

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

*Volume IIB – Onshore Project Components Environmental Evaluation (Public)  
Topic Report 3: Land Cover and Vegetation*

*Submitted to:*



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*September 2020*

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

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

Applicant	Blue Marlin Offshore Port LLC
ATWS	Additional temporary workspace
BMOP	Blue Marlin Offshore Port
BMPs	Best Management Practices
CALM	Catenary Anchor Leg Mooring
CFR	Code of Federal Regulations
CWA	Clean Water Act
DWP	Deepwater Port
DWPA	Deepwater Port Act
EC	East Cameron Block
GOM	Gulf of Mexico
GLO	Texas General Land Office
HDD	Horizontal directional drill
LDWF	Louisiana Department of Wildlife and Fisheries
MARAD	U.S. Maritime Administration
MP	Milepost
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Association
NPDES	National Pollutant Discharge Elimination System
NLCD	National Land Cover Database
NT	Nederland Terminal
OCS	Outer Continental Shelf
OD	Outside diameter
PLEM	Pipeline End Manifolds
PAR	Permanent access road
Project	Blue Marlin Offshore Port Project
ROW	Right-of-way
S1	State Ranked
SA	staging area
SPAR Plan	Spill Prevention and Response Plan
TAC	Texas Administrative Code
TPWD	Texas Parks and Wildlife Department
USACE	U.S Army Corps of Engineers
USCG	U.S. Coast Guard
USFWS	U.S Fish and Wildlife Service
USGS	United States Geological Survey
VLCCs	Very large crude carriers
WC	West Cameron Lease Block

## PROJECT FAST FACTS

<b>General Project Terminology</b>	
<b>Applicant</b>	Blue Marlin Offshore Port LLC
<b>Project Name</b>	Blue Marlin Offshore Port (BMOP)

<b>BMOP Location and General Information</b>	
<b>Nederland Terminal (NT)</b>	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
<b>New 42-inch Pipeline</b>	37.02 miles of 42-inch pipeline from NT to Station 501
<b>Existing Mainline from Cameron parish Louisiana to WC 509</b>	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
<b>Deepwater Port Location (Platform – CALM Buoys)</b>	West Cameron Block 509 (WC 509) West Cameron 508 (WC 508) East Cameron 263 (EC 263)
<b>Deepwater Port Water Depth</b>	156 to 162 feet water depth
<b>Loading Capacity</b>	80,000 barrels per hour (bph)

<b>BMOP Deepwater Port Components</b>	
<b>Existing Stingray Pipeline (Mainline)</b>	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.
<b>Deep Water Port (DWP)</b>	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.
<b>WC 509 Platform Complex (509 Complex)</b>	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.

<b>BMOP Deepwater Port Components</b>	
<b>WC 148 Platform</b>	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.
<b>Catenary Anchor Leg Mooring (CALM) System</b>	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.
<b>Crude Oil Loading Pipelines</b>	Two 36-inch diameter pipelines from the existing WC 509B Platform to the PLEMs.
<b>Pipeline End Manifold (PLEM)</b>	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.
<b>VLCC or other Crude Carrier</b>	Very Large Crude Carriers (VLCCs), Suezmax, Aframax or other large capacity seafaring vessels.
<b>Meter for Measuring Departing Crude Oil</b>	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).
<b>Pre-fabrication Yards</b>	Existing yards will be used along the northern Gulf of Mexico (GOM) coast.
<b>Support Facility</b>	An onshore support base will be established at an existing port facility to provide the necessary security to support the DWP operations.

<b>BMOP Onshore Pipeline Components</b>	
<b>BMOP Pump Station</b>	The onshore metering, pumping, and pig launcher station will be located in Nederland, Texas, adjacent to the existing NT.
<b>Onshore Crude Oil Pipeline</b>	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.
<b>Station 501</b>	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.
<b>Station 701</b>	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.
<b>Stingray ANR Tap Removal Site</b>	BMOP will remove the tap and install 36-inch pipe in its place.

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<b>BMOP Onshore Pipeline Components</b>	
<b>Mainline Valves (MLV)</b>	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.
<b>Pipeline Pig Launchers and Receivers</b>	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.
<b>Access Roads and Canals</b>	The Project will utilize existing access roads and canals. One new temporary access road and four new permanent access roads will be required.
<b>Pipe and Contractor Yards</b>	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.

## PROJECT ENVIRONMENTAL EVALUATION ASSESSMENT CRITERIA

Environmental Evaluation Assessment Criteria		
Criteria	Values	Definition
<b>Outcome</b>	<b>Direct</b>	<i>Direct effects</i> are “caused by the action and occur at the same time and place” of the Project (40 CFR § 1508.8).
	<b>Indirect</b>	<i>Indirect</i> impacts 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.
	<b>Cumulative</b>	<i>Cumulative impact</i> 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).
<b>Type</b>	<b>Adverse (Negative)</b>	<i>Adverse</i> would cause unfavorable or undesirable outcomes for the natural or social environment. Negative impacts result in a net loss to the resource.
	<b>Beneficial (Positive)</b>	<i>Beneficial</i> impact would cause positive or desirable outcomes for the natural or social environment. Beneficial impacts result in a net benefit to the resource.
<b>Duration</b>	<b>Short-term (Temporary)</b>	<i>Short-term (or temporary)</i> 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.
	<b>Long-term</b>	<i>Long-term</i> 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).
<b>Magnitude</b>	<b>Negligible</b>	<i>Negligible</i> impacts are generally those that might be perceptible, but in certain cases may be undetectable.
	<b>Minor</b>	<i>Minor</i> effects are those that could be perceptible but are of very low intensity and may be too small to measure.
	<b>Moderate</b>	<i>Moderate</i> impacts are more perceptible, can often be quantified, and may approach the thresholds for major impacts.
	<b>Major</b>	<i>Major</i> impacts, based on their context and intensity (or severity), have the potential to meet the thresholds for significance set forth in CEQ regulations (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.
<b>Likelihood</b>	<b>Unlikely</b>	Low probability.
	<b>Potential</b>	Possible or probable.
	<b>Likely</b>	Certain.

### 3.0 LAND COVER AND VEGETATION

#### 3.1 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 3-1**. 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 Deepwater Port (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., a 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 Block 263. 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 (see Section 3.1.1), and from there through the existing Stingray Mainline to the DWP.

As depicted in **Figure 3-1**, 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 Project overview map of the onshore Project components is provided in **Figure 3-2**. Details of the Project's offshore facilities are provided in Topic Report 1, "Project Description, Purpose, and Need" (Volume IIa). This Topic Report includes details of the onshore Project facilities.

This Topic Report describes the existing land cover and vegetation underlying the Project; the potential for impacts on land cover and vegetation; and the proposed measures to mitigate any identified impacts to land cover and vegetation. Information in this Topic Report on the land cover and vegetation potentially impacted by construction and operation of the onshore pipeline facilities is based on field surveys, aerial photography, and publicly available data

To avoid and minimize impacts to land cover and vegetation during construction and operation of the Project, the Applicant will implement construction and operation Best Management Practices (BMPs) included in the Project's Onshore Construction Best Management Practice (BMP) Plan (**Appendix C-1**), Revegetation Plan (**Appendix C-2**), Spill Prevention and Response Plan (SPAR Plan, **Appendix C-3**), and Unanticipated Discovery Plan (**Appendix C-4**) provided in Volume IIb.







### **3.1.1 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 that feed natural gas into the Mainline. 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 NGPL/Stingray interconnect (Station 501). The Stingray facilities from WC 509 to Station 501 will be abandoned through a FERC 7(b) Order. 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. Details of the existing offshore Stingray Mainline facilities are provided in Topic Report 1 (Volume IIa).

### **3.1.2 Major Onshore 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. Details of the offshore supply components are provided in Topic Report 1 (Volume IIa). The Project will consist of construction and operation of the following onshore components:

#### New Onshore Facilities

- A new, approximate 37-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 adjacent to the existing NT in Jefferson County, Texas at MP 0.0. The land where the BMOP Pump Station site is located is to be filled as part of the “Nederland Terminal Buildout Project,” which is anticipated to commence construction in January 2021, prior to construction of the BMOP Project. 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 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.

#### Conversion of Existing Onshore 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:
  - A pig receiver for the new 42-inch pipeline termination;
  - Pig launcher for existing 36-inch Mainline; and
  - MLV.

- The existing compressor Station 701 in Cameron Parish, Louisiana, located at approximate MP 3.9 on the converted Stingray Mainline 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.
- The existing ANR Tap (Stingray Tap Removal Site) is located at approximate MP 1.6 on the converted 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 Station 701 will be converted to crude oil service.

Onshore Support Facilities

- Temporary use of existing pipe and contractor yards; and
- Use of existing public roads, highways, and canals and construction of new temporary and permanent access roads.

**3.2 EXISTING ENVIRONMENT**

This section defines the existing environment for the onshore pipeline in regard to land cover and vegetation.

**3.2.1 Ecoregions**

The onshore portion of the Project lies within the Level III Western Gulf Coastal Plain Ecoregion (EPA, 2013). The Western Gulf Coastal Plain Ecoregion expands from the western edge of the Mississippi River Floodplain in Louisiana to the Trinity River in Texas. The ecoregion is characterized by relatively flat to rolling plains with elevations ranging from sea level to 660 feet (TNC, 2003). The typical average annual temperature is between 61- and 68-degrees Fahrenheit and an annual average annual rainfall between 40 and 50 inches (TNC, 2003).

The onshore portion of the Project would cross two Level IV Ecoregions, the Northern Humid Gulf Prairie and the Texas-Louisiana Coastal Marshes (Daigle et al., 2006 and Griffith et al., 2004). **Figure 3-3** shows the Level IV Ecoregions that are crossed by the Project. **Table 3-1** provides a description of the two-Level IV Ecoregions and identifies those portions of the Project within each ecoregion.

<b>TABLE 3-1 Level IV Ecoregions Crossed by the Project</b>		
<b>Level IV Ecoregion</b>	<b>Ecoregion Description</b>	<b>Project Components Crossed</b>
Northern Humid Gulf Coastal Prairies	Historically the vegetation was primarily grasslands with forested areas limited to oak mottes / maritime woodlands in Texas and riparian areas in Louisiana (Daigle et al., 2006; Griffith et al., 2004). Little bluestem ( <i>Schizachyrium scoparium</i> ), big bluestem ( <i>Andropogon gerardii</i> ), yellow Indiangrass ( <i>Sorghastrum nutans</i> ), brownseed paspalum ( <i>Paspalum plicatulum</i> ), gulf muhly ( <i>Muhlenbergia capillaris</i> ), and switchgrass ( <i>Panicum virgatum</i> ) were dominant grasses with a mixture of hundreds of other herbaceous species across these prairies. Almost all the coastal prairies have been converted to cropland, pasture, crawfish aquaculture, or urban	Pipeline ROW - MP 0.00 to 0.51; MP 5.27 to 11.26  (Includes BMOP Pump Station and MLV 3)

<b>TABLE 3-1</b> <b>Level IV Ecoregions Crossed by the Project</b>		
<b>Level IV Ecoregion</b>	<b>Ecoregion Description</b>	<b>Project Components Crossed</b>
	land uses (Daigle et al., 2006; Griffith et al., 2004). Much of the prairies have been invaded by Chinese tallow tree ( <i>Triadica sebifera</i> ) and Chinese privet ( <i>Ligustrum vulgare</i> ) (Griffith et al., 2004).	
Texas-Louisiana Coastal Marshes	Dominated by extensive freshwater and saltwater coastal marshes. There are many rivers, lakes, bayous, tidal channels, and canals. Extensive cordgrass ( <i>Spartina</i> species) marshes occur in most saline areas, with maiden cane ( <i>Panicum hemitomon</i> ) and sawgrass ( <i>Cladium jamaicense</i> ) on fresh marshes (Daigle et al., 2006; Griffith et al., 2004). The marshes support diverse wildlife including winter grounds for large populations of waterfowl and support commercial and sport fisheries (Daigle et al., 2006; Griffith et al., 2004).	Pipeline ROW - MP 0.51 to 5.27; MP 11.26 to 37.02 (end)  (Includes MLV 1, MLV 2, MLV 4, MLV 5, MLV 6, Station 501, Station 701, Stingray Tap Removal Site)
Key: MP – milepost MLV – mainline valve ROW – right-of-way		

### 3.2.2 Existing Vegetation Resources

A review of the 2016 National Land Cover Database (NLCD [USGS, 2016]) shows that the onshore pipeline crosses multiple vegetation types. **Table 3-2** identifies the total mileage of each vegetation type crossed by the onshore pipeline right-of-way (ROW) centerline and a description of each type. Within **Table 3-2**, the mileage totals for open water and woody and herbaceous wetlands is based on desktop GIS analysis of the NLCD dataset and not the field delineated waterbody and wetland dataset that is presented in Volume Topic Report 2, “Water Quality and Use,” of Volume Iib. Therefore, for the discussion of existing environment as it relates to wetlands and waterbodies, see Topic Report 2 (Volume Iib).

The dominant vegetation resources crossed by the onshore pipeline ROW centerline, based on the NLCD dataset, are open water and emergent herbaceous wetlands, which account for 31.42 miles of the pipeline ROW (85% of the length of the pipeline ROW). Open water and herbaceous wetlands are further discussed in Topic Report 2 of Volume Iib. The onshore pipeline ROW also crosses developed lands (low intensity, medium intensity, and open space), hay/pasture lands, herbaceous/grassland (disturbed grasslands and pasture lands), and woody wetlands. Maps depicting the land cover types crossed by the Project are included in **Appendix A-5** (Volume Iib).

<b>TABLE 3-2</b> <b>Vegetation Types Crossed by the Onshore Pipeline ROW Centerline</b>		
<b>Vegetation Type<sup>a</sup></b>	<b>Description of Vegetation Type<sup>a</sup></b>	<b>Miles Crossed by the Pipeline ROW Centerline<sup>b</sup></b>
Open Water <sup>c</sup>	Areas of open water, generally with less than 25% cover of vegetation or soil	14.59
Emergent Herbaceous Wetlands <sup>c</sup>	Areas where perennial herbaceous vegetation accounts for greater than 80% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.	16.83
Developed, Open Space	Areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20% of total cover.	0.37

**TABLE 3-2  
Vegetation Types Crossed by the Onshore Pipeline ROW Centerline**

<b>Vegetation Type<sup>a</sup></b>	<b>Description of Vegetation Type<sup>a</sup></b>	<b>Miles Crossed by the Pipeline ROW Centerline<sup>b</sup></b>
Developed, Low Intensity	Areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20% to 49% percent of total cover.	0.86 <sup>d</sup>
Developed, Medium Intensity	Areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50% to 79% of the total cover.	0.09
Grasslands/Herbaceous	Areas dominated by graminoid or herbaceous vegetation, generally greater than 80% of total vegetation. These areas are not subject to intensive management such as tilling but can be utilized for grazing.	0.07
Pasture/Hay	Areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20% of total vegetation.	2.10
Woody Wetlands <sup>c</sup>	Areas where forest or shrubland vegetation accounts for greater than 20% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.	2.10

**Key:**

ROW – right-of-way

**Notes**

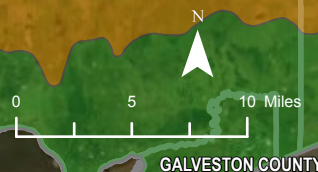
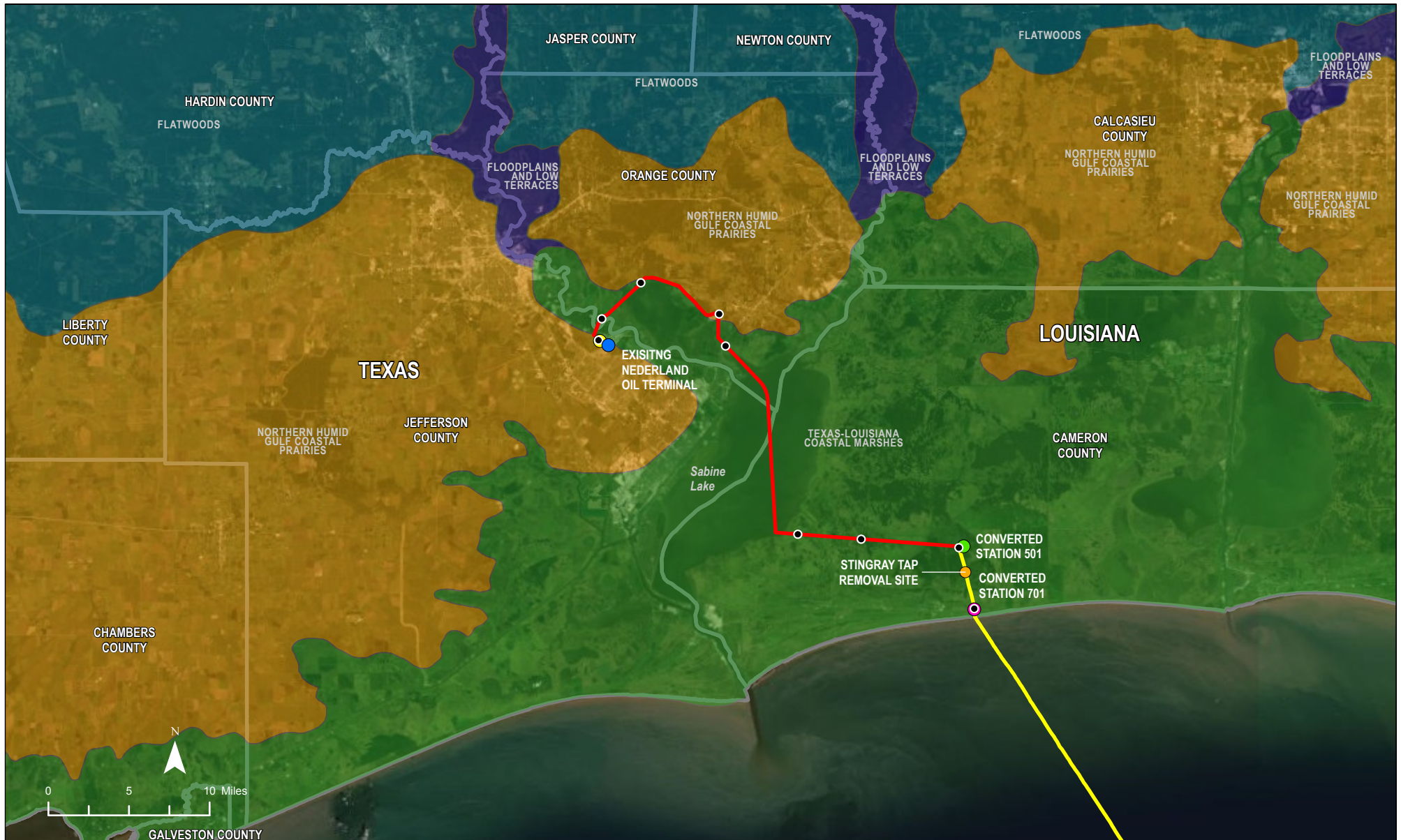
<sup>a</sup> 2016 National Land Cover Database (USGS, 2016)

<sup>b</sup> Mileage totals include the length of the pipeline between HDD entry and exit points. The total length of the pipeline route is 37.02, the total length in this table is 37.01 and the discrepancy is due to rounding.

<sup>c</sup> The mileage presented in the table is based on the 2016 NLCD database. See Topic Report 2 of Volume IIB for a full description of the field delineated waterbodies and wetlands that were identified with the Project workspace.

<sup>d</sup> The mileage total for Developed, Low Intensity was modified to reflect 0.58 miles of the Project within the existing Nederland Terminal that is currently developed or will be developed independent of the BMOP Project.

BMOP PROJECT - FIGURE 3-3 LEVEL IV ECOREGIONS CROSSED BY THE PIPELINE SYSTEM



LEGEND	
● MAINLINE VALVE	— EXISTING PIPELINE TO BE CONVERTED TO OIL SERVICE
● NEDERLAND PUMP STATION	— PROPOSED 42-INCH PIPELINE
● STATION 501 (TO BE CONVERTED TO OIL SERVICE)	LEVEL IV ECOREGIONS
● STATION 701 (TO BE CONVERTED TO OIL SERVICE)	FLATWOODS
● EXISTING NEDERLAND OIL TERMINAL	FLOODPLAINS AND LOW TERRACES
● STINGRAY TAP REMOVAL SITE	NORTHERN HUMID GULF COASTAL PRAIRIES
	TEXAS-LOUISIANA COASTAL MARSHES
	COUNTY / PARISH

BLUE MARLIN OFFSHORE PORT PROJECT			
FIGURE 3-3 LEVEL IV ECOREGIONS CROSSED BY THE PIPELINE SYSTEM			
COUNTY/PARISH:	VARIOUS	DRAWN BY:	JRA
STATE:	TX/LA	CHECKED BY:	CW
DATE:	2020/09/17	PROJECTION:	NAD 1983 UTM Zone 18N

PREPARED BY

**EXP Energy Services Inc.**

T: +1.713.438.3600  
 F: +1.713.963.9085  
 1800 WEST LOOP SOUTH, SUITE 850  
 HOUSTON, TX 77027, USA

**BLUE MARLIN OFFSHORE PORT PROJECT**  
 FIGURE 3-3

DWG: 0802-01-058 SHEET: 1 OF 1

**3.2.3 Noxious and Invasive Plants**

**Table 3-3** lists the noxious and invasive plant species identified by 4 Texas Administrative Code (TAC) Section 19.300(a), and Louisiana State Code (LA Rev Stat § 3:1791 (2018)) that have the potential to occur within the Project area. During wetland delineation survey conducted in March, May, and June 2020, field crews identified the presence of alligator weed (*Alternanthera philoxeroides*), Chinese tallow tree (*Triadica sebifera*), and saltcedar (*Tamarix* spp.) in Texas. In Louisiana, field crews also identified the presence of alligator weed and saltcedar. To control the spread and establishment of noxious and invasive plant species during construction, the Applicant would adhere to measures in the Onshore Construction BMP Plan and Revegetation Plan (**Appendix C-1** and **C-2**, respectively).

<b>TABLE 3-3</b>	
<b>Noxious and Invasive Plant Species with the Potential to Occur in the Project Area</b>	
Common Name	Scientific Name
<b>Texas State-Listed Noxious Plants<sup>a</sup></b>	
Alligator weed	<i>Alternanthera philoxeroides</i>
Balloonvine	<i>Cardiospermum halicacabum</i>
Brazilian peppertree	<i>Schinus terebinthifolius</i>
Broomrape	<i>Orobanche ramosa</i>
Camelthorn	<i>Alhagi camelorum</i>
Chinese tallow tree	<i>Triadica sebifera</i>
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
Giant duckweed	<i>Spirodela oligorrhiza</i>
Giant reed	<i>Arundo donax</i>
Hedge bindweed	<i>Calystegia sepium</i>
Hydrilla	<i>Hydrilla verticillata</i>
Itchgrass	<i>Rottboellia cochinchinensis</i>
Japanese dodder	<i>Cuscuta japonica</i>
Kudzu	<i>Pueraria montana</i> var. <i>lobata</i>
Lagarosiphon	<i>Lagarosiphon major</i>
Paperbark	<i>Melaleuca quinquenervia</i>
Purple loosestrife	<i>Lythrum salicaria</i>
Rooted water hyacinth	<i>Eichhornia azurea</i>
Saltcedar	<i>Tamarix</i> spp.
Salvinia	<i>Salvinia</i> spp.
Serrated tussock	<i>Nassella trichotoma</i>
Torpedograss	<i>Panicum repens</i>
Tropical soda apple	<i>Solanum viarum</i>
Water spinach	<i>Ipomoea aquatica</i>
Water hyacinth	<i>Eichhornia crassipes</i>
Water lettuce	<i>Pistia stratiotes</i>
<b>Texas State-Listed Invasive Plants<sup>a</sup></b>	
Chinaberry	<i>Melia azedarach</i>
Chinese tallow tree	<i>Triadica sebifera</i>
Japanese climbing fern	<i>Lygodium japonicum</i>
Kudzu	<i>Pueraria montana</i> var. <i>lobata</i>
Saltcedar	<i>Tamarix</i> spp.
Tropical soda apple	<i>Solanum viarum</i>
<b>Louisiana State-listed Noxious Plants<sup>b</sup></b>	
Chinese tallow tree	<i>Triadica sebifera</i>
Notes:	
<sup>a</sup> 4 Texas Administrative Code (TAC) §19.300(a)	

TABLE 3-3 Noxious and Invasive Plant Species with the Potential to Occur in the Project Area	
Common Name	Scientific Name
<sup>b</sup> Louisiana State Code, 1995. Agriculture and Forestry. State of Louisiana.	

### 3.2.4 Plant Species of Concern and Sensitive Vegetation Communities

#### 3.2.4.1 *Federally Listed Plant Species*

Based on a review of the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation tool, there are no federally listed threatened or endangered plant species that have the potential to occur within onshore pipeline footprint (USFWS, 2020). A discussion of protected species is included in Section 5.2.3 of Topic Report 5 of Volume IIb.

#### 3.2.4.2 *State Listed Plant Species*

Based on a review of the Texas Parks and Wildlife Department (TPWD) Annotated County List of Rare Species for Jefferson and Orange counties (TPWD, 2020a and 2020b), there are no state listed threatened or endangered plant species that have the potential to occur in the Texas portion of the Project area.

Based on a review of the Louisiana Department of Wildlife and Fisheries (LDFW) Rare and Natural Communities for Calcasieu Parish (LDWF, 2020), there are no state listed threatened or endangered plant species that have the potential to occur in the Louisiana portion of the Project area.

#### 3.2.4.3 *Sensitive Vegetation Communities*

##### **Texas**

The Texas portion of the Project and a portion of the pipeline ROW in Louisiana up to MP 29.23 would cross areas that the Texas General Land Office (GLO) defines as Priority Protection Habitat (GLO, n.d.). The GLO developed these habitat priority areas in consultation with TPWD and other government and non-government entities to identify the priority coastal habitat areas that are to be protected during spills of hazardous materials or oil. **Table 3-4** lists the Priority Protection Habitat that would be crossed by the onshore pipeline ROW. The identification and protection of these habitat priority areas is not mandated by any state regulations.

##### **Louisiana**

The State of Louisiana does not have an equivalent habitat priority index, but the GLO habitat priority area database extends into the western edge of south Louisiana. Based on consultation with LDWF (2020), the Louisiana portion of the existing onshore pipeline has the potential to impact Coastal Live Oak-Hackberry Forest, which is a State Ranked 1 (S1) Natural Community of Louisiana. LDWF defines S1 as “critically imperiled in Louisiana because of extreme rarity (5 or fewer known extant populations) or because of some factor(s) making it especially vulnerable to extirpation”. This status is a conservation status and is not enforced or defined by Louisiana Statutes.

Coastal Live Oak-Hackberry Forest or Cheniere is a natural community which formed on abandoned beach ridges primarily in Southwest Louisiana. These beach ridges were formed from deltaic sedimentation by the Mississippi River with a typical elevation of 4 to 5 feet above sea level. The dominant floral includes live oak (*Quercus virginiana*) and hackberry (*Celtis laevigata*). Other plant species commonly associated with this natural community are swamp red maple (*Acer rubrum* var. *drummondii*), sweet gum (*Liquidambar styraciflua*), water oak (*Quercus nigra*), green ash (*Fraxinus pennsylvanica*), American elm



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(*Ulmus americana*), palmetto (*Sabal minor*), and prickly pear cactus (*Opuntia spp.*) (LDWF, 2009). This natural community is an important stopover habitat for trans-gulf-migrating birds (LDWF, 2009). The onshore pipeline workspace does not overlap any Coastal Live Oak-Hackberry Forest. The closest known location of this sensitive habitat is at Peveto Woods Bird and Butterfly Sanctuary, which is located approximately 0.25 miles south of Station 701 to the east side of the existing Stingray Mainline near MP 4.2 of the Stingray Mainline. The Stingray Mainline has been operating for over 40 years adjacent to Peveto Woods.

**TABLE 3-4  
Priority Protection Habitat Crossed by the Texas Portion of the Onshore Pipeline ROW**

Priority Protection Habitat <sup>a</sup>	Overall Priority Risk	Element	Element Priority Risk	Description	Miles Crossed by Onshore Pipeline ROW (Start/End MP)
Rose City Marsh and Adjacent Marshes	Low	Birds	Not Ranked	Wading birds, waterfowl, osprey ( <i>Pandion haliaetus</i> )	0.52 (MP 1.18 – 1.70)
		Wetlands	High	Fresh marsh (California bulrush ( <i>Schoenoplectus californicus</i> ), cattails ( <i>Typha spp.</i> ), arrowheads ( <i>Sagittaria spp.</i> ), some cypress ( <i>Taxodium spp.</i> ) stands	
North Margin of Bessie Heights Marsh	Low	Wetlands	High	Not provided	1.12 (MP 3.87 – 4.70; 4.76 – 4.96; 5.37 – 5.46)
Bessie Heights Marsh (largely submerged)	High	Birds	High	Feeding area for wading birds, waterfowl; nesting by moorhen ( <i>Gallinula chloropus</i> ), rails, wading birds; river otter ( <i>Lontra canadensis</i> )	3.30 (MP 1.70 – 3.87; 4.70 – 4.76; 5.27 – 5.37; 7.05 – 7.11; 8.34 – 9.26)
		Fish	High	Abundant red drum ( <i>Sciaenops ocellatus</i> ), sheepshead ( <i>Aplodinotus grunniens</i> ), juvenile blue crab ( <i>Callinectes sapidus</i> ); high priority fish area, commercial crabbing	
		Wetlands	High	Formerly vegetated marsh, but primarily open water	
North Margin of Old River Bayou Marsh	Low	Wetlands	High	Not provided	0.15 (MP 10.96 – 11.03; 12.70 – 12.78)
Marsh West of Bridge City	Medium	Wetland	High	Not provided	0.06 (MP 11.03 -11.10)
Old River Bayou and Adjacent Marsh; Part of Lower Neches WMA	High	Birds	High	Brackish marsh used by waterfowl (gadwall ( <i>Mareca strepera</i> ), teals, etc.), nesting rails, wading birds, alligator ( <i>Alligator mississippiensis</i> )	2.47 (MP 11.10 -12.70; 12.78 – 13.64)
		Fish	High	High quality nursery for fish, shrimp	

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**TABLE 3-4**  
**Priority Protection Habitat Crossed by the Texas Portion of the Onshore Pipeline ROW**

Priority Protection Habitat <sup>a</sup>	Overall Priority Risk	Element	Element Priority Risk	Description	Miles Crossed by Onshore Pipeline ROW (Start/End MP)
		Wetlands	High	Not provided	
Madame Johnsons Bayou System	High	Birds	High	Waterfowl, diving ducks along Sabine shoreline	0.51 (MP 26.74 – 27.25)
		Fish	High	Major nursery area for crab, shrimp; commercial fishing, shrimping around entrances of Johnson Bayou	
		Wetlands	High	Not provided	
Johnsons Bayou System	High	Birds	High	Waterfowl, diving ducks along Sabine shoreline	0.16 (MP 28.06 – 28.22)
		Fish	High	Major nursery area for crab, shrimp; commercial fishing, shrimping around entrances of Johnson Bayou	
		Wetlands	High	Brackish marsh of marshhay cordgrass ( <i>Spartina patens</i> )	
Marsh East of Johnsons Bayou	Medium	Birds	High	Not provided	1.02 (MP 28.22 – 29.23 <sup>a</sup> )
		Wetland	High	Brackish marsh of marshhay cordgrass	

Source: GLO, n.d.

Key:

MP – milepost

ROW – right-of-way

WMA – Wildlife Management Area

Notes:

<sup>a</sup> Texas GLO designates Priority Protection Habitat for the State of Texas. The coverage of the Priority Protection Habitat dataset extends into Louisiana until MP 29.23 of the Project. The State of Louisiana does have an equivalent habitat priority index

### 3.3 ENVIRONMENTAL CONSEQUENCES

This section includes a discussion of the impacts that would likely result from construction and operation of the onshore components of the Project. The study area within which potential impacts were assessed includes the area that would be affected physically by Project activities during construction and operation. As described in **Table 1-10** in Section 1.10.2 (Evaluation Criteria) of Topic Report 1 (Volume IIb), the Project’s effects on vegetation resources have been evaluated based on their potential to:

- Violate a legal standard for protection of a species or its critical habitat;
- Potential to degrade the ecological significance of the vegetation resources; and/or
- Introduce new, invasive, or disruptive species in the proposed Project area.

Activities associated with construction, operation, and decommissioning of the onshore pipeline components that are likely to have environmental consequences on land cover and vegetation are included in **Table 3-5**. The following sections provide further information and discussion of potential environmental consequences.

<b>TABLE 3-5</b> <b>Potential Impacts on Vegetation Resources</b>					
Activity	Details	Duration of Impact	Mitigation Measures	Anticipated Level of Impact	
<b>Construction</b>					
Installation of Onshore Pipeline	Open Cut	<ul style="list-style-type: none"> <li>• Disruption, fragmentation, modification, and/or loss to vegetation resources</li> <li>• Introduction or spread of noxious and invasive plant species</li> <li>• Inadvertent spills</li> <li>• Impacts to wetlands and waterbodies are discussed in Topic Report 2, Volume IIb</li> </ul>	Short-term to long-term	<ul style="list-style-type: none"> <li>• Collocation of the pipeline ROW</li> <li>• Onshore Construction BMPs</li> <li>• Revegetation Plan</li> <li>• SPAR Plan</li> <li>• Compliance with USACE Permit Conditions</li> <li>• Pre-construction field surveys</li> </ul>	Negligible to minor
	HDD	<ul style="list-style-type: none"> <li>• Accidental fluid release/incidental return resulting in decreased water quality (through increase in turbidity)</li> <li>• Inadvertent spills and potential contamination</li> </ul>	Short-term	<ul style="list-style-type: none"> <li>• The purpose of an HDD is to avoid surface impacts</li> <li>• HDD Contingency Plan</li> <li>• Onshore Construction BMPs</li> <li>• SPAR Plan</li> <li>• Compliance with USACE Permit conditions</li> </ul>	Negligible
Installation of Aboveground Facilities	<ul style="list-style-type: none"> <li>• Soil erosion and surface water runoff</li> <li>• Soil compaction</li> </ul>	Short-term to long-term	<ul style="list-style-type: none"> <li>• Onshore Construction BMPs</li> <li>• Revegetation Plan</li> <li>• SPAR Plan</li> </ul>	Negligible to minor	

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<b>TABLE 3-5</b> <b>Potential Impacts on Vegetation Resources</b>				
<b>Activity</b>	<b>Details</b>	<b>Duration of Impact</b>	<b>Mitigation Measures</b>	<b>Anticipated Level of Impact</b>
	<ul style="list-style-type: none"> <li>• Introduction or spread of noxious and invasive plant species</li> <li>• Inadvertent spills</li> <li>• Impacts to wetlands and waterbodies are discussed in Topic Report 2, Volume IIb</li> </ul>		<ul style="list-style-type: none"> <li>• Compliance with USACE Permit Conditions</li> <li>• Pre-construction field surveys</li> </ul>	
<b>Operations</b>				
Onshore Pipeline and Aboveground Facility Operations	<ul style="list-style-type: none"> <li>• Temporary disruption to vegetation resources due to maintenance activities.</li> <li>• Periodic maintenance could involve ground-disturbing activities or result in a release of hazardous material</li> <li>• Potential for introduction or spread of noxious and invasive plant species due to maintenance activities</li> </ul>	Lifetime of Project	<ul style="list-style-type: none"> <li>• Onshore Construction BMPs</li> <li>• SPAR Plan</li> <li>• Compliance with MARAD license conditions and USACE Permit conditions</li> </ul>	Negligible to minor
<b>Upsets and Accidents</b>				
Onshore Pipeline and Aboveground Facility Operations	<ul style="list-style-type: none"> <li>• Accidental spills</li> <li>• Temporary disruption to vegetation resources</li> <li>• Potential for introduction or spread of noxious and invasive plant species</li> <li>• Impacts to Priority Protection Habitat</li> </ul>	Short-term to long-term	<ul style="list-style-type: none"> <li>• Compliance with the Energy Transfer’s Coastal Louisiana Pipeline Facility Response Plan (PHMSA Sequence No. 3202), modified to include BMOP</li> <li>• Continuous monitoring of pipeline operations, SCADA, early detection of abnormal operations, and remote shutdown</li> </ul>	Minor to major and localized, depending on the volume of oil released
<b>Decommissioning</b>				
Onshore Pipeline Decommissioning (Abandonment in Place)	<ul style="list-style-type: none"> <li>• Onshore pipeline will be abandoned in-place and maintenance of the ROW will stop</li> <li>• Restoration of vegetation within the permanent ROW to pre-construction conditions</li> </ul>	Short-term	<ul style="list-style-type: none"> <li>• Onshore Construction BMPs</li> <li>• SPAR Plan</li> <li>• Comply with MARAD license conditions</li> </ul>	Beneficial to minor
Aboveground Facility Decommissioning	<ul style="list-style-type: none"> <li>• All Station components and impervious surfaces will be removed, and the impacts involved with removal of the facility would be similar to</li> </ul>	Short-term	<ul style="list-style-type: none"> <li>• Onshore Construction BMPs</li> <li>• SPAR Plan</li> </ul>	Beneficial to minor

<b>TABLE 3-5</b> <b>Potential Impacts on Vegetation Resources</b>				
<b>Activity</b>	<b>Details</b>	<b>Duration of Impact</b>	<b>Mitigation Measures</b>	<b>Anticipated Level of Impact</b>
	those described for construction <ul style="list-style-type: none"> <li>• Restoration of vegetation to pre-construction conditions</li> </ul>		<ul style="list-style-type: none"> <li>• Comply with MARAD license conditions</li> </ul>	

### 3.3.1 Vegetation Resources

Impacts to existing vegetation types from construction and operation of the onshore pipeline and the associated aboveground facilities will result from ground disturbance activities. The potential impacts of these activities on the existing vegetation resources are discussed in this section. **Table 3-2** identifies the linear miles of each vegetation type that would be crossed by the centerline of the pipeline ROW. **Table 3-6** includes the acreage impacts on the vegetation types due to construction and operation of the Project. The Project impact totals presented in **Table 3-6** are based on a GIS analysis of the NLCD datasets. Since the totals are based on the NLCD, the acreage totals for wetlands and waterbodies (i.e., open water) presented in **Table 3-6** do not reflect the wetland and waterbody impact totals presented in Topic Report 2 of Volume IIb. The impact calculations presented in Topic Report 2 of Volume IIb are based on field delineated data and represent current field conditions and are the impact totals that will be presented to the U.S. Army Corps of Engineers (USACE) for the permitting process under Section 404 of the Clean Water Act (CWA). Therefore, the environmental analysis presented in this section will focus on describing the impacts to upland vegetation types. For a discussion of the Project’s impacts to wetlands and waterbodies see Topic Report 2 of Volume IIb.

#### 3.3.1.1 Construction and Installation

##### Onshore Pipeline

The onshore pipeline will consist of a new-build approximately 37-mile, 42-inch OD pipeline connecting the existing NT in Jefferson County, Texas, to the existing Stingray Mainline at Station 501 in Cameron Parish, Louisiana. For typical upland construction, the onshore pipeline will consist of a 150-foot-wide construction ROW, which will include a 50-foot-wide permanent easement (i.e., operational ROW) and 100-feet of temporary workspace. The Applicant will also utilize additional temporary workspace (ATWS) in addition to the nominal construction ROW workspace for site-specific construction conditions such as to facilitate crossing roads, third-party utility lines, or wetland and waterbodies; equipment turnarounds; points of inflection, crossovers, or tie-ins, horizontal direction drill (HDD) crossings; and soil storage. Prior to commencement of clearing activities, the construction ROW workspace will be clearly delineated to ensure that no clearing occurs beyond the approved workspace boundaries.

A summary of the vegetation cover construction impacts is presented in **Table 3-6**. The majority of the pipeline construction ROW is comprised of open water and wetlands, see Topic Report 2 of Volume IIb for the discussion of Project impacts to wetlands and waterbodies. The remainder of the construction footprint of the pipeline is comprised of upland habitats. These upland habitats include developed lands (including open space, low intensity areas, and medium intensity areas), grassland/herbaceous habitat, and pasture/hay habitat. Based on the NLCD dataset, upland habitats only account for approximately 51 acres of the construction footprint for the pipeline, which is only approximately 6 percent of the pipeline’s construction footprint.

**TABLE 3-6**  
**Summary of Vegetation Impacts for the Project**

	Developed, Open Space		Developed, Low Intensity		Developed, Medium Intensity		Grasslands/Herbaceous		Pasture/ Hay		Mixed Forest		Woody Wetlands <sup>a</sup>		Emergent Herbaceous Wetlands <sup>a</sup>		Open Water <sup>a</sup>		Total	
	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)
<b>Onshore Pipeline</b>																				
ROW	3.80	2.60	6.29	5.04	0.19	0.52	0.44	0.36	17.02	12.16	0.00	0.00	27.92	13.33	178.93	100.98	392.26	88.09	626.85	223.07
ATWS	0.09	0.00	0.31	0.00	0.00	0.00	0.00	0.00	2.16	0.00	0.00	0.00	2.28	0.00	14.65	0.00	9.04	0.00	28.53	0.00
<b>Onshore Pipeline Subtotals</b>	<b>3.89</b>	<b>2.60</b>	<b>6.60</b>	<b>5.04</b>	<b>0.19</b>	<b>0.52</b>	<b>0.44</b>	<b>0.36</b>	<b>19.18</b>	<b>12.16</b>	<b>0.00</b>	<b>0.00</b>	<b>30.20</b>	<b>13.33</b>	<b>193.57</b>	<b>101.98</b>	<b>401.30</b>	<b>88.09</b>	<b>655.38</b>	<b>223.07</b>
<b>Staging Areas (SAs)</b>																				
SA-1	0.00	0.00	1.99	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84	0.00	1.68	0.00	0.00	0.00	4.81	0.00
SA-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.84	0.00	0.00	0.00	1.84	0.00
SA-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.44	0.00
SA-4 <sup>c</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.99	0.00	3.82 <sup>c</sup>	0.00	1.47	0.00	0.00	0.00	0.00	0.00	6.29	0.00
SA-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.66	0.00	0.00	0.00	0.75	0.00
SA-6	0.15	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.82	0.00	0.00	0.00	0.00	0.00	0.0002	0.00	0.00	0.00	1.24	0.00
SA-7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77	0.00
SA-8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.56	0.00	0.01	0.00	0.00	0.00	0.56	0.00
SA-9	0.00	0.00	0.30	0.00	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.23	0.00	0.00	0.00	0.70	0.00
SA-10	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00
SA-11	0.00	0.00	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.00
SA-12	0.27	0.00	0.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.11	0.00
<b>SA Subtotals</b>	<b>0.66</b>	<b>0.00</b>	<b>3.73</b>	<b>0.00</b>	<b>0.30</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>4.28</b>	<b>0.00</b>	<b>3.82</b>	<b>0.00</b>	<b>3.13</b>	<b>0.00</b>	<b>4.41</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>20.34</b>	<b>0.00</b>
<b>Temporary Access Road (TAR)</b>																				
TAR-05-A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.39	0.00
<b>Permanent Access Road (PAR)</b>																				

**TABLE 3-6**  
**Summary of Vegetation Impacts for the Project**

	Developed, Open Space		Developed, Low Intensity		Developed, Medium Intensity		Grasslands/Herbaceous		Pasture/ Hay		Mixed Forest		Woody Wetlands <sup>a</sup>		Emergent Herbaceous Wetlands <sup>a</sup>		Open Water <sup>a</sup>		Total	
	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)
PAR-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.03
PAR-05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.02
PAR-13	0.00	0.00	0.00	0.00	0.00	0.000 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.23	0.00	0.00	0.00	0.26
PAR-15	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.00	0.001	0.00	0.40
<b>PAR Subtotals</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.02</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.03</b>	<b>0.00</b>	<b>0.65</b>	<b>0.00</b>	<b>0.001</b>	<b>0.00</b>	<b>0.71</b>
<b>Aboveground Facilities</b>																				
<b>Mainline Valves (MLVs)</b>																				
MLV 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.11
MLV 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.001	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.11
MLV 3 <sup>f</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11 <sup>f</sup>	0.00	0.00	0.00	0.00	0.00	0.11
MLV 4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.11
MLV 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.01	0.00	0.11
MLV 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.11
<b>MLV Subtotals</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.02</b>	<b>0.00</b>	<b>0.001</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.11</b>	<b>0.00</b>	<b>0.54</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>	<b>0.69</b>
BMOP Pump Station	0.00	0.00	0.00	8.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.15
Station 501	0.00	0.00	0.13	0.54 <sup>b</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63	1.49	0.01	0.14	0.77	2.17 <sup>b</sup>
Station 701	0.00	0.00	0.00	31.65 <sup>c</sup>	0.00	0.00	0.00	0.00	0.09 <sup>c</sup>	0.00	0.00	0.00	0.00	0.00	0.81 <sup>c</sup>	0.00	0.00	0.00	0.90 <sup>c</sup>	31.65 <sup>c</sup>
Stingray Tap Removal Site	0.00	0.00	0.00	1.38 <sup>d</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.71	0.00	0.15	0.00	1.86	1.38 <sup>d</sup>
<b>Above-ground</b>	<b>0.00</b>	<b>0.00</b>	<b>0.13</b>	<b>41.73</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.02</b>	<b>0.09</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.11</b>	<b>3.15</b>	<b>2.04</b>	<b>0.16</b>	<b>0.15</b>	<b>3.53</b>	<b>44.05</b>

**TABLE 3-6**  
**Summary of Vegetation Impacts for the Project**

	Developed, Open Space		Developed, Low Intensity		Developed, Medium Intensity		Grasslands/ Herbaceous		Pasture/ Hay		Mixed Forest		Woody Wetlands <sup>a</sup>		Emergent Herbaceous Wetlands <sup>a</sup>		Open Water <sup>a</sup>		Total	
	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)	Temp Impacts (acres)	Perm Impacts (acres)
<b>Facilities Subtotals</b>																				
<b>Subtotal</b>	<b>4.55</b>	<b>2.60</b>	<b>10.47</b>	<b>46.77</b>	<b>0.50</b>	<b>0.54</b>	<b>0.44</b>	<b>0.38</b>	<b>23.88</b>	<b>12.17</b>	<b>3.82</b>	<b>0.00</b>	<b>33.33</b>	<b>13.48</b>	<b>201.20</b>	<b>103.67</b>	<b>401.47</b>	<b>88.24</b>	<b>679.64</b>	<b>267.83</b>
<b>Total Construction Impacts</b>																			<b>947.48</b>	

Source: 2016 National Land Cover Database (NLCD [USGS, 2016])

Key:  
 ATWS – additional temporary workspace  
 MLV – mainline valve  
 ROW – right-of-way

- Notes:
- <sup>a</sup> The acreage of woody wetlands, emergent herbaceous wetlands, and open water presented in **Table 3-6** is based on the 2016 NLCD database. See Topic Report 2 of Volume IIb for the actual acreage of wetland and waterbodies impacts, which were calculated using field delineated wetlands and waterbodies.
  - <sup>b</sup> 0.54 acres of the Station 501 that will be utilized by this Project is within the existing facility footprint and therefore the use of this 0.54 acre will not result in new impacts. This 0.54 acre is classified as Developed, Low Intensity.
  - <sup>c</sup> The entire footprint of Station 701 is within the existing facility footprint and therefore construction of Station 701 will not result in new permanent impacts. ATWS will be required outside of the existing station resulting in temporary impacts.
  - <sup>d</sup> 0.92 acres of the Stingray Tap Removal Site that will be utilized by this Project is within the existing facility footprint or existing Mainline ROW and therefore use of this 0.92 acre will not result in new impacts. This 0.92 acre is classified as Developed, Low Intensity. ATWS will result in temporary impacts.
  - <sup>e</sup> A review of aerial imagery indicates that trees within and adjacent to SA-4 were removed during 2017. The vegetation with SA-4 now appears to be primarily herbaceous with few small isolated areas of woody vegetation remaining.
  - <sup>f</sup> Although the NLCD data classifies MLV 3 as wooded wetland, field surveys has determined that this area is actually wooded upland.



Collocation of the new build pipeline will minimize impacts on vegetation communities during construction and operation of the pipeline system. The use of collocation with existing ROWs minimizes fragmentation and effects on previously undisturbed areas. Approximately 11.86 miles (32 percent) of the pipeline route is collocated with existing powerline, road, canal and/or foreign utility ROW. In addition, conversion of the approximate 103.4 miles of Mainline from natural gas to oil service will minimize impacts to onshore vegetation.

For herbaceous vegetation types (i.e., grassland/herbaceous habitat, and pasture/hay habitat), impacts due to installation of the onshore pipeline will be primarily short-term due to the ability of these habitat types to re-establish within a 1- to 3-year timeframe. Potential impacts to the herbaceous vegetation type include compaction of soils and herbaceous plants by construction equipment; removal of herbaceous plant cover, root stock, and the seed bank; the potential introduction of noxious and invasive plants; and a local reduction in wildlife habitat. Based on a review of aerial imagery, the pipeline ROW will not cross any active row crops.

For the areas of the pipeline construction footprint that are identified as developed lands, construction of the pipeline will not result in a negligible change of overall land cover type. These areas have been developed and are either currently occupied by industrial sites or existing utility ROW. Any vegetation that may be disturbed within these habitats would be comprised of herbaceous plants and restoration of these areas would be similar to those described for herbaceous vegetation types.

To minimize potential impacts to the upland vegetation types, the Applicant will implement mitigation measures contained in the Project-specific Onshore Construction BMP Plan (**Appendix C-1**) and Revegetation Plan (**Appendix C-2**).

The following are some of the measures that will be implemented to minimize potential impacts to the vegetation types during construction:

- Prior to commencement of clearing activities, the pipeline ROW boundaries will be clearly delineated to ensure that no clearing occurs beyond the approved boundaries.
- Topsoil segregation will be done to prevent the mixing of topsoil with subsoil by stripping topsoil from either the full work area or from the trench and subsoil storage area (ditch plus spoil side method). Unless the landowner or land management agency specifically approves otherwise, topsoil will be segregated in non-inundated jurisdictional wetlands; agricultural areas, including managed pastures and hayfields; residential areas; and other areas at the landowner's or land managing agency's request.
- Installation of temporary erosion control either before or immediately after initial disturbance of the soil. Temporary erosion controls are to be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration is complete.
- Application of mulch on all slopes (except in cultivated cropland) concurrent with or immediately after seeding, where necessary to stabilize the soil surface and to reduce wind and water erosion.

Additionally, inadvertent spills of hazardous materials or oil, could negatively impact the existing vegetation resources and the restoration of the disturbed vegetation. To minimize potential impacts, all leaks and spills potentially resulting in contamination would be contained and remedied onsite as soon as practicable, and in compliance with the Applicant's SPAR Plan (**Appendix C-3**).

With adherence to the Onshore Pipeline Construction BMP Plan, Revegetation Plan, and SPAR Plan, it is anticipated that, during construction of the onshore pipeline, impacts to vegetation resources due to clearing activities would be adverse, direct, short-term, and negligible to minor.

### **Aboveground Facilities**

#### Mainline Valves

MLVs are required to be installed in locations along the pipeline system that are accessible to authorized employees and that are protected from damage and tampering in accordance with USDOT standards described in 49 CFR Part 195. The MLVs will also be installed in locations along the pipeline system that will minimize damage or pollution from accidental hazardous liquid discharges in accordance with USDOT standards. MLV 1, MLV 2, MLV 4, MLV 5, and MLV 6 are located in emergent herbaceous wetland or estuarine intertidal areas and are discussed in Volume Iib, Topic Report 2.

Although the NLCD data classifies MLV 3 as wooded wetland, field surveys have determined that this area is wooded upland. MLV 3 will be cleared of vegetation, graded, and filled with gravel and/or shell resulting in long-term vegetation impacts within the pipeline operational ROW. Temporary vegetation impacts associated with the ATWS areas will be returned, as closely as possible, to pre-construction contours and allowed to naturally revegetate.

The Applicant will minimize the unavoidable vegetation impacts in ATWS areas by implementing the measures outlined in the Applicant's Onshore Construction BMP Plan and Revegetation Plan. The potential for inadvertent spills will be minimized by proper adherence to the SPAR Plan. Therefore, vegetation impacts at MLVs will be direct, highly localized, short-term to long-term, and minor.

#### BMOP Pump Station

The BMOP Pump Station site is proposed to be developed as part of the NT Buildout Project, which is anticipated to commence in January 2021, prior to construction of the BMOP Project. The expansion of the permanent facility will not result in any new impacts to upland vegetation as the site is already classified as developed land. The potential for inadvertent spills will be minimized by proper adherence to the SPAR Plan. Therefore, impacts to developed lands due to the construction of the BMOP Pump Station will be long-term and minor.

#### Station 501

Station 501 is an existing facility that will be converted to accommodate new equipment for the Project. The existing Station 501 facility footprint will be expanded in land classified as developed lands and ATWS will be required in emergent herbaceous wetland during construction. The expansion of the permanent facility footprint has been placed within land surrounded by an existing berm to minimize impacts. The Applicant will minimize unavoidable vegetation impacts within ATWS areas by implementing the measures outlined in the Applicant's Onshore Construction BMP Plan and Revegetation Plan. The potential for inadvertent spills will be minimized by proper adherence to the SPAR Plan. Therefore, impacts to vegetation due to the expansion of Station 501 will be long-term and minor. Vegetation impacts at Station 501 ATWS areas will be direct, highly localized, short-term, and minor. See Topic Report 2 of Volume Iib for the assessment of wetland impacts due to the construction of Station 501.

#### Station 701

Station 701 is an existing facility that will be converted for the Project and is classified as developed land. Existing natural gas equipment will be partially removed from the station and new equipment, and pipe will

be installed within the existing facility boundaries. Potential impacts to vegetation due to the construction activities within this site will be long-term and negligible because the site is an existing facility classified as developed land.

ATWS areas along the existing Mainline and north of the facility boundary will be required in emergent herbaceous wetland during construction and will be returned, as closely as possible, to pre-construction contours and allowed to naturally revegetate. The Applicant will minimize the unavoidable vegetation impacts in the ATWS areas by implementing the measures outlined in the Applicant's Onshore Construction BMP Plan and Revegetation Plan. The potential for inadvertent spills will be minimized by proper adherence to the SPAR Plan. Therefore, vegetation impacts at Station 701 ATWS areas will be direct, highly localized, short-term, and minor. See Topic Report 2 of Volume IIb for the assessment of wetland impacts due to the construction at Station 701.

#### Stingray Tap Removal Site

The Stingray Tap is an existing natural gas facility located along the existing Stingray Mainline. The Applicant will install a pre-tested pipeline segment following removal of the tap by others. Construction of the Stingray Tap will result in temporary impacts to developed, low intensity lands (i.e., existing tap and pipeline ROW). Potential impacts to vegetation due to the construction activities will be similar to onshore pipeline construction at this site and will be short-term and minor.

ATWS within and adjacent to the existing Mainline permanent ROW will be required in emergent herbaceous wetland during construction and will be returned, as closely as possible, to pre-construction contours and allowed to naturally revegetate. See Topic Report 2 of Volume IIb for the assessment of wetland impacts due to the construction of Station 701.

The Applicant will minimize the unavoidable vegetation impacts in construction areas by implementing the measures outlined in the Applicant's Onshore Construction BMP Plan and Revegetation Plan. The potential for inadvertent spills will be minimized by proper adherence to the SPAR Plan. Therefore, vegetation impacts at the Stingray Tap Removal Site during construction will be direct, highly localized, short-term and minor.

#### **Pipe and Contractor Yards/Staging Areas**

The Applicant anticipates using existing pipe and contractor yards during onshore construction. Since they will be existing pipe and contractor yards, impacts to vegetation are anticipated to be negligible.

The Applicant is also proposing to use new staging areas during onshore construction. Use of the staging areas will result in temporary disturbance to the existing upland and wetland vegetation resources. Potential impacts to wetlands are discussed in Volume IIb, Topic Report 2. The acreage of vegetation types that will be disturbed at the staging areas is included in **Table 3-4**. According to the NLCD dataset, the use of staging area- (SA)-4 will result in the clearing of 3.82 acres of forested habitat. However, a review of aerial imagery indicates that trees within and adjacent to SA-4 were removed during 2017. The vegetation with SA-4 now appears to be primarily herbaceous with few areas of woody vegetation remaining. Post-construction, the reestablishment of any shrub-scrub vegetation would take 35 years. Potential impacts to vegetation types impacted by the staging areas will be similar to those described for the pipeline ROW. With adherence to the Onshore Pipeline Construction BMP Plan, Revegetation Plan, and SPAR Plan it is anticipated that potential adverse impacts to vegetation, due the use of the temporary staging areas, will be direct, highly localized, short-term, and minor.

## **Access Roads and Canals**

The Applicant intends to utilize existing public roads, highways, and canals to access the construction sites. The access canals to be used for construction are discussed in Volume IIb, Topic Report 2. No new impacts to vegetation are anticipated due to the use of existing public roads and highways.

Limited improvements (i.e., grading and gravel refresh) are planned to some existing private roads to support Project construction; however, widening of access roads is not anticipated to be required. Therefore, no new impacts to vegetation are anticipated.

Construction of new temporary access road (TAR-05-A) will result in temporary impacts to pasture/hay and emergent herbaceous wetlands, see Topic Report 2 of Volume IIb for a discussion of these impacts. Impacts associated with temporary access roads would be comparable to those described above for the pipeline ROW. Following construction, the Applicant will restore the temporary access roads to pre-construction condition. Vegetation impacts due to construction of the new temporary access road during construction is anticipated to be direct, highly localized, short-term, and minor.

Four new permanent access roads (PARs) will be required to extend existing roads to MLV sites (i.e., PAR-03, PAR-05, PAR-13, and PAR-15) which will convert approximately 0.71 acres (see **Table 3-6**) of vegetation to developed land. The amount of acreage converted to gravel surface is minor relative to the surrounding undeveloped land with similar vegetation. Therefore, vegetation impacts due to construction of new permanent access roads during construction are anticipated to be direct, highly localized, long-term, and minor.

### **3.3.1.2 Operations**

#### **Onshore Pipeline**

A summary of the vegetation cover operational impacts along the onshore pipeline is presented in **Table 3-6**. Following installation of the onshore pipeline and successful restoration of temporarily disturbed areas, the operational ROW will be maintained in an herbaceous state (i.e., woody and shrub-scrub vegetation would not be allowed to mature). Routine maintenance is required to allow for onshore pipeline inspection (i.e., routine mowing, vegetation removal). Routine vegetation management will occur over the full width of the 50-foot-wide permanent ROW of the onshore pipeline on an annual basis (or as needed). In areas where the permanent (operational) ROW is adjacent to existing ROWs or existing habitat is dominated by herbaceous cover, there will be no permanent change in habitat; however, permanent habitat conversion will occur in areas within the permanent maintained ROW where forested or shrub-scrub vegetation occur, thereby reducing the extent of existing natural communities for these vegetation types.

Due to routine maintenance, forested vegetation will not be allowed to mature within the permanent ROW. Trees outside the permanent easement with roots that could compromise the integrity of the onshore pipeline may be selectively cut and removed. Construction of the pipeline could cause habitat degradation and fragmentation.

Potential impacts associated with planned and unplanned maintenance may occur during the life of the Project. Periodic maintenance could involve ground-disturbing activities or result in a release of hazardous material. Impacts would be similar to those described for construction. During maintenance activities, the Applicant will adhere to the Onshore Construction BMP Plan and the Applicant's Coastal Louisiana Pipeline Facility Response Plan (PHMSA Sequence No. 3202), modified to include BMOP.

It is anticipated that operation and maintenance activities for the onshore pipeline may result in short-term and minor adverse impacts to herbaceous vegetation cover within the permanent ROW, because herbaceous

vegetation will be allowed to return to pre-construction conditions during operation and there will be no permanent change in habitat as the herbaceous vegetation will be allowed to return to pre-construction conditions during operation. Forested or shrub-scrub areas within the permanent maintained ROW will result in long-term and minor impacts due to permanent conversion of forest vegetation in the permanent maintained ROW. The potential effects to forest land have been minimized by collocating the pipeline to the extent possible. The majority of forested areas along the proposed pipeline route already exist as edge habitat, not interior forested habitat.

### **Aboveground Facilities**

The Applicant has minimized vegetation impacts by repurposing existing facilities (Station 501, Station 701, Stingray Mainline). A summary of the vegetation cover operational impacts at the aboveground facility sites is presented in **Table 3-6**. Operation and maintenance of the facilities will have little additional impact to vegetation after construction is complete. Impacts associated with planned and unplanned maintenance may occur during the life of the Project. Periodic maintenance could involve ground-disturbing activities or result in a release of hazardous material. Impacts will be similar to those described for construction but at a smaller scale. During maintenance activities, the Applicant will adhere to the Onshore Construction BMP Plan and Coastal Louisiana Pipeline Facility Response Plan (PHMSA Sequence No. 3202), modified to include BMOP. Therefore, potential vegetation impacts associated with operation and maintenance of the aboveground facilities will be direct, highly localized, short-term, and negligible to minor, depending on the activity.

#### **3.3.1.3 Upsets and Accidents**

### **Onshore Pipeline**

During operations, an unanticipated release of petroleum products, such as fuel, could lead to contamination and negatively impact vegetation resources. At a minimum, oil would adhere to vegetation along its flow path and may cause defoliation and/or die-off. Potential impacts to vegetation will depend on the type and quantity of the spill, and the dispersal and attenuation characteristics of the vegetation. Volume IIa, Appendix F details the potential for an oil spill from the DWP or pipeline and the potential impacts that could result from the Project.

To minimize the potential occurrence of a large spill, the pipeline will be continuously monitored and constructed with MLVs (i.e., shut-off valves) to allow sections of the pipeline to be isolated remotely. The volume of oil that could be released due to a leak will be limited to the amount of oil that leaked prior to detection and the volume remaining in the isolatable section. Overall, the risk of a pipeline crude oil release is low due to safety mechanisms built into the pipeline system which will prevent a continuous release of oil.

All leaks and spills potentially resulting in contamination will be contained and remedied on site as soon as practicable, and in compliance with the Applicant's Coastal Louisiana Pipeline Facility Response Plan (PHMSA Sequence No. 3202), modified to include BMOP. With implementation of the safety design features for onshore facilities and the mitigation measures, potential impacts on vegetation due to an oil spill are anticipated to be direct and adverse, and depending on the size of the spill, could be short-term or long-term and minor to major.

### **Aboveground Facilities**

Potential impacts to vegetation due to upsets and accidents at the aboveground facilities will be similar to those described for the onshore pipeline. The 10,000-barrel storage tanks at Station 701 are located within a secondary containment berm designed per National Fire Protection Association (NFPA) requirements and

will be capable of containing 110 percent of the capacity of one storage tank. Furthermore, the Applicant will adhere to the Coastal Louisiana Pipeline Facility Response Plan (PHMSA Sequence No. 3202), modified to include BMOP, during operations. With implementation of the safety design features for onshore facilities and the mitigation measures, impacts on vegetation resources due to an oil spill are anticipated to be direct and adverse, and depending on the size of the spill, could be short-term or long-term and minor to major.

#### **3.3.1.4 Decommissioning**

The onshore pipeline is expected to have a lifespan of 25 years. At the time of decommissioning, the Applicant will seek to abandon the pipeline in place and restore the aboveground facilities and the MLV sites to pre-construction condition.

#### **Onshore Pipeline**

Upon decommissioning, the Applicant will cease the maintenance of vegetation within the operational easement. This will allow the vegetation within the operational easement to grow undisturbed and will allow for the maturation of existing vegetation, including shrub-scrub and forested vegetation. The Applicant will comply with the environmental regulations applicable at the time of decommissioning to minimize impacts on the upland vegetation resources and will implement its SPAR Plan in the event of an accidental spill during decommissioning. These changes will lead to beneficial impacts on upland vegetation resources that will be long-term and minor.

#### **Aboveground Facilities**

At the time of decommissioning, the Applicant will seek to remove the industrial facilities within the fence line, including all artificial land covering such as asphalt and gravel. During the removal of the operational facilities, potential impacts to upland vegetation resources will be similar to those described for construction of the aboveground facilities. Upon the removal of the facilities, the cleaned sites will be allowed to revegetate and revert to vegetation types similar to adjacent conditions. Restoration of vegetation resources will lead to beneficial impacts that will be long-term and minor.

### **3.3.2 Noxious and Invasive Plants**

#### **3.3.2.1 Construction and Installation**

#### **Onshore Pipeline**

Construction of the onshore pipeline could result in the potential introduction or establishment of noxious and invasive plant species into the construction workspace due to the clearing and disturbance of the existing vegetation types. The introduction of noxious and invasive plant species to the construction workspace of the onshore pipeline could result in lower revegetation re-establishment rate of native species in the construction workspace. To control the spread and establishment of noxious and invasive plant species during construction, the Applicant would adhere to measures in the Onshore Construction BMP Plan (**Appendix C-1**) and the Revegetation Plan (**Appendix C-2**). To minimize the potential for the spread and introduction of noxious and invasive plant species the Applicant will implement the following measures:

- Inform and train construction personnel regarding noxious and invasive plant species identification and the protocols to prevent or control the spread of noxious and invasive plant species.

- Vehicles and equipment will be inspected for remnant soils, vegetation, and debris, and will be cleaned of these materials before they are brought to the Project area.
- Vehicle and equipment used in areas containing noxious and invasive plant species or aquatic weeds will be cleaned before moving to an unaffected area.
- Seeds for revegetation and straw or hay bales used for sediment barrier installations or mulch distribution, where appropriate, are to be certified weed-free.
- Mechanical treatment or herbicide application will be used to control the spread of noxious or invasive plant species during and after construction. Herbicides will be applied according to manufacturer's printed recommendations and in accordance with applicable agency regulations governing herbicide application. A qualified contractor will be utilized to determine the appropriate herbicide application method.

Additionally, inadvertent spills or releases of hazardous materials or oil, could negatively impact the existing vegetation resources resulting in conditions that are favorable for the establishment of noxious and invasive plants. To minimize impacts, all leaks and spills potentially resulting in contamination would be contained and remedied onsite as soon as practicable, and in compliance with the with the SPAR Plan (**Appendix C-3**).

With adherence to the Onshore Pipeline Construction BMP Plan, Revegetation Plan, and SPAR Plan it is anticipated that during construction of the onshore pipeline potential impacts to vegetation resources due to the introduction or establishment of noxious and invasive plant species would be adverse, direct and indirect, highly localized, short-term, and negligible to minor.

### **Aboveground Facilities**

Similar to the onshore pipeline, disturbance of any vegetation during the construction of the aboveground facility sites has the potential for introduction and establishment of noxious and invasive plants. To control the establishment of noxious and invasive plants during construction, the Applicant will adhere to measures in the Onshore Construction BMP Plan and Revegetation Plan. Similar with construction of the pipeline, inadvertent spills or releases of hazardous materials or oil, could negatively impact the existing vegetation resources resulting in conditions that are favorable for the establishment of noxious and invasive plants. To minimize impacts, all leaks and spills potentially resulting in contamination would be contained and remedied onsite as soon as practicable, and in compliance with the with the SPAR Plan.

With adherence to the Onshore Pipeline Construction BMP Plan, Revegetation Plan, and SPAR Plan, it is anticipated that during construction of the aboveground facilities potential impacts to vegetation resources due to the introduction or establishment of noxious and invasive plant species would be adverse, direct and indirect, short-term, and negligible to minor.

### **Pipe and Contractor Yards/Staging Areas**

The Applicant anticipates using existing pipe and contractor yards during onshore construction. As these sites will continue to be used for their current purpose, the potential for the introduction or establishment of noxious and invasive plant species is considered negligible.

The Applicant is also proposing to use staging areas during onshore construction. Use of these yards and staging areas may result in negligible impacts to adjacent vegetation resources from the introduction or establishment of noxious and invasive plants. The Applicant will control the spread and establishment of noxious and invasive plant species during the use of the laydown yards by adhering to the measures in the Onshore Construction BMP Plan, Revegetation Plan, and SPAR Plan. Potential impacts to vegetation

resources from the introduction or establishment of noxious and invasive plants from use of the staging areas is anticipated to be similar to pipeline construction (i.e., direct and indirect, adverse, short-term and negligible to minor).

### **Access Roads and Canals**

Construction of temporary and permanent access roads may result in negligible impacts to adjacent vegetation resources from the introduction or establishment of noxious and invasive plants. The Applicant will reduce the potential spread and establishment of noxious and invasive plant species by adhering to measures in the Onshore Construction BMP Plan and from inadvertent spills and releases of hazardous material or oil by adhering to measures in the SPAR Plan. Therefore, the adverse impacts to vegetation resources due to the introduction or establishment of noxious and invasive plant species from the use of access roads and canals is anticipated to be short-term and negligible.

#### **3.3.2.2 Operations**

The Applicant will reduce the potential spread and establishment of noxious and invasive plant species during operation and maintenance activities of the Project through implementation of the Project's Onshore Construction BMP Plan and Coastal Louisiana Pipeline Facility Response Plan (PHMSA Sequence No. 3202), modified to include BMOP. Mechanical treatment or herbicide application will be used to control the spread of noxious or invasive plant species during and after construction. Herbicides will be applied according to manufacturer's printed recommendations and in accordance with applicable agency regulations governing herbicide application. A qualified contractor will be utilized to determine the appropriate herbicide application method. Therefore, impacts associated with operation and maintenance of the onshore pipeline will be direct and indirect, adverse, short-term, and negligible.

#### **3.3.2.3 Upsets and Accidents**

Potential impacts and mitigation measures associated with upsets and accidents are similar to vegetation resources discussed in Section 3.3.1.3.

#### **3.3.2.4 Decommissioning**

The onshore pipeline is expected to have a lifespan of 25 years. At the time of decommissioning, the Applicant will seek to abandon the pipeline in place and restore the aboveground facilities to pre-construction condition.

### **Onshore Pipeline**

Upon decommissioning, the Applicant will cease to maintain the vegetation within the operational easement. This will allow the vegetation within the operational easement to grow undisturbed and will allow for the maturation of existing vegetation including shrub-scrub and forested vegetation in the appropriate habitat types. The Applicant will also implement its SPAR Plan in the event of an accidental spill during decommissioning. These changes will lead to beneficial impacts on vegetation resources because of the reduction of maintenance activities that could result in the introduction or establishment of noxious and invasive plant species. These beneficial impacts will be long-term and negligible.

### **Aboveground Facilities**

At the time of decommissioning, the Applicant will remove the industrial facilities within the fenceline of the aboveground facility sites including all artificial land covering such as asphalt and gravel. The cleaned sites will be allowed to revegetate and revert to vegetation types similar to adjacent conditions. There is the



potential for the introduction of noxious and invasive plant species to these freshly disturbed areas; however, the Applicant will implement Onshore Pipeline Construction BMP Plan and Revegetation Plan to minimize the establishment of noxious and invasive plant species. Through the adherence of these plans, adverse impacts to vegetation resources due to the introduction or establishment noxious and invasive plant species are anticipated to be temporary and negligible and will continue to minimize in magnitude as the vegetation is re-established.

### **3.3.3 Plant Species of Concern and Sensitive Vegetation Communities**

As discussed in Section 3.1.4, the footprint of the Project does not overlap with the range of any federally or state listed threatened and endangered plant species; therefore, the Project will not impact federal or state listed plant species. The only sensitive habitat identified within the Project footprint is GLO's Priority Protection Habitat, as identified in **Table 3-4**.

#### **3.3.3.1 Construction and Installation**

##### **Onshore Pipeline**

During construction of the onshore pipeline, there is a potential for sensitive vegetation to be impacted. As shown in **Table 3-4**, the pipeline ROW will cross 9.3 miles of Priority Protection Habitat, which are priority coastal areas identified by the GLO for priority protection in the event of spills of hazardous materials or oil. Construction and installation of the onshore pipeline has the potential to impact these Priority Protection Habitats due to inadvertent spills during construction. During construction, all leaks and spills potentially resulting in contamination would be contained and remedied onsite as soon as practicable, and in compliance with the with the SPAR Plan. With adherence to the SPAR Plan and the Onshore Pipeline Construction BMP Plan, any direct adverse impacts to Priority Protection Habitat due to inadvertent spills or releases during construction are anticipated to be temporary and negligible.

##### **Aboveground Facilities**

The construction footprint of the MLVs located in Orange County, Texas (i.e., MLV 1, MLV 2, MLV 3, and MLV 4) overlap GLO's Priority Protection Areas. A summary of the vegetation cover construction impacts at aboveground facility sites is presented in **Table 3-6**. Construction and installation of these four MLV sites has the potential to impact Priority Protection Habitat due to inadvertent spills or releases of hazardous materials or oil during construction. During construction, all leaks and spills potentially resulting in contamination would be contained and remedied onsite as soon as practicable, and in compliance with the with the SPAR Plan. With adherence to the SPAR Plan and the Onshore Pipeline Construction BMP Plan, any direct adverse impacts to Priority Protection Habitat due to inadvertent spills during construction of the four MLV sites will be temporary and negligible.

##### **Pipe and Contractor Yards/Staging Areas**

The Applicant anticipates using existing pipe and contractor yards during onshore construction. Use of these yards will not result in impacts on Priority Protection Habitat, as they will continue to be used for their current purpose.

The Applicant is also proposing to use staging areas during onshore construction. Only staging areas SA-2 and SA-3 overlap areas of Priority Habitat. Impact on Priority Protection Area use of SA-2 and SA-3 are anticipated to be similar to pipeline construction (i.e., direct, adverse, short-term, and negligible).

## **Access Roads and Canals**

The Applicant intends to utilize existing public roads, highways, and canals to access the construction sites. Four PARs (i.e., PAR-03, PAR-5, PAR-13, and PAR-15) overlap Priority Protection Habitat. The Applicant will implement the measures outlined in its Onshore Construction BMP Plan to minimize erosion during construction. To minimize impacts to vegetation from inadvertent spills, the Applicant will adhere to the SPAR Plan. Therefore, impacts to vegetation due to construction of the access roads will be direct, highly localized, long-term, and minor.

### **3.3.3.2 Operations**

#### **Onshore Pipeline**

Periodic maintenance could involve ground-disturbing activities or result in an inadvertent spill or release of hazardous materials or oil. Potential impacts to Priority Protection Habitat would be similar to those described for construction of the pipeline. To minimize the impacts associated with an accidental release of oil or other hazardous materials during operations (i.e., maintenance), the Applicant will implement its SPAR Plan. With proper adherence to the SPAR Plan and the Onshore Pipeline Construction BMP Plan, any direct adverse impacts to Priority Protection Habitat during pipeline operation and maintenance will be highly localized, short-term, and negligible.

#### **Aboveground Facilities**

The MLVs located in Orange County, Texas (i.e., MLV 1, MLV 2, MLV 3, and MLV 4) overlap GLO's Priority Protection Areas. A summary of the vegetation cover operation impacts at aboveground facility sites is presented in **Table 3-6**. Operation and maintenance of the facilities will have little additional impact to these areas after construction is complete. Periodic maintenance could involve ground-disturbing activities or result in a release of hazardous material. Impacts will be similar to those described for construction but at a smaller scale.

The Applicant will minimize impacts resulting from operation and maintenance of the Project through the implementation of the Project's Onshore Construction BMP Plan and Coastal Louisiana Pipeline Facility Response Plan (PHMSA Sequence No. 3202), modified to include BMOP. With proper adherence to these plans, any direct adverse impacts to Priority Protection Habitat during operation and maintenance of the four MLV sites is anticipated to be highly localized, short-term, and negligible.

### **3.3.3.3 Upsets and Accidents**

Potential impacts and mitigation measures associated with upsets and accidents would be similar to vegetation resources discussed in Section 3.3.1.3.

### **3.3.3.4 Decommissioning**

Potential impacts and mitigation measures associated with decommissioning are similar to vegetation resources discussed in Section 3.3.1.4.

### 3.4 CUMULATIVE IMPACTS

A complete discussion of cumulative impacts is included in Volume IIa, Appendix C, “Framework for Cumulative Impacts Analysis.”

### 3.5 MITIGATION MEASURES

Construction, operation, and maintenance of the Project facilities will be in accordance with all applicable rules and regulations, permits, and approvals. Mitigation measure that will implemented specifically to address impacts to wetlands and waterbodies are discussed in Topic Report 2 of Volume IIb. To avoid and minimize impacts to vegetation resources during construction and operation of the Project, the Applicant has:

- Minimized the footprint of the proposed work activities and the duration of disturbances to the extent practicable to reduce impacts on vegetation resources;
- Repurposed existing facilities (Station 501, Station 701, Stingray Mainline) to minimize impacts to vegetation resources;
- Collocated the onshore pipeline to the extent possible (approximately 32 percent) with existing ROW to minimize impacts on vegetation resources during construction and operation of the pipeline system; and
- Crossed sensitive environmental land (i.e., Lower Neches WMA Nelda Stark Unit) and waterbodies (i.e., Neches River) by using the HDD construction method.

The Applicant will implement the following plans (included in **Appendix C**) to ensure adequate protection of vegetation resources during onshore construction.

- Project’s Onshore Construction BMP Plan to avoid, minimize, and mitigate environmental impacts as they relate to the construction and operation of the Project (**Appendix C-1**);
- Revegetation Plan to avoid and minimize introduction of noxious and invasive plant species and promote rapid revegetation (**Appendix C-2**);
- SPAR Plan to avoid and minimize inadvertent spills and releases of oil and hazardous materials (**Appendix C-3**); and
- Coastal Louisiana Pipeline Facility Response Plan (PHMSA Sequence No. 3202), modified to include BMOP.

### 3.6 SUMMARY OF POTENTIAL IMPACTS

The Project’s effects on land cover and vegetation have been evaluated based on the criteria listed in **Table 1-10** in Section 1.10.2 (Evaluation Criteria) of Topic Report 1 (Volume IIb). The Project is NOT expected to:

- Violate a legal standard for protection of a species or its critical habitat;
- Potential to degrade the ecological significance of the vegetation resources; and/or
- Introduce new, invasive, or disruptive species in the proposed Project area.

Activities associated with the construction, operation, and decommissioning of the onshore pipeline components that are likely to have environmental consequences on vegetation resources are summarized in **Table 3-5**. Impacts on upland vegetation resources from construction, operation, and decommissioning of

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the onshore pipeline and aboveground facilities are expected to be negligible to minor based on the proposed activities and the application of mitigation measures as listed in Section 3.4 of this topic report. Converting the Stingray Mainline, Station 501, and Station 701 will result in a reduction in amount of impacts that will occur from Project construction.

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