

# DEEPWATER PORT LICENSE APPLICATION FOR THE BLUEWATER SPM PROJECT

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## VOLUME II – ENVIRONMENTAL EVALUATION

### Section 5 – Wetlands and Waters of the U.S.

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## ACRONYMNS AND ABBREVIATIONS

>	greater than
ac	acre
BMP	Best Management Practices
BWTT	Bluewater Texas Terminal, LLC
CFR	Code of Federal Regulations
CWA	Clean Water Act, as amended in 1977
DWP	deepwater port
E2EM	estuarine intertidal emergent
E2US	estuarine intertidal unconsolidated shore
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
ft.	feet
GOM	Gulf of Mexico
HDD	Horizontal Directional Drilling
MHT	mean high tide
NFIP	National Flood Insurance Program
NPDES	National Pollutant Discharge Elimination System
PEM	palustrine emergent
PSS	palustrine scrub-shrub
Regional Supplement	2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region
ROW	right-of-way
SFHA	Special Flood Hazard Area
SPCC	Spill Prevention, Control, and Countermeasure
SPM	single point mooring
SWPPP	Stormwater Pollution Prevention Plan
TCEQ	Texas Commission on Environmental Quality
TDEM	Texas [Department of Public Safety] Division of Emergency Management
TPDES	Texas Pollutant Discharge Elimination System
TXDPS	Texas Department of Public Safety
U.S.	United States [of America]
USACE	United States Army Corps of Engineers
U.S.C.	United States Code
USEPA	United States Environmental Protection Agency
WOUS	Waters of the United States

## 5 WETLAND AND WATERS OF THE U.S.

This section discusses the existing wetlands and waters of the U.S. (WOUS) within the vicinity of the Proposed Bluewater Single Point Mooring (SPM) Project (Proposed Project) and the Alternative Project, and the anticipated environmental impacts associated with the construction, operation, and decommissioning of the Proposed Project and the Alternative Project. The detailed description of the Proposed and Alternative Project and the framework for the evaluation of environmental impacts is provided in Section 3: Project Description and Framework for Environmental Evaluation.

### 5.1 Applicable Laws and Regulations

#### 5.1.1 Local

Under State of Texas Flood Control Insurance Act, floodplain development permitting may be required within the Project counties. Aransas, Nueces, and San Patricio Counties have formalized floodplain development permits.

Aransas County requires that any development within applicable jurisdiction first require a permit from the Floodplain Administrator. County regulations require that no alteration, diversion, or encroachment shall be made to any water feature without specific written authorization from the County Floodplain Administrator.

Nueces County prohibits the construction of structures and the altering of land within flood hazard areas unless a Floodplain Development Permit has been issued. If a structure is to be constructed in a floodplain an Elevation Certificate will need to be furnished by the owner before the Floodplain Development Permit is issued. The Elevation Certificate is necessary to document the elevation of the lowest flood of all new or improved structures.

San Patricio County requires that an application for a floodplain development permit be presented to the floodplain administrator, which includes construction plans to scale depicting the location, dimensions, and elevation of proposed landscape alterations, existing and proposed structures, and the location of the project in relation to flood hazard areas. Description of the extent to which any watercourse or natural drainage will be altered or relocated as a result of the proposed development should be included as well.

There are no additional local regulations that would pertain to wetlands, WOUS or floodplains.

#### 5.1.2 State

##### 5.1.2.1 Water Quality Certification

One of the requirements for obtaining a U.S. Army Corps of Engineers (USACE) Section 404 permit is certification from the Texas Commission on Environmental Quality (TCEQ) that the discharge to be permitted will comply with state water quality standards. Because these reviews are done under the authority of Section 401 of the federal Clean Water Act (CWA), they are referred to as Section 401 certification reviews.

The State of Texas sets its own water quality standards, which act as a measure of whether the quality of each waterbody in the state is kept at the level necessary to perpetuate the human and aquatic life that has historically existed there. In allowing pollutants to be added to state water (which includes a broad range of substances such as chemicals, concrete, rock, sand, or other materials), both the federal government and the State of Texas are required to be sure that the discharge will not create a condition that will impair the ability of life existing in or depending on the water to survive and reproduce. The state is charged with confirming that the federal permit accomplishes this. The TCEQ is the agency with primary responsibility for making sure the State of Texas adopts and enforces state water quality standards. It conducts 401 certification reviews to ensure that Texas is involved in decisions made by the federal government that affect the quality of the water resources of this state.

For crude oil project, such as the Bluewater SPM Project, the issuance of the water quality certification actually falls under the Railroad Commission of Texas (RRC). The Railroad Commission of Texas (Commission) has sole authority for the prevention and abatement of pollution of surface waters associated with oil and gas exploration, development, and production operations, including pipeline transportation of crude oil and natural gas. Thus, the Commission is the 401-certifying agency for issuance of USACE permits associated with oil and gas exploration, development, and production operations. The USACE will coordinate with the RRC to obtain water quality certification during the CWA permitting of the Project.

#### 5.1.2.2 Texas Disaster Act

The Texas Disaster Act, which is administered by the Texas Department of Public Safety (TXDPS) Division of Emergency Management (TDEM), requires that, to participate in the National Flood Insurance Program (NFIP), all political subdivisions of the state must adopt rules that address the above summarized federal requirements.

### 5.1.3 Federal and International

#### 5.1.3.1 Clean Water Act

The CWA, as amended in 1977, establishes the basic structure for regulating discharges of dredged or fill material into WOUS, including wetlands and other “special aquatic sites.” The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation’s waters (33 U.S. Code [U.S.C.] 12151) and gives the U.S. Environmental Protection Agency (USEPA) the authority to implement pollution control programs such as setting wastewater standards for industry. The CWA also sets water quality standard requirements for all contaminants in surface waters and makes it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit is obtained under its provisions. Three sections of the CWA are applicable to the proposed Project:

- Section 404, which regulates the placement of dredge or fill materials into WOUS, including special aquatic sites such as wetlands;
- Section 402, which requires permittees to obtain a National Pollutant Discharge Elimination System (NPDES) Permit for a point source discharge into a surface waterbody; and
- Section 401, which requires CWA Section 404 and 402 permittees to comply with all federal and state-established water quality standards.

The definition of WOUS currently in effect is the definition promulgated in 1986/1988. WOUS are currently defined as:

- 1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- 2) All interstate waters including interstate wetlands;
- 3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
  - i. which are or could be used by interstate or foreign travelers for recreational or other purposes; or
  - ii. from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
  - iii. which are used or could be used for industrial purposes by industries in interstate commerce;
- 4) All impoundments of waters otherwise defined as WOUS under this definition;
- 5) Tributaries of waters identified in paragraphs (s)(1) through (4) of this section;
- 6) The territorial sea; and
- 7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (s)(1) through (6) of this section (40 Code of Federal Regulations [CFR] 230.3(s)).

Wetlands are transitional areas between terrestrial and aquatic habitats. Wetlands are differentiated from terrestrial habitats typically by the presence of water at the ground surface or within the root zone of vegetation for a significant portion of the growing season. Wetlands are some the most common special aquatic resources present and are defined by the USACE as “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (40 CFR 230.3(t)). Based on this definition, for an area to be considered a wetland it must possess the following parameters under normal circumstances: 1) a predominance of plants adapted to live in water or saturated soils (i.e., hydrophytic vegetation), 2) soil characteristics of frequent saturation (i.e., hydric soils), and 3) the presence of hydrology showing evidence of regular flooding or ponding (i.e., wetland hydrology). Wetlands can support a diverse assemblage of plants and animals, and help maintain or improve water quality, contribute to flood control, provide wildlife habitat, and have recreational or aesthetic value.

*Special aquatic sites* are geographic areas, large or small, possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values. These areas are generally recognized as significantly influencing or positively contributing to the general overall environmental health or vitality of the entire ecosystem of a region. Special aquatic sites are defined as sanctuaries and refuges, wetlands, mud flats, vegetated shallows, coral reefs, and riffle and pool complexes (40 CFR 230.40 – 230.45). Section 404 of the CWA does not allow the discharge of dredged or fill into special aquatic sites, unless it can be demonstrated that the proposed action is the least damaging practicable alternative.

### 5.1.3.2 National Flood Insurance Act

The National Flood Insurance Act of 1968 establishes the federal framework to provide flood insurance for structures and their contents in communities that adopt and enforce an ordinance outlining minimal floodplain management standards. The Federal Emergency Management Agency (FEMA) has promulgated regulations (44 CFR 60) that:

- Require the development of floodplain management programs by states and their political subdivisions;
- Require permits for all proposed construction and other developments within Zone A of the Flood Insurance Rate Maps (FIRMs); and
- Ensure that the flood carrying capacity within the altered or relocated portion of any watercourse is maintained.

Additionally, FEMA regulations require that when a base flood elevation has been established there is a prohibition of encroachment, including fill, new construction, substantial improvements and other development within the regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses (which must be performed in accordance with standard engineering practice) that the encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge.

## 5.2 Proposed Project

### 5.2.1 Proposed Project Area

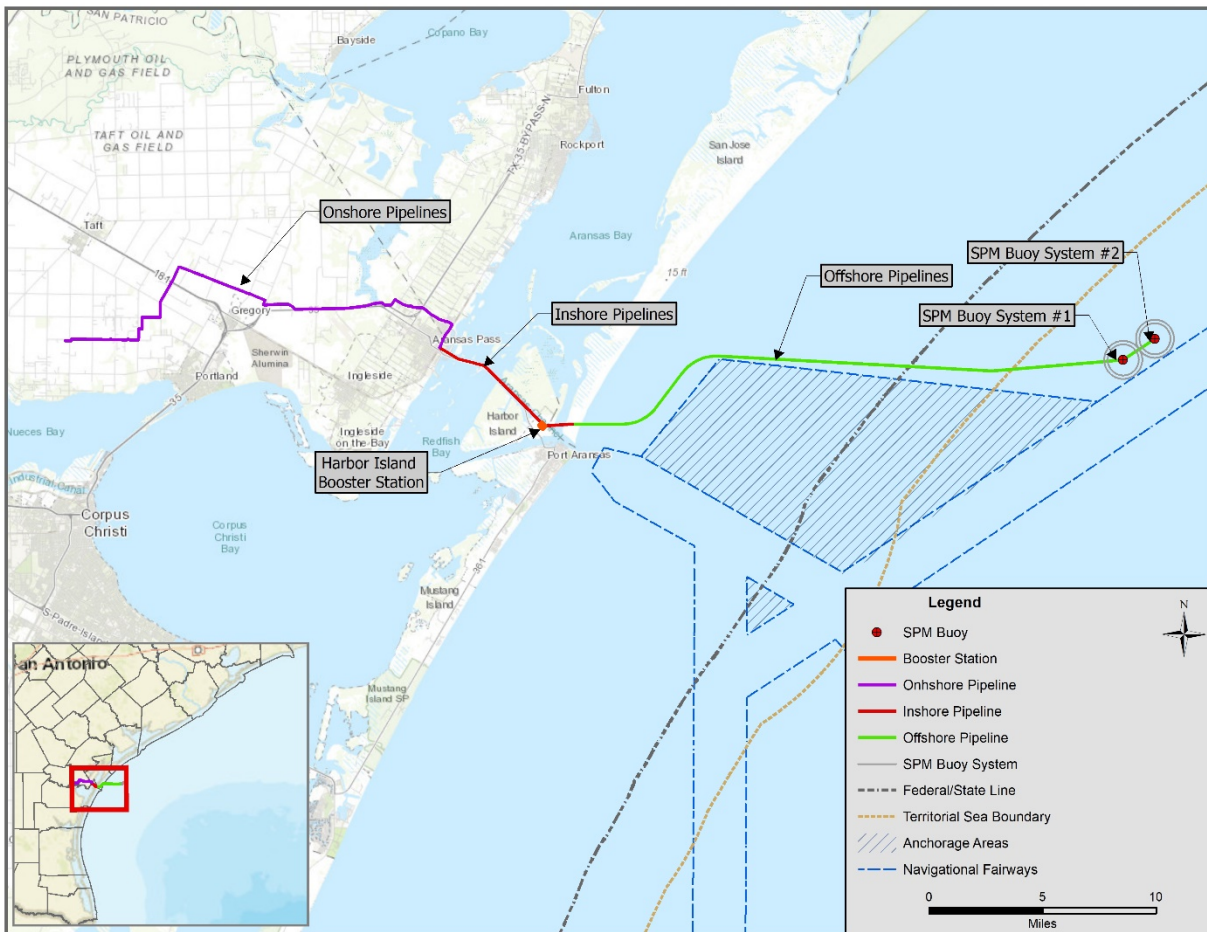
Onshore components associated with the Proposed Project are defined as those components landward of the western Redfish Bay mean high tide (MHT) line, located in San Patricio and Aransas Counties, Texas. Onshore Project components include approximately 22.20 miles of two (2) new 30-inch-diameter crude oil pipelines extending from the landward side of the MHT line of Redfish Bay to a planned multi-use terminal facility located south of the City of Taft, in San Patricio County, Texas. The onshore study area evaluated for natural resources investigations consisted of a 300-foot wide corridor along the length of the proposed pipeline, encompassing 812.74 ac.

Inshore components associated with the Proposed Project are defined as those components located between the western Redfish Bay MHT line and the MHT line located at the interface of San Jose Island and the Gulf of Mexico

(GOM). Inshore Project components includes approximately 7.15 miles of two (2) new 30-inch-diameter crude oil pipelines, and an approximate 19-acre booster station located on Harbor Island. The inshore portion of the Proposed Project area includes the terrestrial portion of the pipeline corridor area including Lydia Ann Island, Harbor Island, Stedman Island, and a small segment leading into Aransas Pass. The inshore study area evaluated for natural resources investigations consisted of an approximate 500-foot wide corridor along the pipeline centerline within Aransas, Nueces, and San Patricio Counties, Texas.

Offshore components associated with the Proposed Project are defined as those components located seaward of the MHT line located at the interface of San Jose Island and the GOM. The Offshore Project components include approximately 27.13 miles of two (2) new 30-inch-diameter crude oil pipelines extending to two (2) SPM buoy systems. The proposed offshore pipelines would extend from the MHT line located at the interface of San Jose Island and the GOM to the proposed SPM buoy systems.

**Figure 5-1: Bluewater SPM Proposed Project Vicinity Map**



### 5.2.2 Proposed Project Existing Conditions

Exiting conditions for the Proposed Project area were evaluated through field surveys. The onshore study area evaluated for natural resources investigations consisted of an approximate 300-foot wide corridor along the length of the proposed pipeline, encompassing 812.74 ac. Field surveys of the onshore study area (Figure 5-1) were conducted from February 4, 2019 through February 25, 2019, following the wetland delineation guidelines provided



in both the 1987 USACE Wetlands Delineation Manual (Manual) (USACE 1987) and the 2010 Regional Supplement to the Manual: Atlantic and Gulf Coastal Plains Region (Regional Supplement) (USACE 2010).

The inshore study area evaluated for natural resources investigations consisted of an approximate 500-foot wide corridor along the pipeline centerline within Aransas, Nueces, and San Patricio Counties, Texas. Field surveys of the inshore study area (Figure 5-1) were conducted January 29, 2019 through February 7, 2019, following the wetland delineation guidelines provided in both the 1987 Manual (USACE 1987) and the 2010 Regional Supplement (USACE 2010).

### 5.2.2.1 Onshore

#### 5.2.2.1.1 WETLANDS

The wetland delineation of the onshore Proposed Project area identified 76 distinct onshore wetland areas and special aquatic sites totaling 41.137 ac within the 300-foot survey area (Refer Appendix E for the Onshore Wetland Delineation Report, and Table 5-1 below). Fifty-three wetlands totaling 28.397 ac were mapped as palustrine emergent (PEM) wetlands, eight wetlands totaling 1.77 ac was mapped as palustrine scrub-shrub (PSS), seven wetlands totaling 9.93 ac were mapped as estuarine intertidal emergent (E2EM), two wetlands totaling 0.13 ac were mapped as estuarine intertidal emergent scrub-shrub (E2SS), and six wetlands totaling 0.91 ac were mapped as estuarine intertidal, unconsolidated shore, irregularly flooded (E2USP).

**Table 5-1: Proposed Project Onshore Wetland Characteristics**

Wetland ID	Vegetation Community Type	Acreage within 300-foot Survey Corridor	Acreage within Construction Workspace
WP1001	PEM	0.09	0.01
WP1002	PEM	1.59	0.99
WP1003	PEM	0.03	0.01
WP1004	PEM	0.01	Avoided
WP1005	PEM	0.34	0.14
WP1006	PEM	1.76	1.03
WP1007	PEM	0.21	0.18
WP1008	PEM	0.17	Avoided
WP1009	PEM	0.58	0.35
WP1010	PEM	0.64	0.10
WP1011	PEM	0.13	0.13
WP1012	PEM	1.11	0.67
WP1013	PEM	0.31	0.29
WP1014	E2EM	0.12	0.03
WP1015	E2EM	0.46	0.04
WP1016_E2EM	E2EM	4.93	0.25
WP1016_E2USP_A	E2USP	0.01	Avoided
WP1016_E2USP_B	E2USP	0.1	0.06
WP1016_E2USP_C	E2USP	0.15	0.05
WP1017	E2EM	0.22	0.18
WP1018	PEM	0.16	0.04
WP1019	PEM	0.24	0.04
WP1020	PEM	0.06	Avoided
WP1021	PEM	3.14	1.60
WP1022	PEM	12.59	6.30
WP1023	PEM	0.19	0.16

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Wetland ID	Vegetation Community Type	Acreage within 300-foot Survey Corridor	Acreage within Construction Workspace
WP1024	PEM	0.06	0.04
WP1025	PEM	0.09	0.03
WP1026	PEM	0.01	Avoided
WP1027	PEM	0.52	0.31
WP1028	PEM	0.1	0.03
WP1029_PEM	PEM	0.01	Avoided
WP1029_PSS	PSS	0.03	Avoided
WP1030	PSS	0.03	Avoided
WP1031	PEM	0.02	0.01
WP1032	PEM	0.01	0.01
WP1033	PEM	0.1	Avoided
WP1034	PEM	0.15	Avoided
WP1035	PEM	0.01	Avoided
WP1036	PEM	0.04	0.02
WP1037	PSS	0.04	0.02
WP1038	PEM	0.06	0.06
WP1039	PEM	0.2	0.01
WP1040	PEM	0.04	0.03
WP1041	PEM	0.12	0.05
WP1042	PEM	0.01	Avoided
WP1043	PEM	0.01	0.01
WP1044	PEM	0.04	Avoided
WP1045	PEM	0.004	Avoided
WP1046	PEM	0.003	Avoided
WP1047	PEM	0.94	0.60
WP1048	PEM	0.04	Avoided
WP1049	PEM	0.15	0.02
WP1050_PEM	PEM	0.6	0.39
WP1050_PEM_C	PEM	0.1	0.06
WP1050_PEM_D	PEM	0.61	0.39
WP1050_PSS	PSS	0.08	0.05
WP1050_PSS_B	PSS	0.27	0.21
WP1051	PEM	0.06	0.02
WP1052	PEM	0.09	0.09
WP1053_E2EM	E2EM	3.03	2.59
WP1053_E2EM_B	E2EM	0.03	0.03
WP1053_E2SS	E2SS	0.1	Avoided
WP1053_E2USP	E2USP	0.59	0.49
WP1054_E2EM	E2EM	1.14	Avoided
WP1054_E2SS	E2SS	0.03	Avoided
WP1054_E2USP	E2USP	0.04	Avoided
WP1054_E2USP_B	E2USP	0.02	Avoided
WP1055_PEM	PEM	0.07	0.05
WP1055_PEM_B	PEM	0.03	0.01
WP1055_PSS	PSS	0.09	0.01
WP1056_PSS	PSS	0.99	0.65
WP1057_WET_PSS_DT	PSS	0.24	Avoided

Wetland ID	Vegetation Community Type	Acreage within 300-foot Survey Corridor	Acreage within Construction Workspace
WP1058_WET_PEM_DT	PEM	0.33	0.27
WP1059_WET_PEM_DT	PEM	0.39	0.32
WP1060_WET_PEM_DT	PEM	0.03	Avoided
Total PEM Wetlands	53	28.397	14.87
Total PSS Wetlands	8	1.77	0.94
Total E2EM Wetlands	7	9.93	3.03
Total E2SS Wetlands	2	0.13	0.00
Total E2USP Wetlands	6	0.91	0.60
Total	76	41.137	19.44

\*Refer to Appendix A for a description of construction workspaces and figures showing the construction workspaces.

Dominant vegetation within the PEM wetlands consisted of bushy seaside tansy (*Borrchia frutescens*), switchgrass (*Panicum virgatum*), big bluestem (*Andropogon gerardii*), saltmeadow cordgrass, smallflowered milkvetch (*Astragalus nuttallianus*), sand spikerush (*Eleocharis montevidensis*), woodrush flatsedge (*Cyperus entrerianus*), brownseed paspalum (*Paspalum plicatum*), shoregrass (*Monanthochloe littoralis*), green flatsedge (*Cyperus virens*), five-stamen tamarisk (*Tamarix chinensis*), coastal saltgrass, and eastern baccharis (*Baccharis halimifolia*).

Dominant vegetation within the PSS wetlands consisted of marsh primrose-willow (*Ludwigia palustris*), Chinese tallow (*Triadica sebifera*), sand spike-rush, broom-sedge bluestem (*Andropogon virginicus*), common buttonbush (*Cephalanthus occidentalis*), bigpod sesbania (*Sesbania herbacea*), coastal salt grass, Brazilian peppertree, and saw greenbrier (*Smilax bona-nox*).

Dominant vegetation within the E2EM wetlands consisted of saltmeadow cordgrass, bushy seaside tansy, saltgrass, shoregrass, and dwarf saltwort (*Salicornia bigelovii*).

Dominant vegetation within the E2SS wetlands consisted of five-stamen tamarisk, bushy seaside tansy, and Brazilian peppertree.

Wetlands identified as E2USP consist of mud flats or sand flats that are tidally influenced with sparsely vegetated surfaces that usually makes up less than five percent of total vegetative cover. Dominant vegetation within the E2USP mudflats consisted of saltgrass, bushy seaside tansy, and dwarf saltwort.

#### 5.2.2.1.2 WATERBODIES

Field survey identified 54 distinct onshore waterbody areas totaling 10.32 ac within the 300-foot study area (Refer to Appendix E for the WOUS delineation report and Table 5-2 below). Thirty-six waterbodies totaling 2.20 ac were designated as ephemeral stream, four waterbodies totaling 0.98 ac was designated intermittent stream, four waterbodies totaling 1.84 ac were designated perennial stream, six waterbodies totaling 4.69 ac were designated as natural ponds, and four waterbodies totaling 0.61 ac were designated as manmade ponds.

**Table 5-2: Proposed Project Onshore Waterbodies**

Waterbody ID	Classification	Acreage within 300-foot Survey Corridor	Acres within Construction Workspace
SP1001	Ephemeral	0.15	Avoided
SP1002	Ephemeral	0.03	0.01
SP1003	Ephemeral	0.03	0.01
SP1004	Perennial	0.88	Avoided
SP1005	Ephemeral	0.02	0.01
SP1006	Ephemeral	0.13	0.01

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Waterbody ID	Classification	Acreage within 300-foot Survey Corridor	Acres within Construction Workspace
SP1007	Intermittent	0.21	0.03
SP1008	Ephemeral	0.01	Avoided
SP1009	Ephemeral	0.02	0.01
SP1010	Ephemeral	0.02	Avoided
SP1011	Ephemeral	0.02	Avoided
SP1012	Perennial	0.19	0.08
SP1013	Ephemeral	0.04	0.02
SP1014	Ephemeral	0.01	0.01
SP1015	Ephemeral	0.04	0.02
SP1016	Ephemeral	0.02	0.01
SP1017	Ephemeral	0.02	0.01
SP1018	Perennial	0.17	0.07
SP1019	Ephemeral	0.01	0.01
SP1020	Ephemeral	0.04	0.02
SP1021	Ephemeral	0.03	0.02
SP1022	Ephemeral	0.42	Avoided
SP1023	Ephemeral	0.01	0.01
SP1024	Ephemeral	0.01	0.01
SP1025	Ephemeral	0.005	0.01
SP1026	Ephemeral	0.005	0.01
SP1027	Ephemeral	0.02	0.01
SP1028	Ephemeral	0.33	Avoided
SP1029	Ephemeral	0.07	Avoided
SP1030	Ephemeral	0.06	Avoided
SP1031	Perennial	0.6	Avoided
SP1032	Ephemeral	0.02	0.02
SP1033	Intermittent	0.46	Avoided
SP1034	Ephemeral	0.03	0.01
SP1035	Ephemeral	0.01	0.01
SP1036	Intermittent	0.19	0.07
SP1037	Ephemeral	0.05	0.02
SP1038	Ephemeral	0.09	0.03
SP1039	Ephemeral	0.01	0.01
SP1040	Ephemeral	0.02	0.01
SP1041	Ephemeral	0.24	0.01
SP1042	Ephemeral	0.01	Avoided
SP1043	Ephemeral	0.15	0.06
SP1044	Intermittent	0.12	0.10
OWP1001	Manmade Pond	0.03	Avoided
OWP1002	Natural Pond	1.88	0.27
OWP1003	Manmade Pond	0.06	Avoided
OWP1004	Manmade Pond	0.35	Avoided
OWP1005	Natural Pond	0.02	Avoided
OWP1006	Natural Pond	0.21	0.05
OWP1007	Manmade Pond	0.17	0.04
OWP1009	Natural Pond	0.06	Avoided
OWP1008	Natural Pond	0.02	Avoided

Waterbody ID	Classification	Acreage within 300-foot Survey Corridor	Acres within Construction Workspace
OWP1010	Natural Pond	2.5	0.74
Total Ephemeral Stream	36	2.20	0.60
Total Intermittent Stream	4	0.98	0.08
Total Perennial Stream	4	1.84	0.02
Total Natural Pond	6	4.69	1.09
Total Manmade Pond	4	0.61	0.00
Total	54	10.32	2.53

## 5.2.2.2 Inshore

### 5.2.2.2.1 WETLAND

Field surveys identified 43 distinct inshore wetland areas totaling 75.827 ac within the 500-foot Project study area (Refer to Appendix F for the Inshore Wetland Delineation Report, and Table 5-3 below). Eleven wetlands totaling 25.610 ac were mapped as PEM, one wetland totaling 3.399 ac was mapped as PSS, 22 wetlands totaling 24.880 ac were mapped as E2EM, eight wetlands totaling 9.485 ac were mapped as E2SS, and one wetland totaling 12.452 ac was mapped as estuarine intertidal unconsolidated shore (E2US).

**Table 5-3: Proposed Project Inshore Wetland Characteristics**

Wetland ID	Vegetation Community Type	Acreage within 500-foot Survey Corridor	Acreage within Construction Workspace
WA001	PEM	0.460	Avoided
WA002	PEM	0.445	Avoided
WA003	PEM	0.253	0.020
WA004	E2SS	1.135	Avoided <sup>†</sup>
WA005	E2EM	1.961	Avoided <sup>†</sup>
WA006	E2EM	14.528	1.56
WA006	E2SS	4.573	1.35
WA007	E2EM	0.563	Avoided
WA008	E2EM	0.463	0.46
WA009	E2EM	0.056	0.06
WA010	E2EM	0.293	0.29
WA011	PEM	0.719	Avoided
WA012	E2EM	2.176	0.57
WA013	PEM	5.538	1.02
WA014	E2SS	0.212	Avoided <sup>†</sup>
WA015	E2EM	1.968	0.55
WA016	PEM	0.832	0.43
WA017	PEM	0.053	Avoided
WA018	PEM	0.342	Avoided
WA019	PEM	0.415	Avoided
WA020	E2SS	0.024	Avoided
WB002	E2EM	0.510	Avoided
WB003	PSS	3.399	1.95
WB004	E2EM	0.032	Avoided
WB005	E2SS	0.595	Avoided

Wetland ID	Vegetation Community Type	Acreage within 500-foot Survey Corridor	Acreage within Construction Workspace
WB006	E2SS	0.226	Avoided
WB007	E2EM	0.064	Avoided
WB008	E2EM	0.087	Avoided
WB009	E2EM	0.038	Avoided
WB010	E2EM	0.013	Avoided
WB011	E2EM	0.077	Avoided
WB012	E2EM	0.133	Avoided
WB013	E2EM	0.248	Avoided
WB013	E2SS	0.638	Avoided
WB014	E2EM	0.055	Avoided
WB014	E2SS	2.082	Avoided
WB015	E2EM	0.429	0.55
WB016	E2EM	0.074	0.07
WB018	E2EM	1.096	Avoided
WC001	PEM	14.410	3.21
WC002	E2EM	0.014	Avoided
WC003	E2US	12.452	Avoided
WC004	PEM	2.142	Avoided <sup>†</sup>
<i>Total PEM Wetlands</i>	<i>11</i>	<i>25.610</i>	<i>4.68</i>
<i>Total PSS Wetlands</i>	<i>1</i>	<i>3.399</i>	<i>1.95</i>
<i>Total E2EM Wetlands</i>	<i>22</i>	<i>24.880</i>	<i>3.96</i>
<i>Total E2SS Wetlands</i>	<i>8</i>	<i>9.485</i>	<i>1.35</i>
<i>Total E2US Wetlands</i>	<i>1</i>	<i>12.452</i>	<i>Avoided</i>
<b>Total</b>	<b>43</b>	<b>75.827</b>	<b>11.94</b>

<sup>†</sup> Feature avoided using HDD.

The inshore herbaceous wetland community consists of a prevalence of hydrophytic, non-woody vegetation less than 3 ft. in height and is found in depressional areas within the Proposed Project area. Dominant herbaceous species include sea ox-eye (*Borrchia frutescens*), shore grass (*Distichlis littoralis*), black mangrove (*Avicennia germinans*), woody saltwort (*Salicornia depressa*), saltwater cord grass (*Spartina alterniflora*), shoreline sea-purslane (*Sesuvium portulacastrum*), turtleweed (*Batis maritima*), broad-leaf cat-tail (*Typha latifolia*), three-square (*Schoenoplectus pungens*), coastal saltgrass (*Distichlis spicata*), gulf cord grass (*Spartina spartinae*), common spike-rush (*Eleocharis palustris*), Carolina desert-thorn (*Lycium carolinianum*), dwarf saltwort (*Salicornia bigelovii*), salt-meadow cord grass (*Spartina patens*), Roemer's rush (*Juncus roemerianus*), and bushy bluestem (*Andropogon glomeratus*).

The inshore scrub/shrub wetland community consists of a prevalence of hydrophytic woody species 3 to 20 feet in height and less than 3 inches in diameter at breast height. The dominant shrubs and sapling species include black mangrove and Brazilian peppertree (*Schinus terebinthifolia*).

#### 5.2.2.2.2 WATERBODIES

Field surveys identified 12 distinct inshore waterbody areas totaling 13.033 ac within the 500-foot Project study area (Appendix F for the Inshore Wetland Delineation Report, and Table 5-4 below). Three waterbodies totaling 0.486 ac were designated as pond features, four waterbodies totaling 0.101 ac were designated as ephemeral stream, one waterbody totaling 0.107 ac was designated intermittent stream, and four waterbodies totaling 12.339 ac were designated perennial stream. Also 6.757 ac of BAY and 4.941 ac of the GOM are located within the Proposed Project study area.

**Table 5-4: Proposed Project Inshore Waterbodies**

Waterbody ID	Classification	Acreage within 500-foot Survey Corridor	Acreage within Construction Workspace
PA001	Pond	0.091	0.09
PB001	Perennial Stream	0.196	0.12
PB002	Pond	0.053	0.05
PB003	Pond	0.342	Avoided
SA001	Ephemeral Stream	0.027	Avoided
SA002	Ephemeral Stream	0.007	0.01
SA003	Ephemeral Stream	0.019	0.01
SA005	Ephemeral Stream	0.048	0.05
SA006	Intermittent Stream	0.107	0.07
SA007	Perennial Stream	0.445	0.435
SC001	Perennial Stream (BAY)	6.757	Avoided <sup>†</sup>
SC002	Perennial Stream (Gulf of Mexico)	4.941	Avoided <sup>†</sup>
<i>Total Ephemeral Stream</i>	<i>4</i>	<i>0.101</i>	<i>0.07</i>
<i>Total Intermittent Stream</i>	<i>1</i>	<i>0.107</i>	<i>0.07</i>
<i>Total Perennial Stream</i>	<i>4</i>	<i>12.339</i>	<i>0.57</i>
<i>Total Pond</i>	<i>3</i>	<i>0.486</i>	<i>0.14</i>
<b>Total</b>	<b>12</b>	<b>13.033</b>	<b>0.85</b>

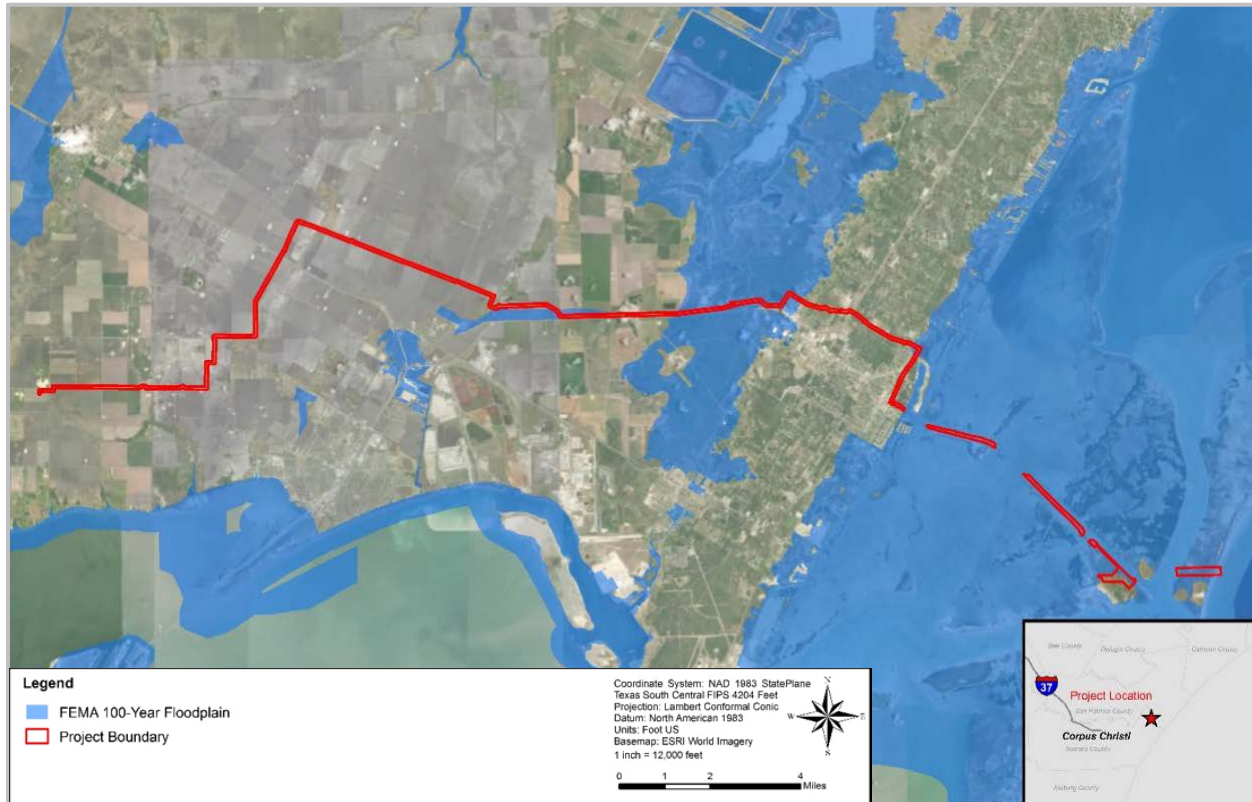
<sup>†</sup> Feature avoided using HDD.

### 5.2.2.3 Floodplains

The current FEMA FIRMs for the Proposed Project area were accessed and reviewed using the FEMA website (FEMA 2019). Refer to Figure 5-2 for the FEMA Flood Zone Map for the portions of the Proposed Project located within Special Flood Hazard Areas (SFHAs). FEMA FIRM panels No. 48409C0465E (effective date November 4, 2016), 48409C0470E (effective date November 4, 2016), 48007C0350G (effective date February 17, 2016), and 48007C0400G (effective date February 17, 2016) depict 415.11 ac (37.1 percent of the action area) within the 100-year flood zone classified as having a 1 percent-annual-chance flood and 705.28 ac (62.9 percent of the action area) within Zone X classified as having a 0.2 percent-annual-chance flood (FEMA 2019).



Figure 5-2: Bluewater SPM Proposed Project Flood Zone Map



### 5.2.3 Proposed Project Construction Impacts

Construction methods and temporary workspaces for the Proposed Project are described in detail in Appendix A: Construction Operation and Decommissioning Procedures. Attachment 1 of Appendix A also contains detailed maps of the construction workspaces and associated wetland and waterbody impact areas.

#### 5.2.3.1 Onshore

Construction of the proposed onshore pipeline infrastructure would result in temporary impacts to approximately 14.87 ac of PEM wetlands, permanent conversion of 0.94 ac of PSS wetlands, temporary impact to 3.03 ac of E2EM wetlands, and temporary impact to 0.60 ac of E2USP wetlands. Impacts are detailed in Table 5-1 and 5-2 above. Temporary impacts to wetlands are those associated with short-term, minor, adverse activities that may disturb the wetland structure and function present but would be allowed to naturally revegetate and recover. Impacts would include temporary vegetation and soil impacts associated with pipeline trenching, placement of side-cast soil into the wetlands, placement of timber mats within the wetlands for construction equipment crossing, and removal of the timber mats once the pipeline has been constructed.

Permanent impacts occur to scrub shrub wetlands due to the conversion of these areas to emergent wetland following the clearing of the areas woody vegetation for the installation of the proposed pipeline infrastructure.

Construction of the proposed onshore pipelines would result in temporary impacts to 163.47 ac (20.11-percent of onshore study area) of FEMA flood zone. Temporary impacts to flood zones are those associated with short-term minor adverse activities that may disturb the topography and present floodplain function. After construction, all portions of the impacted ROW, including wetlands and floodplains, are to be restored to preconstruction conditions and contours. Therefore, there will be no permanent or long-term impacts to floodplain.



### 5.2.3.2 Inshore

Construction of the proposed inshore pipeline infrastructure would result in temporary impacts to approximately 4.68 ac of PEM wetlands, permanent conversion of 1.95 ac of PSS wetlands, temporary impacts to 3.39 ac of E2EM wetlands, permanent impact to 0.57 ac of E2EM wetlands (due to construction of the Harbor Island Booster Station) and 1.35 ac of E2SS wetlands. Impacts are detailed in Table 5-3 and 5-4 above. Temporary impacts to wetlands are those associated with short-term, minor, adverse activities that may disturb the wetland structure and function present but would be allowed to naturally revegetate and recover. Impacts would include temporary vegetation and soil impacts associated with pipeline trenching, placement of side-cast soil into the wetlands, placement of timber mats within the wetlands for construction equipment crossing, and removal of the timber mats once the pipeline has been constructed.

Permanent impacts occur to scrub shrub wetlands due to the conversion of these areas to emergent wetland for the installation of the proposed inshore pipeline infrastructure, and the necessary site buildup to support the installation of the 19-acre Harbor Island Booster Station, which will be a permanent component of the project.

Construction of the proposed inshore pipelines would result in temporary impacts to 50.33 ac (16.37-percent of inshore study area) of FEMA flood zone. Temporary impacts to flood zones are those associated with short-term minor adverse activities that may disturb the topography and present floodplain function. After construction, all portions of the impacted ROW, including wetlands and floodplains, are to be restored to preconstruction conditions and contours.

The Harbor Island Booster Station will be constructed in an area prone to storm surge flooding. The booster station property will be elevated using fill material, therefore permanently impacting 19 ac of surge floodplain.

### 5.2.3.3 Offshore

Offshore construction will not impact wetlands or WOUS. Offshore construction will temporarily impact approximately 250 ac of marine subtidal unconsolidated bottom (M1UB) habitat within the construction corridor as a result of pipeline installation via jetting techniques.

## 5.2.4 Proposed Project Operation Impacts

### 5.2.4.1 Onshore

Operation of the Proposed Project onshore pipelines would result in long-term, minor, adverse impacts. Post construction maintenance and monitoring of the entire action area could generate impacts related to turbidity and sediments. Though the time frame is anticipated to impact the action area for greater than (>) 20 years, the effect of these activities is projected to remain minor by implementing proper operating procedures, erosion and sediment controls, and best management practices (BMP).

### 5.2.4.2 Inshore

Operation of the proposed inshore pipelines would result in long-term, minor, adverse impacts. Post construction maintenance and monitoring of the entire action area could generate impacts related to turbidity and sediments. Though the time frame is anticipated to impact the action area for greater than (>) 20 years, the effect of these activities is projected to remain minor by implementing proper operating procedures, erosion and sediment controls, and BMPs.

Accidental fuel spills are unlikely but still possible during operation of the Proposed Project. In the event of a fuel spill, the associated impacts are projected to be temporary and minor through the implementation of the SPCC Plan detailing emergency procedures for addressing accidental releases and spills during construction and releases.

#### 5.2.4.3 Offshore

Normal project offshore operation will not impact wetlands or WOUS.

### 5.2.5 Proposed Project Decommissioning Impacts

#### 5.2.5.1 Onshore

Decommissioning of the proposed onshore pipelines would not result in any impacts, as all onshore materials will be abandoned in place according to industry standard practices.

#### 5.2.5.2 Inshore

Decommissioning of the proposed inshore pipelines would not result in any impacts, as all inshore materials will be abandoned in place.

#### 5.2.5.3 Offshore

Offshore decommissioning will temporarily impact approximately 250 ac of M1UB habitat within the along the offshore pipeline as a result of pipeline and deepwater port (DWP) removal.

## 5.3 Alternative Project

### 5.3.1 Alternative Project Area

An alternative route assessment was considered in which to construct approximately 56.48 miles of pipeline infrastructure as well as a booster station (Alternative Project) within the State of Texas that continues into the GOM (Figure 5-3). The Alternative Project is comprised of three segments: Onshore, Inshore, and Offshore.

Onshore Project components include approximately 23.10 miles of two (2) new 30-inch-diameter crude oil pipelines extending from the landward side approximately 2.5 miles north of Nueces Bay to the MHT line of the Corpus Christi Bay located south of Ingleside in San Patricio County, Texas.

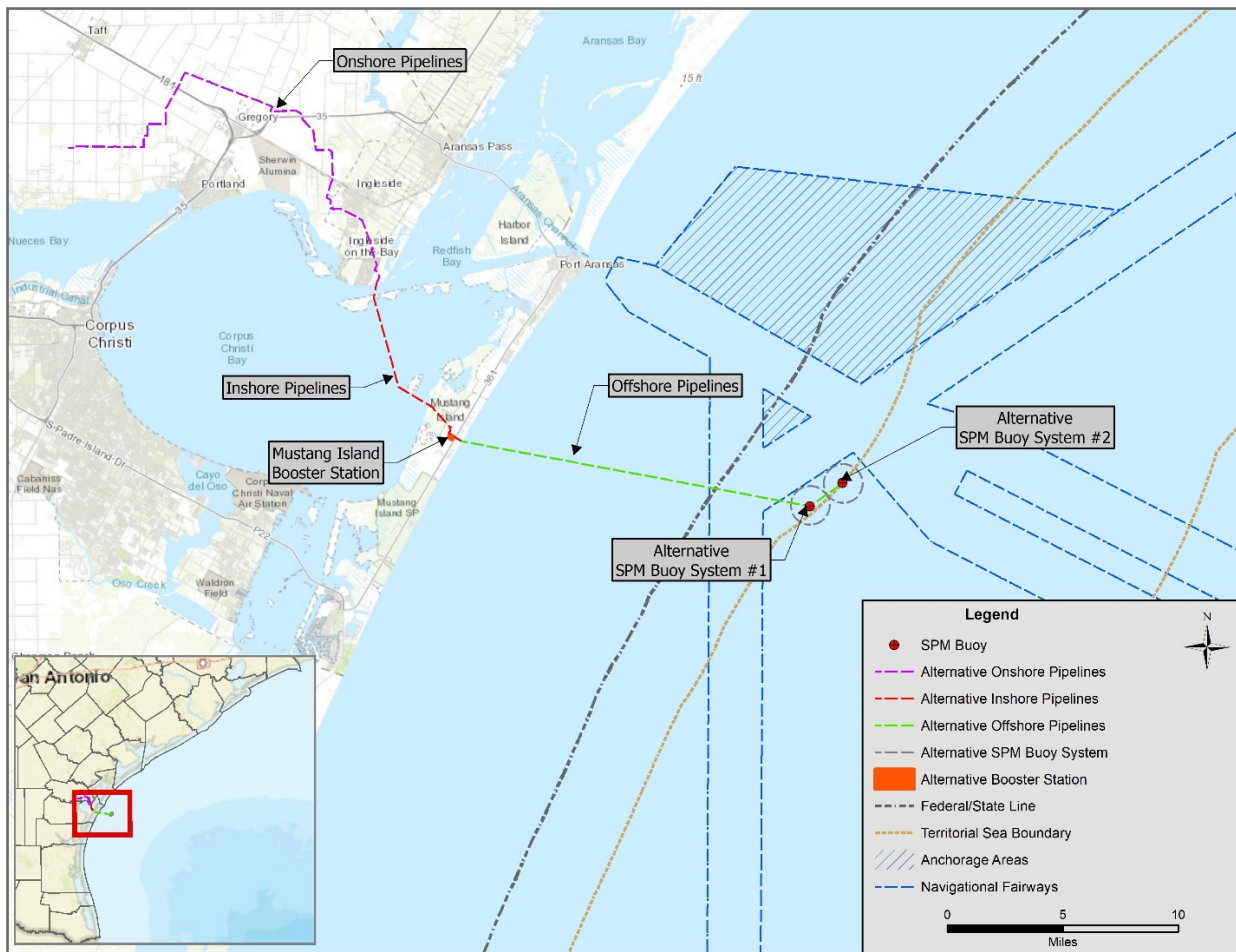
Inshore components associated with the Alternative Project are defined as those components located between the northern Corpus Christi Bay MHT line and the MHT line located at the interface of Mustang Island and the GOM. Inshore Project components includes approximately 8.45 miles of two (2) new 30-inch-diameter crude oil pipelines, and an approximate 19-acre booster station located on Mustang Island.

Offshore components associated with the Alternative Project are defined as those components located seaward of the MHT line located at the interface of Mustang Island and the GOM. The Offshore Project components include approximately 17.07 miles of two (2) new 30-inch-diameter crude oil pipelines extending to two (2) SPM buoy systems.

### 5.3.2 Alternative Project Existing Conditions

An Alternative Project Desktop Analysis (Appendix G) provide a summary of the relevant environmental resources (focusing on waterbodies, wetlands and floodplains) and their anticipated constraints for the Alternative Project within a 0.5-mile-radius of the Alternative Project alignment. The Alternative Project area was assessed using the U.S. Geological Survey (USGS) National Hydrography Dataset (NHD) and U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) data. Tables 5-5 through 5-8 are based upon a desktop assessment only and have not been field verified.

Figure 5-3: Bluewater SPM Alternative Project Vicinity Map



According to NWI data, there are approximately 221 ac of wetlands within the review corridor and 6.5 ac of wetlands within a hypothetical 120-foot-wide ROW centered on the segment alignments. The NWI wetlands are primarily located within gulf coastal prairie rangelands, floodplain crossings, and the Mustang Island crossing. In general, NWI wetlands within the project area fall into four categories: estuarine intermittently exposed intertidal flats (E2US), estuarine intertidal emergent wetlands (E2EM), palustrine scrub/shrub (PSS) wetlands, and palustrine emergent (PEM) wetlands. The NWI data also indicates some riverine and freshwater pond features which are included in the waterbodies section. Due to the potential inaccuracy of the NWI data, it is anticipated that the actual number of wetland crossings would differ. All wetland crossings would be delineated during field surveys. Tables 5-5 and 5-7 summarize wetland crossings by project segment.

Waterbodies were identified using the NHD dataset for the Alternative Project area. The NHD is a nationwide source for waterbody information, but it is not always accurate and may not include all potential waterbody crossings. According to the NHD and NWI, there are 128 streams and waterbodies within the review corridor. The Alternative Project workspace is estimated to cross a total of 14 streams and other waterbodies (estuarine and marine deepwater, riverine, and fresh-water pond features). Tables 5-6 and 5-8 summarizes the estimated waterbody crossings by Project segment. Due to the inaccuracy of the NHD and NWI, it is anticipated that more stream crossings would be encountered. All stream crossings would be delineated during eventual field surveys.

### 5.3.2.1 Onshore

#### 5.3.2.1.1 WETLANDS

**Table 5-5: Alternative Project Onshore Wetland Characteristics**

Wetland Type	Within Review Corridor		Within Construction Workspace	
	Number of Crossings	Acreage	Number of Crossings	Acreage
E2US	2	41.569	0	0
E2EM	0	0	0	0
PSS	3	3.624	1	0.762
PEM	616	199.609	25	2.531
<b>Total Onshore</b>	<b>621</b>	<b>244.802</b>	<b>26</b>	<b>3.293</b>

#### 5.3.2.1.2 WATERBODIES

**Table 5-6: Alternative Project Onshore Waterbody Characteristics**

Waterbody Type	Within Review Corridor		Within Construction Workspace	
	Number of Crossings	Feet/Acreage	Number of Crossings	Feet/Acreage
Perennial	2	5,901 Feet	1	122 Feet
Canal/Ditch	9	42,168 Feet	3	2672 Feet
Other Waterbodies (Ponds/Lakes)	56	316 Acres	5	1 Acres
<b>Total Onshore</b>	<b>67</b>	<b>48,069 Feet 316 Acres</b>	<b>9</b>	<b>2,794 Feet 1 Acres</b>

### 5.3.2.2 Inshore

#### 5.3.2.2.1 WETLANDS

**Table 5-7: Alternative Project Inshore Wetland Characteristics**

Wetland Type	Within Review Corridor		Within Construction Workspace	
	Number of Crossings	Acreage	Number of Crossings	Acreage
E2US	19	84.286	3	0.356
E2EM	26	120.337	0	0
PSS	0	0	0	0
PEM	15	171.451	2	3.177
<b>Total Inshore</b>	<b>60</b>	<b>376.074</b>	<b>5</b>	<b>3.533</b>

5.3.2.2.2 WATERBODIES

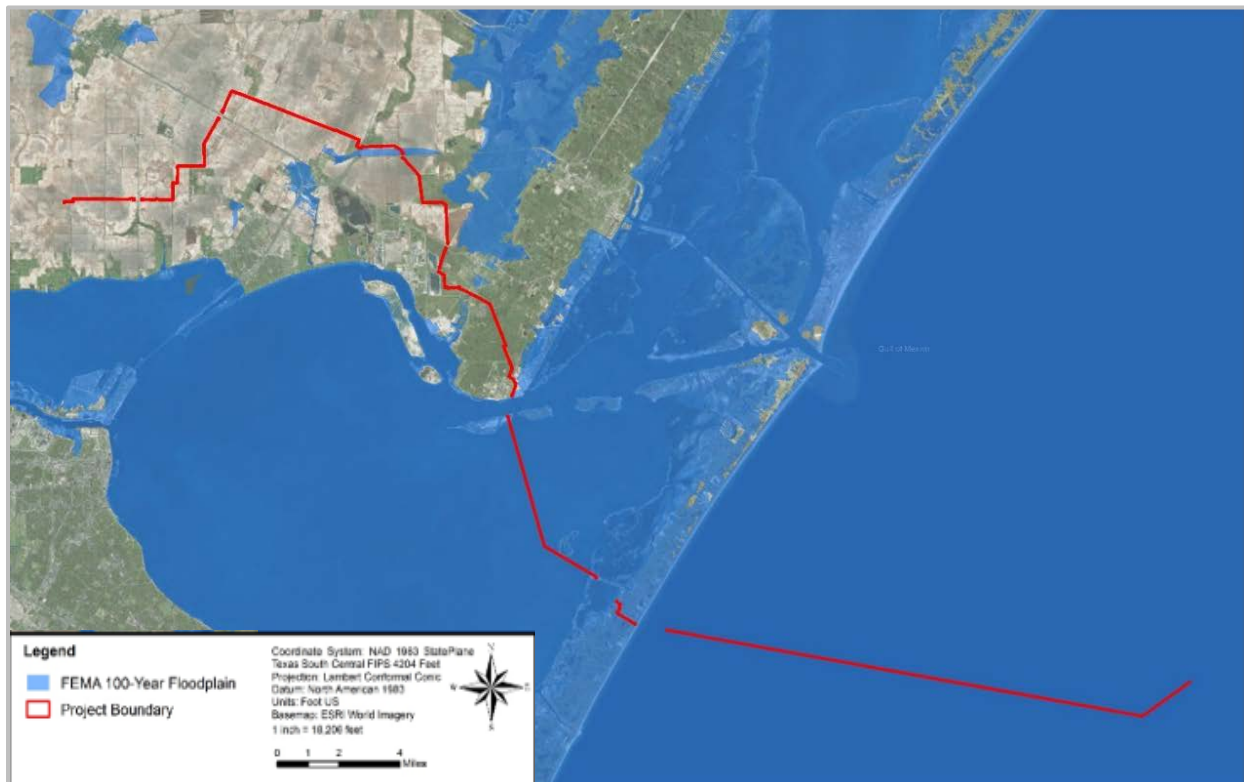
**Table 5-8: Alternative Project Inshore Waterbody Characteristics**

Waterbody Type	Within Review Corridor		Within Construction Workspace	
	Number of Crossings	Acreage	Number of Crossings	Acreage
Other Waterbodies (Ponds/Lakes)	58	4,556	4	50

5.3.2.3 Floodplains

The current FEMA FIRM for the Alternative Project area were accessed and reviewed using the FEMA website (FEMA 2019). Refer to Figure 5-4 for the FEMA Flood Zone Map for the portions of the Alternative Project located within Special Flood Hazard Areas (SFHAs). FEMA FIRM panels No. 48409C0465E (effective date November 4, 2016), 48409C0605E (effective date November 4, 2016), 48409C0625E (effective date November 4, 2016), and 4854640335S (effective date September 17, 1992) depict 557.42 ac (40.1 percent of the action area) within the 100-year flood zone classified as having a 1 percent-annual-chance flood and 334.0 ac (59.9 percent of the action area) within Zone X classified as having a 0.2 percent-annual-chance flood (FEMA 2019).

**Figure 5-4: Bluewater SPM Alternative Project Flood Zone Map**



5.3.3 Alternative Project Impacts

An Environmental Constraints Analysis for the Alternative Route Assessment of the Bluewater SPM has been included in Appendix G. The extent of WOUS impacts have been approximated along this alternative route based on a detailed desktop analysis. Construction procedures and workspace areas for the Alternative Project are detailed in

Appendix A which also includes detailed figures of the Alternative Project workspaces and wetland impacts as Attachment 2.

### 5.3.3.1 Construction

#### 5.3.3.1.1 ONSHORE

Construction of the Alternative Project pipeline would result in temporary impacts to approximately 2.531 ac of PEM wetlands and 0.762 ac of PSS wetlands, although these values have not been field verified. Temporary impacts to wetlands are those associated with short-term, minor, adverse activities that may disturb the wetland structure and function present but would be allowed to naturally revegetate and recover. Impacts would include temporary vegetation and soil impacts associated with pipeline trenching, placement of side-cast soil into the wetlands, placement of timber mats within the wetlands for construction equipment crossing, and removal of the timber mats once the pipeline has been constructed.

Construction of the onshore pipelines would result in temporary impacts to 5.1 ac (1.5-percent of onshore study area) of FEMA flood zone. Temporary impacts to flood zones are those associated with short-term minor adverse activities that may disturb the topography and present floodplain function. After construction, all portions of the impacted ROW, including wetlands and floodplains, are to be restored to preconstruction conditions and contours.

#### 5.3.3.1.2 INSHORE

Construction of the Alternative Project pipeline would result in temporary impacts to approximately 3.177 ac of PEM wetlands and 0.356 ac of E2US wetlands. The inshore pipeline also crosses Corpus Christi Bay which would result in approximately 50 ac of temporary estuarine bay bottom impacts. Temporary impacts to wetlands are those associated with short-term, minor, adverse activities that may disturb the present wetland structure and function, but would be allowed to naturally revegetate and recover. Impacts would include temporary vegetation and soil impacts associated with pipeline trenching, placement of side-cast soil into the wetlands, placement of timber mats within the wetlands for construction equipment crossing, and removal of the timber mats once the pipeline has been constructed.

Construction of the inshore pipelines would result in temporary impacts to 70.7 ac (100-percent of inshore study area) of FEMA flood zone. Temporary impacts to flood zones are those associated with short-term minor adverse activities that may disturb the topography and present floodplain function. After construction, all portions of the impacted ROW, including wetlands and floodplains, are to be restored to preconstruction conditions and contours.

#### 5.3.3.1.3 OFFSHORE

Offshore construction will not impact wetlands or WOUS. Offshore construction will temporarily impact M1UB habitat within the construction corridor.

### 5.3.3.2 Operation

#### 5.3.3.2.1 ONSHORE

Operation of the alternative onshore pipelines would result in long-term, minor, adverse impacts. Post construction maintenance and monitoring of the entire action area could generate impacts related to turbidity and sediments. Though the time frame is anticipated to impact the action area for greater than (>) 20 years, the effect of these activities is projected to remain minor by implementing proper operating procedures, erosion and sediment controls, and BMP.



#### 5.3.3.2.2 INSHORE

Operation of the alternative inshore pipelines would result in long-term, minor, adverse impacts. Post construction maintenance and monitoring of the entire action area could generate impacts related to turbidity and sediments. Though the time frame is anticipated to impact the action area for greater than (>) 20 years, the effect of these activities is projected to remain minor by implementing proper operating procedures, erosion and sediment controls, and BMPs.

Accidental fuel spills are unlikely but still possible during operation of the Alternative Project. In the event of a fuel spill, the associated impacts are projected to be temporary and minor through the implementation of the SPCC Plan detailing emergency procedures for addressing accidental releases and spills during construction and releases.

#### 5.3.3.2.3 OFFSHORE

Offshore construction of the pipeline infrastructure will temporarily impact M1UB habitat within the along the offshore pipeline.

### 5.3.3.3 Decommissioning

#### 5.3.3.3.1 ONSHORE

Decommissioning of the alternative onshore pipelines would result in short-term, minor, adverse impacts similar to installation, as all materials will be removed. Similar measures used to minimize impacts during construction will be implemented.

#### 5.3.3.3.2 INSHORE

Decommissioning of the alternative inshore pipelines would result in short-term, minor, adverse impacts similar to installation, as all materials will be removed. Similar measures used to minimize impacts during construction will be implemented.

#### 5.3.3.3.3 OFFSHORE

Offshore decommissioning of the pipeline infrastructure and DWP will temporarily impact M1UB habitat within the offshore pipelines and at the DWP location.

## 5.4 Summary of Impacts

Wetland impacts for the Proposed Project construction would include temporary impacts to approximately 19.55 ac of PEM wetlands, permanent conversion of 2.89 ac of PSS wetlands, permanent impacts to 0.57 ac of E2EM wetland and temporary impacts to 6.42 ac of E2EM wetlands, permanent conversion of 1.35 ac of E2SS wetlands, and temporary impact to 0.60 ac of E2US wetlands. Waterbody impacts for the Proposed Project include temporary impacts to 0.78 ac of waterbodies and 1.23 ac of pond.

Temporary impacts are those associated with short-term activities that may disturb the wetland, waterbody, and/or floodplain structure and function present. These impacts are not representative of direct losses but reflect temporary disturbance. Mitigation would be required to restore these areas of temporary impacts on conditions reflecting a stable post-construction environmental setting. This restoration activity would require monitoring of the post-construction areas that were restored for several seasons to ensure that wetland functions and values are consistent with the mitigation plan for the area are being fulfilled. In areas of temporary disturbance, seeding and mulching would be used to enhance restoration and recovery.

Wetland and waterbody impacts for the Alternative Project are based upon the results of a desktop analysis. This assessment indicates the Alternative project may temporarily impact 5.708 ac of PEM wetlands, 0.762 ac of PSS



wetlands, and 0.356 ac of E2US wetlands. The Alternative Project will also impact 50 ac of estuarine bay bottom due to the trenching of pipeline across Corpus Christi Bay. Field verification would be required to determine final impacts.

The Project will be constructed in compliance with all USACE conditions for authorization under an Individual Permit. A USACE permit application had been prepared and submitted for the Proposed Project. As such, the Proposed Project will undergo a complete and thorough review by all pertinent state and federal agencies to obtain authorization from the USACE Galveston District. Impacts to WOUS, including wetlands would need to be avoided to the extent practicable, and adequately mitigated by the Applicant through design modifications and implementation of mitigation measures recommended by Federal and State agencies. For those unavoidable impacts, the Applicant has proposed to offset losses to aquatic function through the implementation of a mitigation plan. A conceptual mitigation plan is provided as Appendix H. A summary of impacts for the Proposed Project and Alternative Project is presented in Table 5-9 below.

**Table 5-9: Summary of Impacts**

		Construction	Operation	Decommissioning
<b>Proposed Project</b>	<b>Onshore</b>	Potential temporary, minor impacts to wetlands due to trenching, sidecasting of soils, placement of timber mats, and removal of timber mats during construction. Potential temporary, minor impacts to wetlands due to accidental fuel spills from construction equipment	Potential permanent, minor impacts to wetlands due to maintenance mowing of the right-of-way.	No impacts as onshore components would be abandoned in place following industry standard practices.
	<b>Inshore</b>	Potential temporary, minor impacts to wetlands due to trenching, sidecasting of soils, placement of timber mats, and removal of timber mats during construction. Potential temporary, minor impacts to wetlands due to accidental fuel spills from construction equipment	Potential permanent, minor impacts to wetlands due to maintenance mowing of the right-of-way. Potential temporary, minor impacts to wetlands due to accidental fuel spills from facility equipment.	No impacts as onshore components would be abandoned in place following industry standard practices.
	<b>Offshore</b>	Offshore construction will not impact wetlands or Waters of the US. Offshore construction will temporarily impact Marine Subtidal Unconsolidated Bottom (M1UB) habitat within the construction corridor.	Offshore operation will not impact wetlands or Waters of the US.	Offshore decommissioning will not impact wetlands or Waters of the US. Offshore decommissioning will temporarily impact Marine Subtidal Unconsolidated Bottom (M1UB) habitat within the construction corridor.
<b>Alternative Project</b>	<b>Onshore</b>	Potential temporary, minor impacts to wetlands due to trenching, sidecasting of soils, placement of timber mats, and removal of timber mats during construction. Potential temporary, minor impacts to wetlands due to accidental fuel spills from construction equipment	Potential permanent, minor impacts to wetlands due to maintenance mowing of the right-of-way.	No impacts as onshore components would be abandoned in place following industry standard practices.
	<b>Inshore</b>	Potential temporary, minor impacts to wetlands due to trenching, sidecasting of soils, placement of timber mats, and removal of timber mats during construction. Potential temporary, minor impacts to wetlands due to accidental fuel spills from construction equipment. *Temporary impact to estuarine bay bottom	Potential permanent, minor impacts to wetlands due to maintenance mowing of the right-of-way. Potential temporary, minor impacts to wetlands due to accidental fuel spills from facility equipment.	No impacts as onshore components would be abandoned in place following industry standard practices.
	<b>Offshore</b>	Offshore construction will not impact wetlands or Waters of the US. Offshore construction will temporarily impact Marine Subtidal Unconsolidated Bottom (M1UB) habitat within the construction corridor.	Offshore operation will not impact wetlands or Waters of the US.	Offshore decommissioning will not impact wetlands or Waters of the US. Offshore decommissioning will temporarily impact Marine Subtidal Unconsolidated Bottom (M1UB) habitat within the construction corridor.

\*indicates an environmental consequence that is significantly more impactful as compared to the other project alternative.

## 5.5 Mitigation of Impacts

Construction of the Proposed Project will employ BMPs during Project construction activities, including the clearing of vegetation, excavating the pipeline trench, welding and laying the pipe, backfilling the pipeline trench, re-establishing preconstruction contours, and restoring permanent vegetation. After clearing is completed but before grading begins, erosion/sediment control measures will be installed where necessary to minimize runoff and sedimentation into adjacent lands, wetlands, waterbodies, roads, or other areas. After completion of construction, the Project site will be graded, and disturbed areas will be revegetated.

Impacts have been avoided and minimized, to the extent practicable, by varying the construction corridor to reduce the temporary impacts to wetlands, as well as the use of HDDs to reduce the impacts to streams and PEM, PSS, E2EM, E2SS, and E2US wetlands.

The following BMPs will be utilized to further reduce the potential impacts to wetlands:

- Employ temporary erosion/sediment controls including but not limited to silt fencing, matting, and hay bales. These controls are designed to keep sediment from flowing off the Project site and into places where it may harm the environment. These temporary erosion controls will be properly placed and maintained throughout construction and will be reinstalled as necessary until they are replaced by permanent erosion/sediment controls or until construction activities have ceased and permanent vegetation has become established.
- Prior to construction and operation, prepare a SPCC Plan and Facility Response Plan detailing emergency procedures for addressing accidental releases and spills during construction and releases.
- During construction, implement a SPCC for Construction to prevent spills, leaks, and other releases of hazardous materials that could impact onshore water quality. A Stormwater Pollution Prevention Plan (SWPPP) will also be implemented to minimize impacts on surface waters.
- As part of Project restoration, all portions of the pipeline ROW impacted, including wetlands and floodplains, will be restored to preconstruction conditions and contours.
- Work with the USACE and other State and local agencies during the permitting process to ensure wetlands are protected during construction and operation of the Project.
- Minimize impacts to wetlands, waterbodies, and SFHAs by utilizing HDD on the shorelines of Lydia Ann Island, Harbor Island, and Stedman Island. If wetland and waterbody impacts cannot be avoided, impacts to wetlands should be minimized and fully mitigated per the requirements of the USACE.

In addition to the BMPs proposed above, a Best Management Practice plan for the Proposed Project has been prepared and can be referenced as Appendix V.

Compensatory mitigation for wetland and WOUS impacts may be required by the USACE. A conceptual mitigation plan has been prepared for the Proposed Project and can be referenced as Appendix H.

## 5.6 References

Federal Emergency Management Agency (FEMA). 2019. FEMA Flood Map Service Center. Available at: <https://msc.fema.gov/portal>. Accessed on May 2019.

U.S. Army Corps of Engineers (USACE). 1987. *U.S. Army Corps of Engineers Wetlands Delineation Manual*. Technical Report Y-87-1. Vicksburg, Mississippi: U.S. Army Engineers Waterways Experiment Station Environmental Laboratory.

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