARAD Application processing	
State of Louisiana				
Louisiana Department of Environmental Quality (LDEQ), Water Quality Division	CWA Section 401 Water Quality Certification	Onshore facilities and onshore pipeline	September 2020	
	CWA Section 402 NPDES Permit for Discharge of Hydrostatic Test Water	Onshore facilities and onshore pipeline (depending on where discharge will occur)	Prior to construction	
Louisiana Department of Natural Resources (LDNR), Office of Coastal Management	Coastal Use Permit (CUP) Coastal Zone Management Act (CZMA) Consistency Determination (concurrent with USACE permit review)	Onshore facilities and onshore pipeline	September 2020	

TABLE 1-16
Key Environmental Permits and Approvals for Construction/Operation of the Project

Agency	Permit/Consultation	Project Component	Date Submitted / *Anticipated Submittal*	Date Received / *Anticipated Receipt*
Louisiana Department of Wildlife and Fisheries (LDWF)	Threatened and Endangered Species Consultation (16 USC § 460 et seq.)	Onshore facilities and onshore pipeline	Concurrent with MARAD Application processing	
Louisiana Office of the Governor	DWPA Consent of the Governor	Offshore facilities	September 2020	
Louisiana Office of State Lands	Permit and lease for State Water Bottoms (Louisiana Revised Statutes 41:1701– 1714)	Onshore pipeline	September 2020	
Louisiana Office of Cultural Development (LOCD) – Division of Archaeology	NHPA Section 106 consultation (state waters and onshore facilities); Approval of Unanticipated Discoveries Plan	Onshore facilities and onshore pipeline	Concurrent with MARAD Application processing	
Louisiana Department of Transportation	Road Crossing Permit	Onshore pipeline	90 days prior to construction	
State of Texas				
Governor's Office	Consent to MARAD to issue DWP license, assumed to be determined as an "Adjacent State" for conversion option and primary state for alternative pipeline	Offshore Facilities	Concurrent with MARAD Application processing	
Texas Railroad Commission (RRC)	Issues CZMA Consistency Determination in coordination with Section 404 permit authorization from USACE	Onshore facilities and onshore pipeline	September 2020	
	Issues CWA Section 401 Water Quality Certification in coordination with USACE Section 404 permit authorization	Onshore facilities and onshore pipeline	September 2020	
	Hydrostatic Test Discharge Permit, Title 2, Texas Water Code – Section 26.131(b)	Onshore facilities and onshore pipeline	Prior to construction	
	Permit Application to Operate Product Pipeline, Form T-4 (Texas Administrative Code [TAC], Title 16, Part 1, Chapter 3, Rule 3.70)	Onshore pipeline	September 2020	
Texas General Land Office	State Lands Easement to cross Sabine Lake	Onshore pipeline	2021	
Texas Commission on Environmental Quality (TCEQ), Air Quality Division	Texas Permit By Rule	Onshore facilities	N/A	

TABLE 1-16
Key Environmental Permits and Approvals for Construction/Operation of the Project

Agency	Permit/Consultation	Project Component	Date Submitted / *Anticipated Submittal*	Date Received / *Anticipated Receipt*
Texas Parks and Wildlife Department (TPWD)	Easement to cross Lower Neches Wildlife Management Area / Surface Use Agreement to cross Lower Neches Wildlife Management Area	Onshore pipeline	2021	
	Threatened and Endangered Species Consultation (Title 5, TPWD Code - Chapters 67, 68, and 88 and Title 31, TAC - Section 65zz0)	Onshore facilities and onshore pipeline	Concurrent with MARAD Application processing	
	Sand and Gravel General Permit for relevant waterbody crossings	Onshore pipeline	Prior to construction	
Texas Historical Commission (THC)	• Issues Texas Antiquities Permit for cultural resource field surveys • Issues concurrence with direct and indirect APE for the Project • Issues concurrence with Section 106 determination of effect • Approves Unanticipated Discoveries Plan	Onshore facilities and onshore pipeline	Concurrent with MARAD Application processing	
Texas Department of Transportation (TX DOT)	Road Crossing Permit / Utility Installation Permit	Onshore pipeline	90 days prior to construction	

FERC-jurisdictional facilities. As a cooperating agency, the FERC will also play an important role in developing the environmental analysis for the FERC-jurisdictional facilities in the EIS

1.7.4 Endangered Species Act

The Endangered Species Act (ESA) of 1973 set forth the protection and conservation of threatened and endangered species and the ecosystems that support them. Section 7 of the ESA states that any project authorized, funded, or conducted by any Federal agency should not "… jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined … to be critical."

The USCG and MARAD are required to consult with the USFWS and (NOAA Fisheries and the USFWS) to determine whether any Federally listed or proposed endangered or threatened species or their designated critical habitats occur near and may be affected by the proposed Project. If it is determined that these species or habitats might be affected by the proposed Project, the USCG and MARAD must request to initiate consultation with the USFWS and/or NOAA Fisheries. NOAA Fisheries manages ESA-listed Gulf of Mexico species, including most marine mammals, several sea turtles, and select fish species. The USFWS is responsible for the management of birds, anadromous fish, nesting sea turtles, and the West Indian manatee. The two federal entities may list a species as endangered or threatened depending on the species' biological status and current threats to its survival.

If it is determined that these species or habitats might be affected by the proposed Project, the USCG and MARAD must request to initiate consultation with the USFWS and/or NOAA Fisheries. The nature and extent of effects and recommended measures that would avoid or reduce potential effects on the species and their designated critical habitat are discussed in a Biological Assessment to determine whether the effects would likely jeopardize any listed species or result in the destruction or adverse modification of designated critical habitat. After review of the relevant information, NOAA Fisheries and/or the USFWS would issue a concurrence letter through informal consultation or a Biological Opinion through formal consultation on the potential for jeopardy.

NOAA Fisheries and/or the USFWS may also issue an incidental take statement as an exception to the take prohibitions in Section 7 of the ESA. The ESA makes it unlawful for a person to take a listed animal without a permit. Take is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." Through regulations, the term "harm" is defined as "an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering." Listed plants are not protected from take, although it is illegal to collect or maliciously harm them on Federal land. In addition, States may have their own laws restricting activity involving listed species. Information on ESA species is provided in Topic Report 6, "Wildlife and Protected Species," (Volume IIa) and Topic Report 5, "Wildlife and Protected Species," (Volume IIb) for offshore and onshore species, respectively. This information serves as a Biological Assessment for the Project and construction and operation of the Project is not anticipated to adversely affect any federal or state listed species.

1.7.5 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), amended by the Sustainable Fisheries Act of 1966, establishes procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal Fishery Management Plan (FMP). The FMP of interest in the project area is the Gulf of Mexico. The MSA requires federal agencies to consult with NOAA Fisheries on all actions or proposed actions authorized, funded, or undertaken by the agency that may adversely affect EFH. NOAA

Fisheries recommends consolidated EFH consultations with interagency coordination procedures required by other statutes such as NEPA or the ESA (50 CFR § 600.920(e)(1)) to reduce duplication and improve efficiency. The mandatory content of an EFH Assessment is detailed in 50 CFR § 600.920(e)(3). A copy of the Project EFH Assessment is included in **Appendix D** (Volume IIa). The EFH Assessment concludes that impacts during Project construction are minor and short-term other than the placement of structures on the seafloor (e.g., PLEMs, CALM Buoy anchors). Impacts during Project operations are long-term but negligible.

1.7.6 Marine Mammal Protection Act

The MMPA prohibits the "take" of marine mammals, with certain exceptions, in waters under U.S. jurisdiction and by U.S. citizens on the high seas. Under Section 3 of the MMPA, "take" is defined as "harass, capture, hunt, kill, or attempt to harass, capture, hunt, or kill any marine mammal." "Harassment" is defined as "any act of pursuit, torment, or annoyance that has the potential to injure marine mammal stock in the wild; or has the potential to disturb marine mammal stock in the wild by disrupting behavioral patterns, including migration, breathing, nursing, breeding, feeding, or sheltering." In cases where U.S. citizens are engaged in activities, other than fishing, that result in "unavoidable" incidental take of marine mammals, the Secretary of Commerce can issue a "small take authorization." The authorization can be issued after notice and opportunity for public comment if the Secretary of Commerce finds negligible impacts. The MMPA requires consultation with NOAA Fisheries if impacts on marine mammals are unavoidable. A copy of the Project MMPA is included in **Appendix E** (Volume IIa). The MMPA concludes that impacts during Project construction are minor and short-term. Impacts during Project operations are long-term but negligible.

1.7.7 Marine Protection, Research, and Sanctuaries Act

Under Section 101 of the Marine Protection, Research, and Sanctuaries Act (MPRSA), no person may transport material from the U.S. for the purpose of dumping it in ocean waters in the absence of a permit issued by EPA pursuant to Section 102 of the Act. "Dumping" does not include "construction of any fixed structure or artificial island nor the intentional placement of any device in ocean waters, or on or in the submerged land beneath such waters, for a purpose other than disposal, when such construction or such placement is otherwise regulated by federal or state law." Under Section 103 of the MPRSA, the USACE is the Federal agency that decides whether to issue a permit authorizing the ocean disposal of dredged materials. USACE relies on the EPA's ocean dumping criteria when evaluating permit requests for (and implementing Federal projects involving) the transportation of dredged material for the purpose of dumping it into ocean waters. MPRSA permits and Federal projects involving ocean dumping of dredged material are subject to EPA review and concurrence.

Dumping would not occur from the construction or operation of the proposed Project; therefore, a permit under the MPRSA would not be required.

1.7.8 Coastal Zone Management Act

The CZMA is administered by NOAA and its purpose is to preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone. Section 307 of the CZMA requires federal consistency with the state's federally approved coastal management program for any federal actions within and outside the coastal zone which could have a reasonably foreseeable effect on the program.

In Louisiana, the LDNR, Office of Coastal Management is charged with implementing the LCRP under authority of the Louisiana State and Local Coastal Resources Management Act. A CUP application has

been submitted to the LDNR Office of Coastal Management Permits for the onshore components as part of the Joint CUP/USACE 10/404 permit application process.

In Texas, the Texas RRC has oversight and review authority for oil and gas projects that occur within the Texas Coastal Zone and coordinates with the USACE during the Section 10 of the RHA and Section 404 of the CWA permitting process. Since BMOP is seeking USACE authorizations under Section 404 of the CWA and/or Section 10 of the Rivers and Harbors Act located within the Texas Coastal Zone, the Texas RRC will review the USACE application to assess Coastal Management Program Consistency. Copies of the draft permit applications are provided is Volume I, Appendix C-1.

1.7.9 Clean Water Act

The Federal CWA, as amended, establishes the basic structure for regulating discharges of pollutants into the waters of the U.S. The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters and gives the EPA the authority to implement pollution control programs such as setting wastewater standards for industry. The CWA also sets water quality standard requirements for all contaminants in surface waters and makes it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit is obtained under its provisions. Three sections of the CWA are applicable to the proposed Project:

- Section 401, which requires Federal agencies to obtain certification from the State, territory, or Indian tribes before issuing permits that would result in increased pollutant loads to a waterbody. Section 401 certification is issued only if such increased loads would not cause or contribute to exceedances of water quality standards. Section 401 water quality criteria are developed by State agencies for receiving waters based on their beneficial uses;
- Section 402 requires that developers obtain an NPDES Permit for point source discharges into a surface waterbody; and
- Section 404 regulates the placement of dredge or fill materials into waters of the U.S.

For the proposed Project facilities in Louisiana, surface water quality standards for State waters are administered by the LDEQ Water Quality Division. For the proposed Project facilities in Texas, surface water quality standards for State waters are administered by the Texas RRC for oil and gas projects. LDEQ and the Texas RRC will issue the Section 401 Water Quality Certification in conjunction with the issuance of the above-mentioned USACE permits.

The primary mechanism in the CWA regulating the discharge of pollutants is the NPDES, which is administered by the EPA. Under the NPDES program, a permit is required from EPA or an authorized State for the discharge of any pollutant from a point source into the waters of the U.S. (Section 402; 33 USC § 1342). An NPDES permit for certain stormwater discharges is also required. In the case of discharges to the territorial sea or beyond, permits are also subject to the ocean discharge criteria developed under Section 403 of the CWA (33 USC § 1343). Permits for discharges into the territorial sea or state waters may be issued by states following approval of their permit program by EPA; in the absence of an approved state permit program, and for discharges beyond the territorial sea, EPA is the permit-issuing authority. The proposed Project will require applications/Notice of Intents (NOIs) to the EPA Region 6 for a NPDES Permit to Discharge Process Wastewater, including hydrostatic test water, from the Project. A copy of the draft permit application is provided is Volume I, Appendix C-2.

The Section 404 permit program is administered by the USACE but is subject to review by the EPA and other resource agencies such as the USFWS, NOAA Fisheries, and applicable state agencies. The EPA

regulates and permits discharges to Louisiana and federal waters through the NPDES program under the CWA. The proposed Project will require permits under Sections 401, 402, and 404 of the CWA.

1.7.10 Rivers and Harbors Appropriation Act

Section 10 of the RHA prohibits the unauthorized obstruction or alteration of any navigable water of the U.S. A Section 10 authorization is given for all structures and work located within U.S. waters, including infrastructure located on the seabed to the seaward limit of the OCS, through Section 4(f) of the OCSLA of 1953 as amended (43 USC § 1333(e)). The USACE has responsibility for Section 10 of the RHA. Section 408 (33 USC § 408) falls under Section 14 of the RHA. Section 14 of the RHA provides that the Secretary of the Army, on the recommendation of the Chief of Engineers, may grant permission for the temporary occupation or use of any sea wall, bulkhead, jetty, dike, levee, wharf, pier, or other work built by the U.S. This permission is granted by an appropriate real estate instrument in accordance with existing real estate regulations upon a determination that the alteration proposed would not be injurious to the public interest nor impair the usefulness of the civil works project. Section 408 provides that USACE may grant permission for another party to alter a Civil Works project upon a determination that the alteration proposed will not be injurious to the public interest and will not impair the usefulness of the Civil Works project. The proposed Project will require permits under both Section 10 and Section 14 (Section 408) of the RHA. Copies of the draft permit applications are provided in Volume I, Appendix C-2.

1.7.11 Outer Continental Shelf Lands Act (OCSLA)

The OCSLA defines the OCS as all submerged lands lying seaward of state coastal waters (three miles offshore) which are under U.S. jurisdiction. Under the OCSLA, the Secretary of the Interior is responsible for the administration of mineral exploration and development of the OCS. The Act empowers the Secretary to grant leases to the highest qualified responsible bidder on the basis of sealed competitive bids and to formulate regulations as necessary to carry out the provisions of the Act. BOEM has been delegated responsibility for all OCS leasing policy and program development issues for oil, gas and other marine minerals. The proposed Project will require permits from BOEM for the pipeline ROWs and from BSEE for the reconfiguring and conversion of existing platforms. Copies of the draft permit application for the reconfiguring and conversion is provided in Volume I, Appendix C-4.

1.7.12 Clean Air Act

The Clean Air Act (CAA) requires EPA to set limits on how much of a pollutant can be in the ambient air anywhere in the U.S. These limits are known as the National Ambient Air Quality Standards (NAAQS). The law allows individual states to have ambient air quality standards stronger than the NAAQS, but states are not allowed to have weaker standards than the NAAQS. The main or "criteria" air pollutants with NAAQS established by the CAA are ozone, sulfur dioxide (SO_2), particulate matter (PM), lead, nitrogen oxides (NO_x), and carbon monoxide (CO). The CAA includes specific limits, timelines, and procedures to reduce these criteria pollutants. The CAA also regulates what are called “hazardous air pollutants” (HAPs). SO_2 and NO_x, which contribute to acid rain, are regulated by the CAA under a comprehensive permit program for electric generating facilities. The act protects stratospheric ozone by restricting the use of chlorofluorocarbons (CFCs) and limits ambient ozone by regulating the emissions of volatile organic compounds (VOCs) and NO_x.

Under the CAA, states have to develop state implementation plans (SIPs) that explain how each state will meet the NAAQS established under the CAA. A SIP is a collection of the regulations a state will use to clean up areas that are not meeting the NAAQS and maintain those areas in compliance with the NAAQS. EPA must approve each SIP, and if a SIP is not acceptable, EPA can take over enforcement of the CAA in that State. The Project would need to comply with the Texas SIP for the onshore pump station, and the

Louisiana SIP for Stations 501 and 701, proposed as part of the project. All project areas onshore are designated as "attainment" or "unclassifiable" by the EPA for all criteria pollutants and averaging periods at 40 CFR Part 81. The offshore area proposed for the DWP has not been designated as "nonattainment," "attainment," or "unclassifiable." The DWPA identifies that the law of the nearest adjacent coastal state will apply to a DWP. The nearest onshore location to the DWP is Cameron Parish, Louisiana, which is designated as "attainment" or "unclassifiable" for all criteria pollutants and averaging periods, and this classification will be applied to the DWP, as well. BMOP submitted its NSR and Title V Operating Permit application to EPA Region 6 for processing in 2020 and expects to receive these permits later in calendar year 2021.

1.7.12.1 *New Source Review/Prevention of Significant Deterioration*

One of the key programs designed to achieve compliance with the NAAQS is the New Source Review (NSR) program, a pre-construction review process for new and modified stationary sources. The NSR program has two component parts: the Prevention of Significant Deterioration (PSD) program for attainment or "clean" areas, which requires new or modified sources to install state-of-the-art pollution controls to ensure that the ambient air quality will not degrade. The non-attainment area NSR program is designed to ensure that any new industrial growth in an area not meeting the NAAQS will comply with stringent emission limitations (by requiring the most protective pollution controls and emission offsets), with the goal of improving air quality overall to meet the NAAQS. The NSR program requires companies to obtain a permit for new construction or major modifications that substantially increase a facility's emissions of a criteria pollutant.

The proposed Project consists of two distinct but interrelated components: the onshore component and the offshore component. The TCEQ is the air permitting authority for air emissions from the proposed pump station. BMOP has evaluated the emissions from the proposed pump station and has determined that authorization is provided with Permit by Rules. The LDEQ is the air permitting authority for the onshore operations in Cameron Parish. Potential emissions from both Station 501 and Station 701 will be insignificant and will qualify for an exemption from an air permit, in accordance with Louisiana Administrative Code (LAC) 33:III.501.B.2.d.i.(a). The EPA Region 6 is the air permitting authority for the air emissions from the offshore components of the Project, and BMOP has applied for a PSD Construction Permit.

1.7.12.2 *Title V Permits*

State environmental agencies issue air permits to large stationary sources of pollution, including all sources subject to NSR permitting. The permitting process provides an operating permit for sources after they have completed construction or modification to document all emission limits, monitoring, recordkeeping and reporting requirements for ongoing operation of the new or modified facility. The information contained in this permit and all required records are available to the permitted facility, other agencies, and the public. These permits are known as "Title V" permits because they are required by Title V of the 1990 CAA. The Title V permit is meant to contain all the requirements for the permitted source and includes semi-annual and annual certification of compliance with the permit, all of which is public information. The proposed Project would require a Title V Operating Permit from the EPA Region 6 for the offshore components of the Project. As well, the pump station will be included in the Nederland Terminal's (RN100214626) Title V Operating Permit, issued by TCEQ, at the next renewal or revision.

1.7.12.3 *General Conformity*

Section 176(c)(1) of the CAA established requirements to ensure that Federal actions or actions approved by Federal agencies do not adversely affect a State's ability to achieve and maintain attainment with the

NAAQS for projects located in an area not in attainment with the NAAQS for one or more criteria pollutants. No emissions from construction or operation of the proposed Project would occur in any designated nonattainment area. Therefore, no further evaluation of potential Project emissions with respect to General Conformity is required.

1.7.13 Migratory Bird Treaty Act

Migratory birds are protected under the Federal Migratory Bird Treaty Act (MBTA; 16 USC § 703-712) and was enacted as a prohibition on the killing of migratory birds. Migratory bird species listed under this act occur throughout the general Project vicinity, and indeed are ubiquitous worldwide. Additionally, Executive Order 13186 (66 Federal Register 3853) directs Federal agencies to identify where unintentional take is likely to have a measurable negative effect to migratory bird populations and to avoid or minimize adverse impacts on migratory birds through enhanced collaboration with the USFWS. While the MBTA does not explicitly contain specific compliance measures to address potential impacts on migratory birds, developers are encouraged to evaluate existing avian resources within a proposed ROI and take reasonable measures to prevent avian impacts. Executive Order 13186 also states that emphasis should be placed on species of concern, priority habitats, and key risk factors, and that particular focus should be given to addressing population-level impacts.

The USFWS is proposing a rule that defines the scope of the MBTA to provide regulatory certainty as to how it applies to conduct resulting in the injury or death of migratory birds protected by the MBTA. The proposed rule is consistent with the Solicitor's Opinion, M-37050, which concludes that the MBTA's prohibitions on pursuing, hunting, taking, capturing, killing, or attempting to do the same, apply only to actions directed at migratory birds, their nests, or their eggs. Thus, the proposed rule clarifies that the scope of the MBTA only extends to conduct intentionally injuring birds. Conduct that results in the unintentional (incidental) injury or death of migratory birds is not prohibited under the act. The proposed rule was published in the Federal Register on February 3, 2020, beginning a 45-day public comment period.

1.7.14 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) makes it unlawful to take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald or golden eagle, alive or dead, or any part, nest, or egg thereof without a permit. Since delisting of the Bald Eagle under ESA in 2007, bald eagles are now protected solely by the BGEPA along with MBTA.

1.7.15 Oil Pollution Act

The Oil Pollution Act of 1990 (OPA) streamlined and strengthened the EPA's ability to prevent and respond to catastrophic oil spills. A trust fund financed by a tax on oil is available to clean up spills when the responsible party is incapable or unwilling to do so. The OPA requires oil storage facilities and vessels to submit to the Federal government plans detailing how they will respond to large discharges. The EPA has published regulations for aboveground storage facilities; the USCG has done so for oil tankers. The OPA also requires the development of Area Contingency Plans to prepare and plan for oil spill response on a regional scale. The Applicant will modify its affiliate's existing facility response plans to include the BMOP facilities: Energy Transfer's Coastal Louisiana Pipeline Facility Response Plan (PHMSA Sequence 3202) and Energy Transfer's Sea Robin Oil Spill Response Plan (O-726).

1.7.16 National Historic Preservation Act

The NHPA, as amended, serves to merge the principles of the various preservation laws that came before it and provide a foundation for all subsequent preservation laws dealing with the protection of sites correlated with U.S. history, architecture, archaeology, landscapes, and culture. The NHPA serves to also

create the National Register of Historic Places (NRHP). Section 106 of the NHPA requires the USCG and MARAD to consider the effects of its undertakings on properties listed or eligible for listing on the NRHP, including prehistoric or historic sites, districts, buildings, structures, objects, or properties of traditional religious or cultural importance, and to allow the Advisory Council on Historic Preservation to comment on the undertaking. An undertaking is defined under 36 CFR § 800.16(y) as "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license or approval." As a Federal undertaking, issuance of the Project DWP Application license requires a NHPA Section 106 review. The NHPA Section 106 review involves four sequential phases:

- Initiation of the Section 106 process;
- Identification of historic properties;
- Assessment of adverse effects on historic properties; and
- Resolution of adverse effects, including development of mitigation strategies.

As part of the second phase (identification of historic properties), the lead Federal agency is required to determine and document the area of potential effect (APE) for the undertaking in consultation with the appropriate SHPO or THPO. In Louisiana, the Louisiana State Historic Preservation Officer (LA SHPO), within the Department of Culture, Recreation, and Tourism, reviews projects regarding Section 106 of the NHPA. In Texas, the Texas THC reviews projects regarding Section 106 of the NHPA. The field surveys have been completed and copies of the survey reports are provided in Volume III, Appendix E. Copies of agency correspondence are provided in **Appendix B-1** (Volume IIa).

1.7.17 Archeological Resources Protection Act

The Archeological Resources Protection Act (ARPA) established requirements to protect archaeological resources and sites on public lands and Indian lands and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals. The Act (16 USC § 470aa-470mm) established civil and criminal penalties for the destruction or alteration of cultural resources. The DOI has issued regulations under the ARPA, available at 43 CFR Part 7, establishing definitions, standards, and procedures to be followed by all Federal land managers in providing protection for archaeological resources located on public lands and Indian lands of the U.S.

1.7.18 Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) and the regulations (43 CFR Part 10) that allow for its implementation address the rights of lineal descendants, Indian tribes, and Native Hawaiian organizations (parties with standing) to Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony (cultural items). The statute requires Federal agencies and museums to provide information about Native American cultural items to parties with standing and, upon presentation of a valid claim, ensure the item(s) undergo disposition or repatriation. NAGPRA requires that the Bureau of Reclamation complete a number of reports and submit them to tribes and the DOI through the National NAGPRA Program.

1.8 AGENCY, POLITICAL, AND STAKEHOLDER OUTREACH

The Applicant has conducted, and will continue to conduct, regulatory and political outreach for the Project at the federal, state, and local levels (see **Appendix B**, "Agency and Stakeholder Correspondence," Volume IIa).

1.9 EVALUATION OF IMPACTS

1.9.1 Descriptions of Impact

The assessment criteria used to determine potential environmental impacts related to the Project are summarized in **Table 1-17** and are consistent with NEPA and Council on Environmental Quality (CEQ) requirements. Potential impacts on environmental resources may be direct or indirect; adverse or beneficial; short-term or long-term; and negligible, minor, moderate, or major. As used in this assessment, these characteristics are defined below.

TABLE 1-17
Environmental Evaluation Assessment Criteria

Criteria	Values	Definition
Outcome	**Direct**	***Direct effects*** are "caused by the action and occur at the same time and place" of the Project (40 CFR §1508.8).
	Indirect	***Indirect effects*** are "caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect impacts may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems" (40 CFR §1508.8). Indirect impacts are caused by the Project, but do not occur at the same time or place as the direct impacts.
	Cumulative	***Cumulative impact*** is "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR § 1508.7).
Type	**Adverse (Negative)**	***Adverse*** would cause unfavorable or undesirable outcomes for the natural or social environment. Negative impacts result in a net loss to the resource.
	Beneficial (Positive)	***Beneficial*** impact would cause positive or desirable outcomes for the natural or social environment. Beneficial impacts result in a net benefit to the resource.
Duration	**Short-term (Temporary)**	***Short-term (or temporary)*** impacts are those that would occur only during a specific phase of the proposed Project, such as noise during construction or certain installation activities. Short-term impacts would end at the time, or shortly after, construction activities ceased. The duration of most short-term impacts would be a few hours to a few days.
	Long-term	***Long-term*** impacts would occur either continually or periodically throughout the life of the Project (e.g., operational air emissions, stormwater discharge), or would last for years after an impact-producing activity occurred (e.g., removal of wildlife habitat).
Magnitude	**Negligible**	***Negligible*** impacts are generally those that might be perceptible, but in certain cases may be undetectable.
	Minor	***Minor*** effects are those that could be perceptible but are of very low intensity and may be too small to measure.
	Moderate	***Moderate*** impacts are more perceptible, can often be quantified, and may approach the thresholds for major impacts.
	Major	***Major*** impacts, based on their context and intensity (or severity), have the potential to meet the thresholds for significance set forth in CEQ regulations

TABLE 1-17 Environmental Evaluation Assessment Criteria		
Criteria	**Values**	**Definition**
		(40 CFR §1508.27). Major impacts warrant additional attention in a NEPA analysis and a review of potential mitigation measures that would fulfill the policies set forth in NEPA, which include avoiding, minimizing, or mitigating major impacts.
Likelihood	**Unlikely**	Low probability.
	Potential	Possible or probable.
	Likely	Certain.

1.9.2 Evaluation Criteria

Table 1-18 provides a framework for establishing evaluation criteria based on quantitative and qualitative analyses for each resource and indicate the potential severity of impact if the criteria were to be violated. These evaluation criteria were developed by environmental professionals in relevant fields in coordination and consultation with stakeholder agencies and were adopted by the USCG and MARAD (MARAD and USCG, 2020). Although some evaluation criteria have been designated based on legal or regulatory limits or requirements, others are based on best standard practice, professional judgment, and BMPs (MARAD and USCG, 2020).

TABLE 1-18 Evaluation Criteria for Determining Environmental Consequences by Resource Type	
Resource	**Evaluation Criteria**
Water Resources	Violate a Federal, state, local, or Federally recognized international water quality criterion or waste discharge requirement
	Cause irreparable harm to human health, aquatic life, or beneficial uses of aquatic ecosystems
	Degrade groundwater quantity or quality
	Degrade marine, coastal, or terrestrial (lakes, rivers, wetlands, tidal environments) water quality
	Increase contaminant levels in the water column, sediment, or biota to levels shown to have the potential to harm marine organisms, even if the levels do not exceed the formal water quality criteria
Biological Resources, Including Threatened and Endangered Species Habitat and Essential Fish Habitat	Violate a legal standard for protection of a species or its critical habitat
	Degrade the commercial, recreational, ecological, or scientific viability or significance of a biological resource or its critical habitat
	Measurably change the population size (density) or change the distribution of an important species in the region
	Introduce new, invasive, or disruptive species in the proposed Project area
	Directly affect nesting migratory birds protected under the Migratory Bird Treaty Act
	Reduce quality and/or quantity of essential fish habitat as defined by the Magnuson-Stevens Fishery Conservation and Management Act, causing adverse effects, such as direct or indirect physical, chemical, or biological alterations of the waters or substrate, and loss of or injury to benthic organisms, prey species, their habitat, and other ecosystem components
Geologic and Soil Resources	Degrade unique geological features
	Prevent recovery of mineral resources due to site(s) of facilities

TABLE 1-18
Evaluation Criteria for Determining Environmental Consequences by Resource Type

Resource	Evaluation Criteria
Geologic and Soil Resources	Increase the potential for geologic hazards to occur, such as seismic events
	Alter the lithology, stratigraphy, or geological structures that control or contribute to groundwater quality, the distribution of aquifers and confining beds, and groundwater availability
	Alter soil or sediment composition, structure, or function
	Cause permanent loss or impairment of agricultural soils, or affect prime farmland
	Degrade or prevent the study or recovery of paleontological resources
Cultural Resources	Directly or indirectly affect submerged cultural resources
	Cause irretrievable or irreversible damage to a prehistoric or historic property that is listed or eligible for listing on the National Register of Historic Places
	Alter or impair a viewshed (the area from a specific point), scenic quality, or aesthetic value related to a historic property not consistent with applicable laws or regulations
	Adversely affect a prehistoric or historic property that is listed or eligible for listing on the National Register of Historic Places
	Violate cultural resource standards by affecting resources that are of value to Indian culture and heritage
	Disturb human remains, including those interred outside of formal cemeteries
Ocean and Land Use	Alter the functional use of an area already in use
	Conflict with applicable planning and zoning
	Conflict with the Texas Coastal Zone Management Plan
	Affect existing residences or business
Recreation	Interfere with access to coastal recreational shorelines or waterways
	Cause the loss or displacement of an important recreational resource, such as recreational fishing sites and other water-dependent recreational activities
	Degrade recreational value, as established in applicable public agency management plans or policies
Visual Resources	Alter or impair a viewshed, scenic quality, or aesthetic value not consistent with applicable laws or regulations
	Create a new source of substantial light or glare that would, over the long term, adversely affect nighttime views, especially from shoreline areas, adjacent water areas, and other locations where dark skies are an expected or protected value
Transportation	Interfere with access to transportation routes, over the long term
	Cause permanent decreases in the Level of Service of key transportation arteries
	Cause a substantial increase in maritime traffic
	Cause a substantial increase in the risk of collisions or other incidents (e.g., grounding, air traffic accidents)
Air Quality	Cause or contribute to a violation of National Ambient Air Quality Standards
	Cause or contribute to a violation of a Class I or Class II increment (the maximum allowable increase in concentration that is allowed to occur above a baseline concentration for a pollutant)
	Cause an adverse impact on air quality-related values in a Class I area

TABLE 1-18
Evaluation Criteria for Determining Environmental Consequences by Resource Type

Resource	Evaluation Criteria
Air Quality	Expose sensitive receptors to substantially increased pollutant concentrations
	Increase emissions of criteria pollutants beyond limits allowed under Clean Air Act regulations
	Substantially increase the emissions of greenhouse gases
	Create objectionable odors, resulting in adverse effects to a substantial number of people
Noise	Cause a substantial change in existing ambient noise levels on land (which would affect humans and wildlife) or underwater (which would affect marine wildlife)
	Exceed U.S. Environmental Protection Agency recommended thresholds for noise levels at noise sensitive receptors
	Violate state or local noise ordinances, limits, or standards, or applicable land use compatibility guidelines
Socioeconomics	Cause substantial change in: • Population or demographics • Housing demand or affordability • The local or regional economy, including employment levels and income • Availability or quality of public services (e.g., schools, emergency services, medical services) • Local and regional economic contributions of recreation and tourism • Local and regional economic contributions of marine commerce and shipping
Environmental Justice	Cause adverse and disproportionate environmental, economic, social, or health impacts on minority or low-income populations
	Cause adverse and disproportionate environmental health or safety risks to children
Safety and Security	Cause adverse risks to public safety from operation of both onshore and offshore Project components
	Violate Federal safety regulations
	Disregard standard or best practices for safety and security of the facilities

In evaluating potential impacts on these resources from construction, operation, and decommissioning of the Project, the Applicant has included an analysis of the Project's environmental consequences of each resource type based on the evaluation criteria outlined in **Table 1-19**, and developed mitigation measures to comply with federal, state, and local requirements for permits and authorizations, and to reduce potentially adverse environmental effects for the proposed Project. The environmental consequence analysis and mitigation measures for the onshore project facilities are and included in each topic report in Volume IIa.

1.10 EVALUATION OF CUMULATIVE IMPACT ANALYSIS

To facilitate NEPA analysis, a cumulative impact assessment is included in **Appendix C**, "Evaluation of Cumulative Impacts Analysis," Volume IIa. 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 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 NEPA requires an analysis of cumulative impacts (40 CFR § 1508.25(a)(2) and 40 CFR § 1508.25(c)(3)).

1.11 REFERENCES

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