

# DEEPWATER PORT LICENSE APPLICATION FOR THE BLUEWATER SPM PROJECT

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## VOLUME II – ENVIRONMENTAL EVALUATION

### Section 15 – Environmental Evaluation Summary

**TABLE OF CONTENTS**

15 Environmental Evaluation Summary..... 15-1

15.1 Purpose of Environmental Evaluation..... 15-1

15.2 Scope of Environmental Evaluation ..... 15-1

15.2.1 Applicable Laws and Regulations ..... 15-1

15.2.2 Report Organization ..... 15-3

15.3 Summary of Evaluation Sections..... 15-5

15.3.1 Section 1 – Project Purpose and Need ..... 15-5

15.3.2 Section 2 – Alternatives Analysis..... 15-6

15.3.3 Section 3 – Project Description and Framework for Environmental Evaluation..... 15-6

15.3.4 Section 4 – Water Quality..... 15-7

15.3.4.1 Proposed Project Water Quality Impacts..... 15-7

15.3.4.2 Alternative Project Water Quality Impacts ..... 15-7

15.3.4.3 Water Quality Impacts Summary ..... 15-8

15.3.4.4 Water Quality Impacts Mitigation..... 15-8

15.3.5 Section 5 – Wetlands and Waters of the U.S..... 15-8

15.3.5.1 Proposed Project Wetlands and WOUS Impacts ..... 15-8

15.3.5.2 Alternative Project Wetlands and WOUS Impacts..... 15-8

15.3.5.3 Wetlands and WOUS Impacts Summary..... 15-9

15.3.5.4 Water Quality Impacts Mitigation..... 15-9

15.3.6 Section 6 – Aquatic Environment ..... 15-9

15.3.6.1 Proposed Project Aquatic Environment Impacts ..... 15-9

15.3.6.2 Alternative Project Aquatic Environment Impacts..... 15-9

15.3.6.3 Aquatic Environment Summary ..... 15-10

15.3.6.4 Aquatic Environment Impacts Mitigation ..... 15-10

15.3.7 Section 7 – Commercial and Recreational Fisheries..... 15-10

15.3.7.1 Proposed Project Commercial and Recreational Fisheries Impacts..... 15-10

15.3.7.2 Alternative Project Commercial and Recreational Fisheries Impacts ..... 15-11

15.3.7.3 Commercial and Recreational Fisheries Summary..... 15-11

15.3.7.4 Commercial and Recreational Fisheries Impacts Mitigation..... 15-11

15.3.8 Section 8 – Wildlife and Protected Species ..... 15-11

15.3.8.1 Proposed Project Wildlife and Protected Species Impacts ..... 15-11

15.3.8.2 Alternative Project Wildlife and Protected Species Impacts..... 15-12

15.3.8.3 Wildlife and Protected Species Summary ..... 15-12

15.3.8.4 Wildlife and Protected Species Impacts Mitigation ..... 15-12

15.3.9 Section 9 – Cultural Resources ..... 15-14

15.3.9.1	Proposed Project Cultural Resources Impacts .....	15-14
15.3.9.2	Alternative Project Cultural Resources Impacts.....	15-14
15.3.9.3	Cultural Resources Impacts Summary .....	15-14
15.3.9.4	Cultural Resources Impacts Mitigation .....	15-14
15.3.10	Section 10 – Socioeconomics .....	15-14
15.3.10.1	Proposed Project Socioeconomics Impacts .....	15-15
15.3.10.2	Alternative Project Socioeconomics Impacts .....	15-15
15.3.10.3	Socioeconomics Impacts Summary .....	15-15
15.3.10.4	Socioeconomics Impacts Mitigation .....	15-16
15.3.11	Section 11 – Geological Resources .....	15-16
15.3.11.1	Proposed Project Geological Resources Impacts.....	15-16
15.3.11.2	Alternative Project Geological Resources Impacts .....	15-17
15.3.11.3	Geological Resources Impacts Summary .....	15-17
15.3.11.4	Geological Resources Impacts Mitigation.....	15-17
15.3.12	Section 12 – Coastal Zone Use, Recreation, and Aesthetics.....	15-18
15.3.12.1	Proposed Project Coastal Zone Use Impacts .....	15-18
15.3.12.2	Alternative Project Coastal Zone Use Impacts.....	15-18
15.3.12.3	Coastal Zone Use Impacts Summary.....	15-19
15.3.12.4	Coastal Zone Use Impacts Mitigation .....	15-19
15.3.13	Section 13 – Meteorology, Air Quality, and Noise .....	15-19
15.3.13.1	Proposed Project Air Quality, and Noise Impacts.....	15-19
15.3.13.2	Alternative Project Air Quality, and Noise Impacts .....	15-20
15.3.13.3	Air Quality, and Noise Impacts Summary .....	15-21
15.3.13.4	Air Quality, and Noise Impacts Mitigation.....	15-21
15.3.14	Section 14 – Navigation, Safety, and Security .....	15-22
15.3.14.1	Proposed Project Navigation, Safety, and Security Impacts.....	15-22
15.3.14.2	Alternative Project Navigation, Safety, and Security Impacts .....	15-22
15.3.14.3	Navigation, Safety, and Security Impacts Summary .....	15-23
15.3.14.4	Navigation, Safety, and Security Impacts Mitigation.....	15-23
15.3.15	Section 15 – Environmental Evaluation Summary .....	15-24
15.3.16	Section 16 – Cumulative Impact Analysis .....	15-24
15.3.17	Section 17 – List of Preparers .....	15-25
15.5	Selection of Preferred Bluewater SPM Project .....	15-26

## ACRONYMS AND ABBREVIATIONS

BOEM	Bureau of Ocean Energy Management
BWTT	Bluewater Texas Terminal, LLC
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulation
COMDINST	Commandant’s Instruction
DWP	deepwater port
DWPA	Deepwater Port Act of 1974, as amended
DWPL	deepwater port license
EFH	essential fish habitat
ESA	Endangered Species Act
E1UB	estuarine bay bottom
E2EM	estuarine intertidal emergent
E2SS	estuarine intertidal scrub shrub
E2US	estuarine intertidal unconsolidated shoreline
GOM	Gulf of Mexico
HDD	horizontal directional drill
IR	inadvertent return
LEDPA	Least Environmentally Damaging Practicable Alternative
MARAD	Maritime Administration
NEPA	National Environmental Policy Act
NHRP	National Register for Historic Places
NMFS	National Marine Fisheries Service
NSA	Noise Sensitive Area
PEM	palustrine emergent
Project	Bluewater SPM Project
PSS	palustrine scrub shrub wetland
SPCC Plan	Spill Prevention, Control, and Countermeasure Plan
SPM	single point mooring
T&E	threatened and endangered
THC	Texas Historic Commission
TSS	Total Suspended Solids
U.S.	United States [of America]
U.S.C.	United States Code
USACE	United States Corps of Engineers
USCG	United States Coast Guard
USEPA	United States Environment Protection Agency
VLCC	very large crude carrier
VOC	volatile organic compounds
WOUS	Waters of the United States

## 15 Environmental Evaluation Summary

### 15.1 Purpose of Environmental Evaluation

Bluewater Texas Terminal LLC (BWTT; also referred to as Applicant) has prepared an Environmental Evaluation of the proposed Project in support of this DWPL application. The Environmental Evaluation is presented in preceding sections of Volume II of this DWPL application.

The Environmental Evaluation (Volume II of the DWPL application) has been prepared in anticipation of compliance with National Environmental Policy Act (NEPA) requirements, the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 code of federal regulations [CFR] §§1500-1508), U.S. Department of Transportation Order 5610.1C Procedures for Considering Environmental Impacts), and the United States Coast Guard (USCG) policy (Commandant's Instruction [COMDINST] M16475.1D).

The primary objectives of the Environmental Evaluation document are to:

- Provide an environmental analysis sufficient to support the Secretary of Transportation's licensing decision;
- Demonstrate that the DWP would be located, constructed, and operated in a manner that represents the best available technology necessary to prevent or minimize any adverse effects to the environment;
- Aid in the USCG's and the Maritime Administration's (MARAD) compliance with NEPA; and
- Facilitate public involvement in the NEPA decision-making process.

### 15.2 Scope of Environmental Evaluation

The Environmental Evaluation considers the potential consequences of the Proposed Project and the Alternative Project that has been identified as reasonable alternatives for the Bluewater SPM Project. See Section 2 for the alternative analysis and Section 3 for a detailed description of the Proposed Project and the Alternative Project.

Accessible data and literature, predictive modeling, project surveys, and desktop reviews are utilized to determine the present environmental setting as well as the basis for evaluating potential positive and negative consequences. Effort was made to define consequences quantitatively, to the extent practicable. In some instances where data is limited, the evaluation is based on qualitative judgment through the understanding of the local and regional setting; comprehension of the Proposed Project or Alternative Project; and forecasting effects from comparable actions, agency/ stakeholder positions on these, and/or published science. Modeling and surveys were conducted using data collection methods that comply with Texas state, and Federal standards via coordination with the applicable agencies. Where season or time of year impacted the ability to survey a resource (e.g. pipeline plover), presence of the resources was assumed.

In addition to documenting potential impacts, the Environmental Evaluation seeks to recommend procedures to avoid, reduce, or offset, possible negative environmental consequences as a result of construction, operation, and decommissioning of the Proposed Project and Alternative Project. Safety has also been considered where applicable; however, this document does not serve as the final safety screening.

#### 15.2.1 Applicable Laws and Regulations

BWTT has reviewed the following federal laws and statues to comply with 33 CFR 148.737 of the DWPA during preparation of this DWPL application. All the laws were reviewed, and the applicable regulations are discussed in the Environmental Evaluation (Volume II);

- Abandoned Shipwreck Act (ASA), 43 U.S.C. 2102, *et. seq.*,
- American Indian Religious Freedom Act (AIRFA), 42 U.S.C. 1996, *et. seq.*,

- Antiquities Act, 16 U.S.C. 431 - 433, *et. seq.*,
- Archeological and Historic Preservation Act (AHPA), 16 U.S.C. 469,
- Archeological Resources Protection Act (AHPA), 16 U.S.C. 470 aa-ll, *et. seq.*,
- Architectural Barriers Act, 42 U.S.C. 4151, *et. seq.*,
- Bald and Golden Eagle Protection Act,
- Beaches Environmental Assessment and Coastal Health Act (BEACH) Act,
- Clean Air Act (CAA), Pub. L. 95-95, 42 U.S.C. 7401, *et. seq.*,
- Clean Water Act of 1977 (CWA), Pub. L. 95-217, 33 U.S.C. 1251, *et. seq.*,
- Coastal Barrier Resources Act (CBRA), Pub. L. 97-348, 16 U.S.C. 3510, *et. seq.*
- Coastal Zone Management Act (CZMA), Pub. L. 92-583, 16 U.S.C. 1451, *et. seq.*,
- Community Environmental Response Facilitation Act (CERFA), 42 U.S.C. 9620, *et. seq.*,
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), also commonly referred to as Superfund, Pub. L. 96-510, 26 U.S.C. 4611, *et. seq.*,
- Consultation and Coordination with Indian Tribal Governments, E.O. 13175, 65 FR 67249,
- Coral Reef Protection, E.O. 13089, 63 FR 32701,
- Department of Transportation Act, Section 4(f), Pub. L. 89-670, 49 U.S.C. 303, Section 4(f), *et. seq.*,
- Emergency Planning and Community Right-to-Know Act, 42 U.S.C. 11001- 11050, *et. seq.*,
- Endangered Species Act of 1973 (ESA), Pub. L. 93-205, 16 U.S.C. 1531, *et. seq.*,
- Energy Efficiency and Water Conservation at Federal Facilities, E.O. 12902, 59 FR 11463,
- Environmental Effects Abroad of Major Federal Agencies, E.O. 12114, 44 FR 1957,
- Environmental Justice in Minority Populations and Low-Income Populations, Executive Order (EO) 12898,
- Environmental Quality Improvement Act, Pub. L. 98-581, 42 U.S.C. 4371, *et. seq.*,
- Farmlands Protection Policy Act, Pub. L. 97-98, 7 U.S.C. 4201, *et. seq.*,
- Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, E.O. 12898, 59 FR 7629,
- Federal Compliance with Pollution Control Standards, E.O. 12088, 43 FR 47707,
- Federal Insecticide, Fungicide, and Rodenticide Act, Pub. L. 86-139, 7 U.S.C. 135, *et. seq.*,
- Federal Records Act (FRA), 44 U.S.C. 2101- 3324, *et. seq.*,
- Federalism, E.O. 13083,
- Fish and Wildlife Act of 1956, Pub. L. 85-888, 16 U.S.C. 742, *et. seq.*,
- Fish and Wildlife Coordination Act, (Pub. L. 85-624, 16 U.S.C. 661, *et. seq.*,
- Fisheries Conservation and Recovery Act of 1976, Pub. L. 94-265, 16 U.S.C. 1801, *et. seq.*,
- Flood Disaster Protection Act, 42 U.S.C. 4001, *et. seq.*,
- Flood Plain Management and Protection, E.O. 11988, 42 FR 26951,
- Greening the Government Through Leadership in Environmental Management, E.O. 13148, 65 FR 24595; 63 FR 49643,
- Historic Sites Act, 16 U.S.C. 46, *et. seq.*,
- Indian Sacred Sites, E.O. 13007, 61 FR 26771,
- Intergovernmental Review of Federal Programs E.O. 12372, 47 FR 30959,
- Invasive Species, E.O. 13112, 64 FR 6183,
- Locating Federal Facilities on Historic Properties in our Nation's Central Cities, E.O. 13006, 61 FR 26071,
- Magnuson-Stevens Fishery Conservation and Management Act as amended through October 11, 1996, 16 U.S.C. 1801, *et. seq.*,
- Marine Mammal Protection Act of 1972 (MMPA), Pub. L. 92-522, 16 U.S.C. 1361,
- Marine Protected Areas, E.O. 13158, 65 FR 24909,

- Marine Protection, Research, and Sanctuaries Act of 1972, Pub. L. 92-532, 16 U.S.C. 1431, *et. seq.* and 33 U.S.C. U.S.C. 1401, *et. seq.*,
- Marine Transportation Security Act,
- Migratory Bird Treaty Act, 16 U.S.C. 703- 712, *et. seq.*,
- National Environmental Policy Act of 1969 (NEPA), Pub. L. 91-190, 42 U.S.C. 4321, *et. seq.*,
- National Historic Preservation Act of 1966 (NHPA), Pub. L. 89-665, 16 U.S.C. 470, *et. seq.*,
- Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C. 3001, *et. seq.*,
- Noise Control Act of 1972, Pub. L. 92-574, 42 U.S.C. 4901, *et. seq.*,
- Occupational, Health and Safety Act of 1970,
- Outer Continental Shelf Lands Act (OCSLA) of 1953, as amended (43 U.S.C. 1331),
- Pollution Prevention Act of 1990 (PPA), 42 U.S.C. 13101- 13109, *et. seq.*,
- Protection and Enhancement of Cultural Environmental Quality, E.O. 11593, 36 FR 8921,
- Protection and Enhancement of Environmental Quality, E.O. 11514, 35 FR 4247,
- Protection of Children from Environmental Health and Safety Risks, E.O. 13045, 62 FR 19885,
- Protection of Wetlands, E.O. 11990, 42 FR 26961,
- Recreational Fisheries, E.O. 12962, 60 FR 307695,
- Resource Conservation and Recovery Act of 1976 (RCRA), Pub. L. 94-580, 42 U.S.C. 6901, *et. seq.*,
- Responsibilities of Federal Agencies to Protect Migratory Birds, E.O. 13186, 66 FR 3853,
- Safe Drinking Water Act (SDWA), Pub. L. 93-523, 42, U.S.C. 201, *et. seq.*,
- Submerged Lands Act (SLA) 1953,
- Sunken Military Craft Act (SMCA) of 2004,
- Toxic Substances Control Act (TSCA), 7 U.S.C. 136, *et. seq.*, and
- Wild and Scenic Rivers Act, Pub. L. 90-542, 16 U.S.C. 1271, *et. seq.*,
- Below is a list of international laws and regulations that were reviewed during the development of the DWPL application:
  - Convention on International Regulations for Preventing Collisions at Sea of 1972 (72 COLREGS),
  - High Seas Fishing Compliance Act in March of 1996,
  - IMO International Ship and Port Facility Security Code (ISPS)
  - International Convention for the Prevention of Pollution from Ships, adopted in 1973 and modified by the Protocol of 1978 (MARPOL), and
  - United Nations Convention on the Law of the Sea in 1982

## 15.2.2 Report Organization

The Environmental Evaluation provided as part of this DWPL application is included as Volume II and Volume II Appendices (under separate cover). The Environmental Evaluation includes an introduction, Project purpose and need discussion, alternatives analysis, and Project description and framework for environmental evaluation, followed by evaluations of social and environmental resource categories, as well as a list of preparers of the environmental evaluation and all applicable appendices. Several additional engineering and environmental baseline studies were conducted as part of this application and are submitted as appendices to Volumes I, II, and III of this DWPL application.

The Environmental Evaluation is included as Volume II of the DWPL application and contains the following sections and appendices:

**Volume II - Environmental Evaluation**

Introduction

- Section 1 - Project Purpose and Need
- Section 2 - Alternatives Analysis
- Section 3 - Project Description and Framework for Environmental Evaluation
- Section 4 - Water Quality
- Section 5 - Wetlands and Waters of the U.S.
- Section 6 - Aquatic Environment
- Section 7 - Commercial and Recreational Fisheries
- Section 8 - Wildlife and Protected Species
- Section 9 - Cultural Resources
- Section 10 - Socioeconomics
- Section 11 - Geological Resources
- Section 12 - Coastal Zone Use, Recreation, And Aesthetics
- Section 13 - Meteorology, Air Quality, And Noise
- Section 14 - Navigation, Safety, and Security
- Section 15 - Environmental Evaluation Summary
- Section 16 - Cumulative Impact Analysis
- Section 17 - List of Preparers

**Volume II – Appendices**

- Appendix A: Construction, Operation, and Decommissioning Procedures
- Appendix B: Agency Coordination, Governing Laws, and Regulations
- Appendix C: Sediment Chemistry Assessment
- Appendix D: Temporary Suspended Solids Modeling Analysis
- Appendix E: Onshore Wetland Delineation Report
- Appendix F: Inshore Wetland Delineation Report
- Appendix G: Alternative Wetland Constraints Desktop Analysis
- Appendix H: Conceptual Mitigation Summary
- Appendix I: Aquatic Resources Survey Report
- Appendix J: Essential Fish Habitat Assessment
- Appendix K: Marine Mammal Protection Act Assessment
- Appendix L: Benthic Survey Report
- Appendix M: Onshore T&E Species Report
- Appendix N: Inshore and Offshore T&E Species Report
- Appendix O: Inshore State Listed T&E Species Report
- Appendix P: Draft Biological Assessment
- Appendix Q: Unanticipated Discoveries Plan
- Appendix R: Alternative Cultural Resources Constraints Desktop Analysis
- Appendix S: Noise Analysis
- Appendix T: Air Dispersion Modeling Report
- Appendix U: Ichthyoplankton Plankton Assessment
- Appendix V: Draft Best Management Practices Plan



## 15.3 Summary of Evaluation Sections

The Environmental Evaluation analyzes the potential consequences of the Proposed Project and the alternatives that have been identified and deemed reasonable. The assessment is based on available data and literature, Project surveys, and desktop studies. In cases where limited data is available, the assessment is based on qualitative judgment through the understanding of the local and regional setting; understanding the proposed actions; and predicting effects from similar actions, agency positions on these, and/or published science. Each section also considers how the Project meets or complies with applicable laws, regulation, standards, or guidelines associated with the discussed resource (complete list found in Section 15.2.1 above).

The Environmental Evaluation assesses the potential environmental effects associated with installation / commissioning (“construction”), routine operations, potential upsets/accidents, and decommissioning of the proposed Project and a reasonable alternative to the proposed Project. A detailed description of construction, operations, and decommissioning procedures and set of detailed exhibits has been prepared to aid in the evaluation environmental consequences of the Project and can be referenced in Volume II, Appendix A: Construction, Operation, and Decommissioning Procedures.

A summary of each section of the Environmental Evaluation (Volume II) prepared in support of this DWPL application are provided below.

### 15.3.1 Section 1 – Project Purpose and Need

The Applicant proposes to construct the Bluewater SPM Project to allow for the loading of very large crude carriers (VLCCs) at a DWP via two (2) single point mooring (SPM) buoy systems in the Gulf of Mexico. The purpose of the proposed Project is to provide a safe and environmentally sustainable solution for the export of abundant domestic crude oil supply from major shale basins. The Project will help fulfill market demand and support economic growth in the U.S. The Applicant has identified critical objectives required for the fulfillment of the Project purpose and need. The proposed Project fulfills the required Project objectives including:

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

### 15.3.2 Section 2 – Alternatives Analysis

An analysis of alternatives was undertaken in compliance with the NEPA. This section summarizes the process and outcome of the alternative analysis conducted for the proposed Project. The alternatives analysis is one of nine criteria used to determine a final decision under the DWPA (33 CFR subchapter NN parts 148, 149, 150 and 33 U.S.C. 1503c). Pursuant to NEPA, governmental decision-makers must consider a range of reasonable and practicable alternatives to a proposed action that would result in a significant environmental effect. A reasonable alternative is defined by the below criteria:

- Satisfy the Project purpose and need as defined in Section 1 – Project Purpose and Need;
- Satisfy Project objectives discussed as defined in Section 1 – Project Purpose and Need;
- Technically and economically feasible; and,
- Would result in an acceptable return on the investment.

MARAD may approve or deny an application for a license under the DWPA, and in accordance with the implementing regulations in 33 CFR subchapter NN (parts 148, 149, 150). The Applicant understands that a license approval may include enforceable conditions by MARAD as part of the license. MARAD may also consider alternative means to construct and operate the DWP that meet the criteria listed above. Identifying and evaluating alternatives ensures that decisions using the NEPA process regulated under the DWPA are in the best interest of the U.S., and consistent with national security, energy policies, and environmental policies.

As described in Section 1.0 – Project and Need the Applicant identified critical Project objectives required for the fulfillment of the purpose and need of the proposed Project. These Project objectives serve as the basis for consideration throughout the alternatives analysis and are used to compare potential alternatives throughout the tiered analysis.

The alternatives analysis evaluates the reasonable and practicable alternatives in accordance with NEPA. A variety of practicable and reasonable alternatives were considered by the Applicant. Impracticable alternatives are defined as alternatives that are technically or economically unfeasible; therefore, were not considered as part of this alternative analysis.

The alternatives evaluated have been selected to determine the best means of satisfying the purpose and need of the Project and in accordance with NEPA requirements. As part of the alternative analysis process, the Applicant identified five tiers which were used to determine the proposed action and a reasonable alternative to the proposed action, both of which fulfill the purpose and need of the proposed Project. As a result of this alternatives analysis, the identified proposed action and reasonable alternative to the proposed action will be carried forward for further evaluation as part of the Environmental Evaluation conducted for the proposed Project to identify related environmental consequences and their level of impact to the environmental resources. The reasonable alternatives are herein referred to as the Proposed Project and the Alternative Project.

### 15.3.3 Section 3 – Project Description and Framework for Environmental Evaluation

Section 3 – Project Description and Framework for Environmental Evaluation provides descriptions of the Proposed Project and the Alternative Project, including their detailed descriptions of their associated components. Additionally, this section details the framework and methodology used for identifying the environmental consequences that are related to the project and assess their level of significance to environmental resources as characterized in the Environmental Evaluation technical sections (Sections 4 through 14) and the cumulative impacts

section (Section 16) of this DWPL Application. This section identifies the NEPA requirements, analysis process, assessment criteria, and impact producing factors associated with the Proposed Project.

A detailed description of construction, operations, and decommissioning procedures has been prepared and is provided within Volume II to assist in the assessment of the environmental impacts.

The following general steps are used to assess environmental impacts:

1. The resources specific study area analyzed for existing conditions.
2. The specific and applicable consequence-producing factors to be evaluated are identified for each resource.
3. Potential consequences are evaluated for each resource using the assessment criteria described above.
4. Resources with specific threshold criteria (i.e., air, noise, and/or water quality thresholds as set by agency standards) will be assessed utilizing the above criteria and the agency standards/thresholds to determine significance.
5. Mitigation measures that are incorporated into the Project to avoid and minimize impacts are considered as part of the assessment process to determine the level/magnitude of significance.

### 15.3.4 Section 4 – Water Quality

Section 4 – Water Quality discusses the existing water quality conditions within the vicinity of the Proposed Project and the Alternative Project, and the anticipated environmental impacts to water quality of onshore, inshore and offshore groundwater and waterbodies associated with the construction, operation, and decommissioning of the Proposed Project and the Alternative Project.

#### 15.3.4.1 Proposed Project Water Quality Impacts

Potential impacts to water quality include impacts on groundwater from construction and operation of the Onshore Pipelines could result from trenching and construction activities, compaction, and inadvertent spills. Temporary, minor impacts on groundwater quality and flow could occur during construction for the Onshore Pipelines; however, water levels will likely re-establish equilibrium and total dissolved solid levels will subside shortly after construction. Construction of the Onshore and Inshore Pipelines could result in potential increases in downstream turbidity and sedimentation during stream crossings. Horizontal Directional Drilling (HDD) installation of inshore water crossings will minimize the impact of construction on suspended sediment and water quality. Offshore, trenching of the pipelines may result in temporary, minor turbidity increases due to suspension of seafloor sediments in the immediate vicinity; however, impacts will subside shortly following the 16-week-long installation period. Impacts from decommissioning the Proposed Project will be similar to those described for construction, including temporary, minor increases in turbidity from removing Project components. Normal operation of the Onshore, Inshore, and Offshore Pipelines will not result in impacts on surface water quality. During operation of the SPM buoy systems, anchor chain sweep will result in negligible turbidity impacts within the seafloor footprint of the SPM buoy system. Vessel intakes and discharges will be negligible. Oil spill from operation of the project could have potentially major and adverse impacts, although the likelihood of a major oil spill occurring is very low.

#### 15.3.4.2 Alternative Project Water Quality Impacts

The Alternative Project has a greater potential for impacts on groundwater supply wells, since one drinking water well was identified within 348 ft (107 m) of the Alternative Onshore Pipelines. Greater impacts on surface water quality would occur under the Alternative Project due to increased turbidity and potential suspension of contaminated sediments, if present, during trenching of about 5.8 mi (9.3 km) through Corpus Christi Bay. Offshore water quality impacts due to trenching of sediments is relatively equivalent to the Proposed Project. However, elevated Total Suspended Solids (TSS) levels caused by the Alternative Offshore Pipelines, for the 3.1 mi (5.0 km) where they cross the shipping fairways, would likely persist longer than any other areas along the Proposed or Alternative Offshore Pipelines. Removal of the Alternative Offshore Pipelines across a shipping fairway would disturb

a greater volume of sediment and require additional time for decommissioning at a single location than elsewhere along the Alternative Offshore Pipelines, similar to construction. Inadvertent releases of hazardous materials could occur during all phases of Alternative Project construction, operations, and decommissioning. Operational impacts of the Alternative Project are similar to the Proposed. Normal operation of the Alternative Onshore, Inshore, and Offshore Pipelines would not result in impacts on surface water quality.

#### 15.3.4.3 Water Quality Impacts Summary

Based on the environmental evaluation of water quality impacts for the Proposed Project and the Alternative Project, the Proposed Project is considered the Least Environmentally Damaging Practicable Alternative (LEDPA) with regard to water quality and is therefore considered to be environmentally preferable to the Alternative Project.

#### 15.3.4.4 Water Quality Impacts Mitigation

Mitigation measures proposed to minimize impacts to water quality for the Proposed Project include adhering to the project Spill Prevention, Control, and Countermeasure (SPCC) Plan to minimize impacts to groundwater resulting from inadvertent spills and releases of fuel or hazardous materials, use of soil erosion and sediment controls, adhering to the measures in its HDD Inadvertent Return Contingency Plan during construction. Mitigation of oil spill will adhere to the tactical response plan and future Oil Spill Response Plan, and implementation of the proposed automatic flow monitoring and shut off system during operations if a pipeline leak or break were to occur.

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

Section 5 – Wetlands and Waters of the U.S.(WOUS) discusses the existing wetlands and waterbodies within the vicinity of the Proposed Project and the Alternative Project, and the anticipated environmental impacts to wetlands and WOUS of onshore, inshore and offshore groundwater and waterbodies associated with the construction, operation, and decommissioning of the Proposed Project and the Alternative Project.

#### 15.3.5.1 Proposed Project Wetlands and WOUS 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 palustrine scrub shrub (PSS) wetlands, permanent impacts to 0.57 ac of E2EM wetland and temporary impacts to 6.42 ac of estuarine emergent (E2EM) wetlands, permanent conversion of 1.35 ac of estuarine intertidal scrub shrub (E2SS) wetlands, and temporary impact to 0.60 ac of estuarine intertidal unconsolidated shoreline (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. 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. 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 Right of way, 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.

#### 15.3.5.2 Alternative Project Wetlands and WOUS Impacts

The Alternative project may temporarily impact 5.708 ac of palustrine emergent (PEM) wetlands, permanent impacts to 0.762 ac of PSS wetlands, and temporary impacts 0.356 ac of E2US wetlands. The Alternative Project will also impact 50 ac of estuarine bay bottom (E1UB) due to the trenching of pipeline across Corpus Christi Bay. Field verification would be required to determine final impacts. These impacts are not representative of direct losses but reflect temporary disturbance. 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 pipeline infrastructure. 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 Right of way, including wetlands and floodplains, are to be restored to preconstruction conditions and contours.

#### 15.3.5.3 Wetlands and WOUS Impacts Summary

Based on the environmental evaluation of wetland and WOUS impacts for the Proposed Project and the Alternative Project, the Proposed Project is considered the LEDPA with regard to wetlands and WOUS and is therefore considered to be environmentally preferable to the Alternative Project.

#### 15.3.5.4 Water Quality Impacts Mitigation

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.

Mitigation measures proposed to minimize impacts to wetlands and WOUS for the Proposed Project include use of soil erosion and sediment controls, site restoration, and compensatory mitigation according to the project's USACE Section 404 permit conditions. As part of Project restoration, all portions of the pipeline Right of way 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.

### 15.3.6 Section 6 – Aquatic Environment

Section 6 – Aquatic Environment discusses the existing conditions within the vicinity of the Proposed Project and the Alternative Project aquatic environment including inshore and offshore waters and habitats, and the anticipated environmental impacts of onshore, inshore and offshore groundwater and waterbodies associated with the construction, operation, and decommissioning of the Proposed Project and the Alternative Project.

#### 15.3.6.1 Proposed Project Aquatic Environment Impacts

Proposed Project construction could impact downstream aquatic environments during onshore pipeline construction across streams. HDD installation is proposed for all inshore waterbody crossings, minimizing impacts to aquatic environments including seagrass and oyster reefs. HDD inadvertent returns (IR) are a potential impact in inshore waters; however, the risk is mitigated through the development of the HDD IR Contingency Plan and returns are unlikely. Offshore impacts from construction include increased TSS surrounding trenching of the pipeline and noise impacts from pile driving. The habitats disturbed during construction of the Onshore, Inshore, and Offshore Pipelines will take various amounts of time to recover to pre-construction levels, but no additional impacts will be incurred during operations. Although not anticipated to occur, a release of petroleum products from the SPM buoy systems or pipelines will also impact the aquatic environment; the degree of impact on each habitat would depend on the volume of oil that reaches the affected habitat and the state of the oil (fresh or lightly or highly weathered). The hard structures of the SPM buoy systems will act as artificial hard structures, allowing sessile invertebrates with a substrate on which to attach, this is a beneficial impact. During operations, the presence and transit of support vessels will also be persistent, but will be consistent with area traffic and will result in negligible impacts on aquatic environments.

#### 15.3.6.2 Alternative Project Aquatic Environment Impacts

Alternative Project impacts to aquatic environment are similar in nature as the Proposed Project for onshore and offshore aquatic habitats. In the inshore area (Corpus Christi Bay), trenching and jetting would result in increased turbidity and sedimentation, which can affect seagrasses around the edges of Corpus Christi Bay. Further, trenching

would require additional vessels to transit and be present in Corpus Christi Bay, causing further increase in turbidity, sedimentation, and the potential for inadvertent spills. Although the Alternative Inshore Pipelines would likely avoid most direct seagrass impacts within Corpus Christi Bay, small areas of seagrasses may be directly affected by trenching/jetting and indirect impacts on area seagrasses may occur from the increase in turbidity and sedimentation.

Impacts on the aquatic environment during operation of the Alternative Project would generally be limited to presence of the Alternative SPM buoy systems, port calls by the VLCCs (estimated at 16 per month for the two buoys combined), the sporadic transit of support vessels to and from the offshore port, and the presence of the restricted zones. The habitats disturbed during construction of the Alternative Onshore, Inshore, and Offshore Pipelines would take various amounts of time to recover to pre-construction levels, but no additional impacts would be incurred during operations except where rip rap would be installed along 3.1 mi (5.0 km) of the Alternative Offshore Pipelines in the shipping fairway.

#### 15.3.6.3 Aquatic Environment Summary

Based on the environmental evaluation of Aquatic Environment impacts for the Proposed Project and the Alternative Project, the Proposed Project is considered the LEDPA with regard to Aquatic Environment and is therefore considered to be environmentally preferable to the Alternative Project.

#### 15.3.6.4 Aquatic Environment Impacts Mitigation

Onshore aquatic impacts have been avoided and minimized, to the extent practicable, by utilizing HDD installation at waterbody crossings. Although the Inshore Pipelines will cross areas of seagrass and oyster beds, all inshore waters will be crossed using HDD methods, thereby avoiding the direct impacts on these resources that would be caused by open water trenching. The offshore design and location of the SPM buoy systems inherently minimizes impacts on aquatic habitats through a number of factors, including avoiding nearshore transit of the VLCCs and sensitive habitats that provide high-quality habitat for aquatic species. Additionally, sensitive shoreline areas are crossed with HDD pipeline installation, and fabrication of offshore components will occur in onshore facilities to minimize the timing and disturbance associated with offshore installation.

### 15.3.7 Section 7 – Commercial and Recreational Fisheries

Section 7 – Commercial and Recreational Fisheries discusses the existing conditions within the vicinity of the Proposed Project and the Alternative Project Commercial and Recreational Fisheries including inshore and offshore waters and habitats, and the anticipated environmental impacts of onshore, inshore and offshore groundwater and waterbodies associated with the construction, operation, and decommissioning of the Proposed Project and the Alternative Project.

#### 15.3.7.1 Proposed Project Commercial and Recreational Fisheries Impacts

Impacts on commercial and recreational fisheries from the Proposed Project would generally be restricted to the offshore areas where the Proposed Project's Offshore Pipelines will be installed by jetting and where the SPM buoy systems will be placed. Construction impacts will be temporary (during jetting and SPM buoy installation activities) or permanent (from the loss of 700 square ft [0.02 ac] of soft bottom habitat through placement of the SPM buoy systems) and negligible. Installation of the Offshore Pipelines by jetting will occur across 26.4 mi (42.5 km), which will cause temporary, localized, minor turbidity impacts and temporary, localized, negligible sedimentation impacts. Although the Proposed Project will result in slightly greater impacts in the offshore environment from the additional 10.2 mi (16.4 km) of Offshore Pipeline installation, offshore benthic habitat is relatively benign and ubiquitous when compared to the seagrass habitat that would likely be affected by open water trenching through Corpus Christi Bay. Impacts during normal operations will result in permanent and beneficial, but minor impact on the fisheries through

protection of a 939-ac (380-ha) safety zone, in which fishing would be precluded. However, seawater intake by the VLCCs will result in a minor, but permanent impact on fisheries through the loss of fish eggs and larvae. Impacts on inshore fisheries will be avoided during decommissioning as in-water infrastructure will be abandoned in place; however, seawater usage during abandonment, if applicable, could result in a negligible impact on ichthyoplankton. Decommissioning of the Offshore Components will result in temporary and minor impacts on the fisheries related to removal of the Offshore Components, including localized increases in turbidity, sedimentation, and noise.

#### 15.3.7.2 Alternative Project Commercial and Recreational Fisheries Impacts

The majority of impacts associated with the Proposed and Alternative Offshore Projects will be identical, including the increased vessel traffic, noise, SPM buoy systems installations, and potential for inadvertent releases or spills. However, the Alternative Offshore Pipelines would require about 10.2 mi (16.4 km) fewer miles of offshore trenching than will the Proposed Offshore Pipelines. Fewer miles of pipeline installation corresponds to a decrease in relative turbidity and sedimentation, as well as decreased impacts on the plankton community through decreased hydrostatic test water requirements. However, although impacts on these resources from the Alternative Offshore Pipelines would be proportionally less than those impacts associated with the Proposed Offshore Pipeline, both projects would have temporary to short-term, negligible to minor impacts on these resources in the offshore environment. Further, where the Alternative Offshore Pipelines would cross navigational fairways (about 3.1 mi [5.0 km]), the depth of cover would increase from 3 ft (1 m) to 10 ft (3 m), which would result in higher turbidity and sedimentation levels during crossing of the fairways when compared to other locations along the Proposed or Alternative Offshore Pipelines. In addition, rip-rap would be installed over the Alternative Offshore Pipelines in the fairway, and would remain during operations. Where the Alternative Offshore Pipelines are within 0.2 mi (0.3 km) of the Lonestar Reef, impacts from sedimentation would be temporary and minor; the nearest artificial reef is 5.7 mi (9.2 km) from the Proposed Project.

#### 15.3.7.3 Commercial and Recreational Fisheries Summary

Based on the environmental evaluation of Commercial and Recreational Fisheries impacts for the Proposed Project and the Alternative Project, the Proposed Project is considered the LEDPA with regard to Commercial and Recreational Fisheries and is therefore considered to be environmentally preferable to the Alternative Project.

#### 15.3.7.4 Commercial and Recreational Fisheries Impacts Mitigation

Based on the Project location (away from unique fishing habitat) and design (minimal footprint), impacts to commercial and recreational fisheries will be negligible and no additional mitigation measures are proposed for the mitigation of impacts to commercial and recreational fisheries.

### 15.3.8 Section 8 – Wildlife and Protected Species

Section 8 – Wildlife and Protected Species discusses the existing conditions of wildlife species and habitats present within the vicinity of the Proposed Project and the Alternative Project, and the anticipated environmental impacts to onshore, inshore and offshore habitats and species associated with the construction, operation, and decommissioning of the Proposed Project and the Alternative Project.

#### 15.3.8.1 Proposed Project Wildlife and Protected Species Impacts

Potential impacts to 27 federally listed threatened and endangered species within Aransas, San Patricio, and Nueces Counties, Texas. Of these, 13 species are not anticipated to occur in the habitats crossed by the Proposed Project; therefore, the Proposed Project would have no effect on these species. The Proposed Project may affect, but is not likely to adversely affect the remaining 14 species. Marine sea turtles are known to occur and/or nest within the vicinity of the Proposed Project. BWTT will avoid impacts to nesting habitat through the implementation of HDD construction methods; however, these species have the potential to be impacted from inadvertent vessel strikes,

inadvertent releases, impacts to *Sargassum*, and noise during construction and operation of the Proposed Project. Impacts from pile-driving noise are anticipated to have the highest potential impacts marine fauna, but BWTT will implement appropriate mitigation for this potential impact through coordination with NMFS. Further, federally listed bird species are known to occur and have preferred habitat within the Proposed Project area. Known critical habitat for the piping plover (and suitable beach habitat for sea turtles) occurs in the Proposed Project area; however, impacts to this habitat would be avoided through the implementation of HDD construction methods.

The Proposed Project would have no effect on 18 state listed species due to lack of preferred habitat and lack of Texas Natural Diversity Database-reported elemental occurrences in the vicinity of the Proposed Project area. The Proposed Project may affect, but is not likely to adversely affect the remaining 8 state-listed threatened and endangered species, which may occur in the Proposed Project area, but for which impacts will be minimized or avoided through HDD construction methods.

#### 15.3.8.2 Alternative Project Wildlife and Protected Species Impacts

The Proposed and Alternative Projects may affect, but are unlikely to adversely affect 14 federally listed species through increased vessel traffic, inadvertent releases, and noise (particularly pile-driving noise). However, there is a higher potential for impacts on federally listed sea turtles from the Alternative Project due to the open-cut trenching within Corpus Christi Bay, which may affect preferred sea turtle habitat (seagrasses). Marine sea turtles are known to occur and/or nest within the vicinity of the Alternative Project area and seagrass areas (preferred sea turtle habitat) would likely be impacted by trenching during inshore construction of the Alternative Project. Additionally, sea turtle species could be impacted from inadvertent vessel strikes, inadvertent releases, impacts to *Sargassum*, and noise during construction and operation of the Alternative Project. Threatened and endangered marine mammals and fish are known to occur within deeper coastal waters; however, they are occasionally identified within shallower coastal waters such as those of the Alternative Project area. Although unlikely to occur in the Alternative Project area, these species could be impacted by vessel strikes and noise impacts during all phases of the Alternative Project. Impacts from pile-driving noise are anticipated to have the highest potential impacts marine fauna, but BWTT would implement appropriate mitigation for this potential impact through coordination with National Marine Fisheries Service (NMFS). Further, federally listed bird species are known to occur and have preferred habitat within the Alternative Project area. Known critical habitat for the piping plover (and suitable beach habitat for sea turtles) occurs in the Alternative Project area; however, impacts to this habitat would be avoided through the implementation of HDD construction methods.

In addition, 8 state-listed species could also be affected by the Proposed and Alternative Projects, which will include impacts similar to those discussed other wildlife species (e.g., habitat clearing, noise, lighting, vessel and human presence). Mustang Island, while also showing infrastructure and some development, contains larger areas of upland and wetland vegetation that are suitable for wildlife use. Noise impacts at designated critical habitat nearest HDD construction of the Alternative Inshore Pipelines would be greater than the Proposed Inshore Pipelines and could cause more than a perceived doubling of sound (10 dB); however, impacts due to noise from HDD construction would be temporary, and the use of HDD construction would avoid disturbance of critical habitat due to trenching for both the Proposed and Alternative Projects.

#### 15.3.8.3 Wildlife and Protected Species Summary

Based on the environmental evaluation of Wildlife and Protected Species for the Proposed Project and the Alternative Project, the Proposed Project is considered the LEDPA with regard to wildlife and protected species and is therefore considered to be environmentally preferable to the Alternative Project.

#### 15.3.8.4 Wildlife and Protected Species Impacts Mitigation

The Proposed Project has been developed in a manner that minimizes impacts on all habitat and species to the extent possible. In addition to siting the SPM buoy systems and Offshore Pipelines in soft-bottom habitats, which are



the most prevalent and least sensitive habitat in the Gulf of Mexico (GOM), the following BMPs have also been incorporated into the Proposed Project:

- using HDD construction methods for the coastal landfall approach of the Offshore Pipelines to San Jose Island and across all inshore waters between San Jose Island and the mainland, which will result in impacts on estuarine resources, including SAV, oyster beds, and the species that use them;
- designing the Project to have the smallest footprint practicable to minimize impacts on marine resources;
- construction and support vessels under the purview of BWTT will be required to implement NTL No. 2015-BSEE-G03, Marine Trash and Debris Awareness and Elimination, which will minimize the potential for marine species to ingest, or become entangled in, lost debris;
- land-based fabrication of the offshore SPM buoy systems, to minimize the timing and disturbance associated with offshore installation;
- to minimize the potential for vessel strikes of marine mammals, BOEM NTL No. 2016-G01, Vessel Strike Avoidance and Injured/Dead Protected Species Reporting, will be followed by all Project construction and support vessels;
- a Project-specific spill response plan will be developed prior to construction, which will identify measures to prevent, contain, and clean up any inadvertent spills from construction and support vessels;
- the Project will meet all lighting stipulations as noted in 33 CFR, Part 149, which requires limiting Terminal lighting to that required for safety and navigational concerns, in order to reduce the disruptive effects of lighting, and will down-shield lighting, to the greatest extent possible, to reduce light dispersion;
- BWTT will provide the operators of VLCCs with National Marine Fisheries' *Vessel Strike Avoidance Measures and Reporting for Mariners* and request that these measures be used when transiting to and from the SPM buoy systems to minimize the potential for impacts from vessel strikes; and
- Pile-driving associated with installation of the SPM buoy systems could result in injury or harassment of fish, turtles, and marine mammals. BWTT will use biological monitors during pile-driving activities and will cease pile-driving if a marine mammal is identified within the injury zone for mid-frequency marine mammal injury; pile-driving will not restart until the mammal had left the area of its own accord, thereby avoiding injury. As the zone of influence for sea turtles, marine mammal behavioral effects, and low-frequency cetacean injury are too large to be effectively monitored, BWTT will ensure proper coordination with NMFS to identify what additional measures will need to be implemented during pile-driving to minimize impacts. Any such mitigation will also minimize the potential impacts of underwater noise on marine fishes. While identification of mitigation is not final, measures may include:
  - use of the lowest energy hammer feasible for installation of the piles;
  - the use of "soft starts," using a lower hammer energy level to begin pile-driving, which allows sensitive species to avoid the vicinity prior to peak pile-driving noise; and
  - the use of a bubble curtain or other sound damping system to minimize propagation of pile-driving noise.

The following BMPs may be employed to further reduce the potential impacts to protected species and their habitats:

- timing construction windows to avoid sea turtle nesting season;
- environmental monitors may be employed during construction of Onshore, Inshore, and Offshore Project Components when deemed appropriate or as required by issued permits;
- flagging around potentially hazardous or protected habitats; and
- in the event of an inadvertent return during HDD activities, the Project's will employ the Inadvertent Returns Contingency Plan, which will be approved prior to initiating HDD installation.

### 15.3.9 Section 9 – Cultural Resources

Section 9 – Cultural Resources discusses the existing cultural setting and existing or found cultural resources in the vicinity of the Proposed Project and the Alternative Project, and the anticipated environmental impacts to onshore, inshore and offshore cultural resources due to the construction, operation, and decommissioning of the Proposed Project and the Alternative Project.

#### 15.3.9.1 Proposed Project Cultural Resources Impacts

Seven archaeological sites were identified during archaeological survey to be within or directly adjacent to (within 1,000 ft. [304.8 m]) the terrestrial inshore or onshore portions of the Proposed Project area. None of the seven sites meets the eligibility criteria for listing on the National Register for Historic Places or qualify for designation as a State Antiquities Landmark. Three potentially significant magnetic anomalies, possibly representing historic-era resources, have been identified within the submerged parts of the non-terrestrial inshore and offshore portion of the Project area. Disturbance of the seafloor must be avoided within these avoidance buffers. Seafloor disturbances include, but are not limited to trenching, anchoring, dragging anchor chains, laying pipe on the seafloor, use of barge spuds, and pile driving.

#### 15.3.9.2 Alternative Project Cultural Resources Impacts

Three archaeological sites were identified during the desktop analysis to be within or directly adjacent to (within 1,000 ft. [304.8 m]) the terrestrial inshore and onshore portions of the Alternative Project area. All seven sites were previously determined to be not eligible for listing on the National Register for Historic Places (NRHP) or qualify for designation as a State Antiquities Landmark. One previously documented shipwreck was identified within the Alternative Project area. The shipwreck has an undetermined eligibility for listing on the NRHP and an unknown determination for designation as a SAL. Shipwreck 1086 is located along a section of the project alignment where pipes will be installed through HDD, so no negative effects are anticipated. However, as there is no safe, effective way to survey for or assess this resource prior to construction, and these potential resources may be impacted by deep impacts associated with HDD pipeline installation.

#### 15.3.9.3 Cultural Resources Impacts Summary

Neither the Proposed Project nor the Alternative Project present any significant cultural resources impacts. Therefore either could be considered the LEDPA with regard to Cultural Resources.

#### 15.3.9.4 Cultural Resources Impacts Mitigation

Mitigation of cultural resources impacts includes planning to avoid all cultural resources or potential resources, including seafloor anomalies, that have an undetermined eligibility for listing on the NRHP. If avoidance of cultural resources or potential resources with undetermined eligibility status is not possible, additional investigations and a treatment plan will be developed in consultation with the Texas Historic Commission (THC) and applicable federal agencies. BWTT will develop and implement an Unanticipated Discoveries Plan. This plan will be reviewed by the THC and applicable federal agencies. All Proposed Project construction, operation, and decommissioning personnel shall be familiar with the plan and the steps that the Project has agreed to follow in the event of the discovery of significant cultural resources including human remains.

### 15.3.10 Section 10 – Socioeconomics

Section 10 – Socioeconomics discusses the existing conditions of the socioeconomic conditions and environmental justice issues within the vicinity of the Proposed Project and the Alternative Project, and the anticipated impacts to socioeconomics and environmental justice associated with the construction, operation, and decommissioning of the Proposed Project and the Alternative Project.

### 15.3.10.1 Proposed Project Socioeconomics Impacts

Impacts to socioeconomics during the all phases of the Proposed Project are anticipated to range from negligible to no impact for most socioeconomic resources, with the potential for beneficial impacts to be experienced by labor force and employment and taxes and revenues within the study area. New jobs created for construction would be relatively high-paying but would be restricted to the 18-month period of construction. Overall the construction phase of the Proposed Project is anticipated to result in a beneficial impact of negligible to minor significance on labor force and employment within the study area. Based on the results of the cash-flow modeling, construction of the Proposed Project is anticipated to result in beneficial impact to, and support the continued growth of, both U.S. and local economies. Recreation and tourism in the immediate vicinity of the Proposed Project are likely to experience adverse impacts during construction, such as changes in viewshed for nearshore recreational boaters and fishermen which could result in a decrease in the number of boaters utilizing the area in the immediate vicinity of the Proposed Project. However, with all planned mitigation measures in place, including the use of HDD construction methods in open water areas where recreational boating and fishing could occur, and the avoidance of construction during key public events and peak recreational times (such as public holidays), impacts on the recreation and tourism economy is anticipated to be temporary and minor. The Proposed Project is not being constructed in any portion of a major navigational fairway, as such routine maritime activity is expected to continue undisturbed during all construction activity. Given the sufficient fishing habitat available in the adjacent, unrestricted areas and because harvest levels are typically set below estimated abundances, no impact to actual harvest levels and commercial fishing in the vicinity of Project are anticipated. With mitigation, such as stakeholder engagement (notices to mariners and fishermen) and aids to navigation system (for the SPM buoy systems) in place, construction is expected to have negligible effect to commercial fishing and maritime industries.

The majority of the Onshore Pipelines does not occur in immediate proximity to populated areas, and the SPM buoy systems are about 17.0 mi (27.4 km) offshore, widely separated from surrounding offshore infrastructure. Upsets and accidents during construction, while not anticipated, could cause temporary negligible impacts on the socioeconomic environment.

### 15.3.10.2 Alternative Project Socioeconomics Impacts

The Alternative Project is anticipated to result in similar impacts to the socioeconomic environment, with the exception of additional minor potential impacts to education facilities, the recreation and tourism industry, exploration or operation of platforms and wells, and the local maritime industry. Recreation and tourism in the immediate vicinity of the Alternative Project are likely to experience adverse impacts during construction, such as changes in viewshed for nearshore recreational boaters and fishermen, and construction noise, dust, and light impacts experienced by local park and beach users, which could result in a decrease in the number of recreational users and tourists utilizing the area in the immediate vicinity of the Project.

The Alternative Offshore Pipelines traverses a major shipping fairway. During the installation of these pipelines, temporary safety zones would be established. The temporary safety zones would force vessels that would otherwise transit through the offshore vicinity to navigate around the safety zones, increasing the time that it would take them to move through the area and reach their destination. With mitigation, such as stakeholder engagement and use of aids to navigation system, in place, the construction of the Alternative Offshore Pipelines is anticipated to result in minor impacts in the form of delays to offshore maritime industries.

### 15.3.10.3 Socioeconomics Impacts Summary

Based on the environmental evaluation of socioeconomic conditions for the Proposed Project and the Alternative Project, the Proposed Project is considered the LEDPA with regard to socioeconomics and is therefore considered to be environmentally preferable to the Alternative Project.

#### 15.3.10.4 Socioeconomics Impacts Mitigation

Overall, the Project is anticipated to have no disproportionate impact on Environmental Justice communities during its construction, operational, or decommissioning phase. The selection of the Project type and the siting of key Project facilities was made to avoid and minimize potential impacts on socioeconomics. Mitigation measures specific to socioeconomics include:

- On completion of Onshore Pipelines construction, the Onshore Pipeline Right of way will be seeded with a native grass mixture or with some other suitable reclamation mixture approved by the landowner and will be returned to a vegetated state to help minimize any adverse impact and/or inconvenience to landowners and wind turbine owners.
- avoid onsite Project emergency incidents and in turn minimize Project related pull on public services such as safety and emergency response facilities; to minimize dust, noise, and light emissions and any potentially related impact to local recreation and tourism economy; and to minimize potential impacts to land owners, farmers, wind turbine owners and other stakeholders.
- Local Project Employment: BWTT will utilize a small workforce for the Project, approximately 100% of which will be employed from within the State of Texas and which will be comprised of local workers from the Project area, to the extent practicable.
- Stakeholder Consultation: Ongoing communication with local stakeholders will be important to help identify and resolve any potential adverse impacts to socioeconomics. Stakeholders to be consulted include, but may not be limited to: local businesses and those involved in fishing and the tourism industry; fire departments, police, and/or emergency service districts within the vicinity of the Proposed Project; farmers, landowners, and wind turbine owners.
- Avoidance of Key Public Events: BWTT will avoid of construction during key public events and peak recreational times (such as public holidays) to help reduce adverse impacts on the local recreation and tourism economy.

#### 15.3.11 Section 11 – Geological Resources

Section 11 – Geological Resources discusses the existing geological resources, hazards and soils in the vicinity of the Proposed Project and the Alternative Project, and the anticipated environmental impacts to onshore, inshore and offshore geology due to the construction, operation, and decommissioning of the Proposed Project and the Alternative Project.

##### 15.3.11.1 Proposed Project Geological Resources Impacts

Adverse impacts on geological resources may occur when an activity is likely to damage or disturb a unique geological feature, induce soil erosion, modify seafloor stability, affect sediments, or affect mineral resources. Unique geological features present within the Proposed Project area include dunes located on the eastern shoreline of San Jose Island and localized normal faults. The Proposed Project is likely to affect soils and sediments as a result of construction activities. Seafloor stability has been protected using through strategic route planning. Apart from affecting the sediment itself, sediment disturbance would likely result in temporary minor impacts on water quality and marine resources. Construction of the inshore and offshore pipeline segments may cause minor to negligible disturbance to seafloor sedimentary processes, resulting in sediment displacement and increased turbidity, as well as increased scour resulting from the presence of equipment and materials at or near the seafloor. Upon the completion of the Project, pipeline trenches are expected to backfill naturally, returning the sea floor to the pre-excavation contours and consequently, to the pre-floor seafloor sedimentary regime.

Based on review of available geologic data, no currently exploitable mineral resources are present within the Project area. The proposed Project would not affect the occurrence of faulting, gas hydrate formation, or subsidence. Soil

liquefaction may be affected by the presence of the pipeline and DWP anchor and foundation pilings, but the effect would be minor to negligible.

Due to the lack of anchorage at the DWP, no seafloor disturbing impacts would be expected from the operation of the DWP. However, scour, or the removal of granular bed material by hydrodynamic forces, could occur when hydrodynamic stresses are greater than sediment shear stresses. Scour can cause changes in local turbidity concentrations and result in sediment disruption and movement due to changing tides and currents. Current forces in the GOM near the site and local sediment types would determine the level of the scour effect. The relatively slow tidal/current speeds and soft-bottom sediments in the vicinity suggest that scour would be minor, short-term, and local.

#### 15.3.11.2 Alternative Project Geological Resources Impacts

Impacts to geological resources from the Alternative Project components are similar in nature as described for the Proposed Project due to the location of the Alternative Project in the same geological area as the Proposed Project. Adverse impacts on geological resources may occur when an activity is likely to damage or disturb a unique geological feature, induce soil erosion, modify seafloor stability, affect sediments, or affect mineral resources. It is anticipated that subsea blasting activities would not be required for the proposed Alternative Project. Unique geological features present within the project area include dunes located on the eastern shoreline within the Alternative Project area and localized normal faults. The Alternative Project is likely to affect soils and sediments within the Alternative Project area. Seafloor stability will be protected using careful Alternative Project siting. Apart from affecting the sediment itself, sediment disturbance would likely result in minor impacts on water quality and marine resources.

There are more oil and gas leases located near the Alternative Project route than the Proposed project, and thus there is a higher potential for impacts to mineral resources. Conditions in the vicinity are susceptible to soil liquefaction, especially during storms, and have potential to damage or destroy portions of the Alternative Project. Gas hydrates and subsidence are affected by the presence of faults and salt diapirs, neither of which are present within the Alternative Project area, limiting the risk of such hazards. The proposed Alternative Project would not affect the occurrence of faulting, gas hydrate formation, or subsidence. Soil liquefaction may be affected by the presence of the pipeline and DWP anchor and foundation pilings, but the effect would be minor to negligible.

Inshore and offshore impacts during operations for the Alternative Project are anticipated to be similar as those for the Proposed Project.

#### 15.3.11.3 Geological Resources Impacts Summary

Based on the environmental evaluation of geological conditions and impacts for the Proposed Project and the Alternative Project, the Proposed Project is considered the LEDPA with regard to geological resources and is therefore considered to be environmentally preferable to the Alternative Project

#### 15.3.11.4 Geological Resources Impacts Mitigation

Effects on soils, sediments, and sedimentary processes from the pipeline and terminal installation and decommissioning would be the only activities with respect to geological resources that could warrant mitigation. Proper siting and HDD procedures will avoid geologic hazards and mineral resources within and near the Project area. Although the proposed activities would impact soils, sediments, and sedimentary processes, the geologic impacts would be negligible since the ground surface would be returned to the original contours, the terrestrial pipeline scar would be revegetated, and alterations to the seafloor would recover naturally. Preparation and implementation of a comprehensive IR Contingency Plan would mitigate for potential negative impacts to soils. The potential effect of fuel and fluid spills on soils during construction, operation and decommission could be adequately mitigated through adequate implementation of adequate controls on the location of fuel and fluid storage and refueling locations, as described in the appropriate SPCC and spill response plans.

### 15.3.12 Section 12 – Coastal Zone Use, Recreation, and Aesthetics

Section 12 – Coastal Zone Use, Recreation and Aesthetics discusses the existing conditions of the coastal zone in the vicinity of the Proposed Project and the Alternative Project, and the anticipated impacts to onshore, inshore and offshore land use and recreation due to the construction, operation, and decommissioning of the Proposed Project and the Alternative Project.

#### 15.3.12.1 Proposed Project Coastal Zone Use Impacts

The entirety of the Proposed Project is within the Texas Coastal Management Zone. Use of HDD construction methods will avoid any sensitive shallow water and shoreline habitat, as well as surface impacts as the pipelines are expected to be relatively deep. The Onshore and Inshore Pipelines will cross four main types of land use, in addition to open water areas: agricultural land, windfarms, residential areas, and coastal islands. With mitigation in place, impacts to coastal zone use, recreation, and aesthetics during the all phases of the Proposed Project are anticipated to range from negligible to no impact for most resources. Minor impacts are anticipated on agricultural land, wind farms, residential areas, coastal islands, aesthetics, and Inshore and Offshore Pipelines and other submerged infrastructure during construction, and aesthetics and coastal zone uses during operation.

During construction of the pipelines, the viewshed for areas directly adjacent to the construction area would be disrupted by the presence of trucks, dust, temporary employees, and other construction activities. Eight active leases were identified within the immediate vicinity of the Inshore Pipelines; however, no active leases are crossed by the inshore elements of the Proposed Project. As such, no impact is anticipated to inshore oil and gas activities as a result of the Proposed Project construction. The proposed Inshore Pipelines will cross a total of 69 existing inshore pipelines.

During the 16-week construction period of the SPM buoy systems, recreational fishing will be prohibited in the temporary safety zone. Direct effects on offshore recreational fishing experiences will be negligible given the availability of accessible offshore fishing areas in proximity to the SPM buoy systems site, and the lack of unique fishing opportunities afforded by the Offshore Project site.

Decommissioning of the proposed Onshore and Inshore Pipelines would consist of purging the pipe of crude oil liquids and filling them with water. No decommissioning activities are anticipated to occur in onshore or inshore waterbodies. The Harbor Island Booster Station will be dismantled and removed; removal activities will be similar in scope to those discussed for the station's construction. Once the Harbor Island Booster Station has been decommissioned, the terrestrial habitat will be restored, and no further land disturbance will be required. As such, no permanent impact to land/zone use, commercial and recreational activities, or aesthetic conditions are anticipated as a result of decommissioning. No permanent impact to marine zone use, offshore commercial and recreational activities, or offshore aesthetic conditions are anticipated as a result of the decommissioning phase.

#### 15.3.12.2 Alternative Project Coastal Zone Use Impacts

The Alternative Inshore Pipelines would be installed using open-cut trenching across Corpus Christi Bay and Mustang Island. As a result of this method of construction, the Alternative Project is anticipated to have minor impacts on coastal zone use during construction. During construction, the close proximity of the Alternative Onshore Pipelines Right of way to Live Oak Park would result in impacts such as dust due to soil movement, artificial light from construction machinery, and increased levels of noise in the vicinity of active construction, which could create an annoyance for local recreational users and wildlife within the park. As the Alternative Project would be constructed by an open-cut method across the Corpus Christi Bay, some impacts to recreational fishermen and boaters within this area would occur. While still considered minor, impacts to recreation from the Alternative Project would be of

slightly higher significance than those anticipated by the Proposed Project. In addition, impacts would be experienced over a longer (6 months longer) period of time.

The Alternative Inshore Pipelines would traverse two active dredge placement areas; the Proposed Inshore Pipelines will not cross dredge placement areas. Installing the Alternative Inshore Pipelines within the active dredge placement areas would significantly and adversely impact the quality of the two dredge placement areas; however, due to the temporary nature of the construction activities, and as only two of many placement areas would be impacted, the overall impact to dredge placement areas within the study area as a result of the Alternative Project is anticipated to be minor and temporary.

The Corpus Christi Bay and the active lease block would be crossed by trenching, which would restrict access to portions of the block during installation of the Alternative Project. As a result, it is anticipated that the construction of the Alternative Inshore Pipelines would result in a temporary minor adverse impact to inshore oil and gas activity within the study area during Alternative Project construction.

#### 15.3.12.3 Coastal Zone Use Impacts Summary

Based on the environmental evaluation of coastal zone use and impacts for the Proposed Project and the Alternative Project, the Proposed Project is considered the LEDPA with regard to Coastal Zone Use, Recreation, and Aesthetics and is therefore considered to be environmentally preferable to the Alternative Project

#### 15.3.12.4 Coastal Zone Use Impacts Mitigation

The selection of the Project facility-type and the proposed site location was made to avoid and minimize potential impacts on marine uses or aesthetics. During Project installation/commissioning, BWTT will communicate with the USCG and USACE Navigation Branch, and federal pilots regarding offshore Project installation activities. Prior to commencing installation, BWTT will communicate with the appropriate USCG personnel to ensure a Notice to Mariners is issued prior to any installation activity. The Notice to Mariners would alert vessel captains ahead of time about the location of the Project's temporary installation activities and the exact coordinates of restricted-access temporary safety zones around each installation site. Working vessels could also issue very high frequency (VHF) radio broadcasts, as needed, to alert passing vessels about the presence of temporary safety zones around each site of active installation. The temporary safety zones, themselves, would be mitigation measures to temporarily segregate marine uses in the area and prevent collisions, accidents, or other undesired interactions between Project installation activities and non-Project commercial or recreational vessel transits. The mitigation measures employed during decommissioning would be nearly identical to those used during installation, though the duration of decommissioning would be much shorter than installation/commissioning.

### 15.3.13 Section 13 – Meteorology, Air Quality, and Noise

Section 13 – Meteorology, Air Quality, and Noise discusses the existing air quality and ambient noise conditions in the vicinity of the Proposed Project and the Alternative Project, and the anticipated impacts to onshore, inshore and offshore areas due to the construction, operation, and decommissioning of the Proposed Project and the Alternative Project.

#### 15.3.13.1 Proposed Project Air Quality, and Noise Impacts

Construction and operation of the Proposed Project are expected to result in temporary and permanent impacts on sound levels in the Proposed Project vicinity. Installation of the Harbor Island Booster Station will generate noise due to operation of construction equipment; however, noise is not expected to exceed the USEPA's guidance level (55 dBA  $L_{dn}$ ) at the nearest Noise Sensitive Area (NSA), which is about 0.8 mi (1.3 km) away.

Temporary noise during installation of the pipelines will result from typical pipeline construction, HDDs, and vessel activity (including the pipeline lay barge). Composite construction noise for typical land-based pipeline construction could exceed the USEPA-recommended 55 dBA  $L_{dn}$  (which is equivalent to a continuous sound level of 48.6 dBA when nighttime construction is planned) along the pipelines.

Estimated noise from HDD construction could exceed the USEPA's guideline level of 55 dBA  $L_{dn}$  at the nearest residential NSAs to four HDD locations (the HDD 4 entry, HDD 5 exit, HDD 6 entry, and HDD 7 entry sites) without additional noise mitigation. However, if additional recommended noise mitigation measures are employed at each location, the sound level at the NSA nearest to each HDD will be below 55 dBA  $L_{dn}$  and the sound level increases above ambient will not be perceptible (less than 3 dB). Decommissioning of the Proposed Project will not result in significant noise impacts; impacts will be temporary and minor to negligible.

During operations, equipment at the Harbor Island Booster Station will result in localized noise. Operation of the Harbor Island Booster Station will not result in an audible increase above ambient sound levels at the nearest NSAs; therefore, impacts due to operations will be permanent but negligible. Noise from operation of the SPM buoy systems will be virtually non-existent because the SPM buoy systems do not contain any mechanical engines, pumps, or generators that will be running continuously during operation. Intermittent noise will be generated by support tugs and VLCCs calling at the SPM buoy systems (about 192 times per year). No significant increase in vessel traffic is anticipated in the Proposed Project area, and therefore airborne noise impacts from vessel traffic during operations will be localized and negligible.

Air Quality could be impacted during construction of the Project due to emissions of dust and products of combustion from construction equipment and excavation/land clearing activities onshore/inshore and emissions of products of combustion from construction and supply vessels offshore.

There are anticipated to be insignificant emissions from storage tanks, pipeline pigging and wastewater treatment facilities. The operational impacts to air quality include emissions of hydrocarbons from loading of the vessels with a work-practice of submerged fill loading and vessel volatile organic compounds (VOC) management and emissions of products of combustion from VLCC and support vessels.

During decommissioning, there is potential for air quality impacts due to emissions of dust and products of combustion from construction equipment and demolition/ land clearing activities and emissions of products of combustion from demolition and supply vessels.

#### 15.3.13.2 Alternative Project Air Quality, and Noise Impacts

Construction and operation of the Alternative Project are expected to result in temporary and permanent impacts on sound levels in the Project vicinity. Installation of the Alternative Booster Station would generate noise due to operation of construction equipment. The nearest potential NSA is about 0.4 mi (0.6 km) away from the site center and construction at the Alternative Booster Station could exceed the level recommended in USEPA's guidance (55 dBA  $L_{dn}$ ) if all equipment operates simultaneously.

Temporary noise during installation of the Alternative Pipelines would result from typical pipeline construction, HDDs, and vessel activity (including the pipeline lay barge). Composite construction noise for typical land-based pipeline construction could exceed the USEPA-recommended 55 dBA  $L_{dn}$  (which is equivalent to a continuous sound level of 48.6 dBA when nighttime construction is planned) along the pipelines. Pipeline construction is expected to occur over a schedule similar to the Proposed Project and active pipeline construction at any location would be temporary. The exception would be installation of the pipelines within Corpus Christi Bay via underwater jetting/trenching methods; impacts from vessel activity in inshore areas along the Proposed Project will not occur.

Estimated noise from HDD construction could exceed the USEPA's guideline level of 55 dBA  $L_{dn}$  at the nearest residential NSAs to one location without additional noise mitigation. However, BWTT would implement noise



mitigation measures such that the sound level at the NSA nearest to each HDD would be below 55 dBA  $L_{dn}$  and the sound level increases above ambient would not be perceptible (less than 3 dB). the installation of the Alternative Inshore Pipelines within Corpus Christi Bay via underwater jetting/trenching methods would result in temporary noise impacts from vessel activity; similar impacts in inshore areas along the Proposed Project will not occur.

During operations, equipment at the Alternative Booster Station would result in localized noise. Operation of the Alternative Booster Station would not result in an audible increase above ambient sound levels at the nearest NSA; the estimated increase is 2.2 dB. Therefore, impacts due to operations would be permanent but negligible. Noise from operation of the SPM buoy systems would be virtually non-existent because the Alternative SPM buoy systems do not contain any mechanical engines, pumps, or generators that would be running continuously during operation. Intermittent noise would be generated by support tugs and VLCCs calling at the Alternative SPM buoy systems (about 192 times per year). No significant increase in vessel traffic is anticipated in the Alternative Project area, and therefore airborne noise impacts from vessel traffic during operations would be localized and negligible.

Greater noise impacts would occur on sensitive wildlife habitat during HDD construction of the Alternative Project. Finally, while neither of the Proposed and Alternative Booster Stations will result in an audible noise level increase at the nearest NSAs, the noise increase associated with the Alternative Booster Station would be greater.

Decommissioning of the Alternative Project would result in minor sound level increases during removal of Project facilities similar to those associated with installation; activity at any one location is of short duration.

Air Quality could be impacted during construction of the Project due to emissions of dust and products of combustion from construction equipment and excavation/land clearing activities onshore/inshore and emissions of products of combustion from construction and supply vessels offshore.

There are anticipated to be insignificant emissions from storage tanks, pipeline pigging and wastewater treatment facilities. The operational impacts to air quality include emissions of hydrocarbons from loading of the vessels with a work-practice of submerged fill loading and vessel VOC management and emissions of products of combustion from VLCC and support vessels.

During decommissioning, there is potential for air quality impacts due to emissions of dust and products of combustion from construction equipment and demolition/ land clearing activities and emissions of products of combustion from demolition and supply vessels.

### 15.3.13.3 Air Quality, and Noise Impacts Summary

Based on the environmental evaluation of air quality and noise impacts for the Proposed Project and the Alternative Project, the Proposed Project is considered the LEDPA with regard to noise and is therefore considered to be environmentally preferable to the Alternative Project. Either project could be considered the LEDPA for air quality due to the similarities in both the Proposed and Alternative Project.

### 15.3.13.4 Air Quality, and Noise Impacts Mitigation

Impacts from pipeline construction on nearby NSAs will be temporary during active construction in the immediate vicinity. Noise will be attenuated using housing structures on all pumps or mechanical engines that emit noise above the acceptable limit, meeting all regulations. BWTT will investigate the use of site-specific noise mitigation at HDDs 4, 5, 6, and 7, including the use of temporary barriers between construction workspace and nearby NSAs and enclosures surrounding HDD equipment. Given the distance of the SPM buoys and Harbor Island Booster Station from NSAs, impacts are not anticipated, and additional noise mitigation measures are not necessary for the Project. However, the Harbor Island Booster Station pumping systems will be located within noise abatement housings to minimize noise during operations to the maximum extent practicable

For air quality purposes, mitigation measures correspond to control measures specified in an applicable regulation or in an enforceable construction or operating permit. Anticipated control requirements have been identified at various points in the preceding discussion and should be regarded as specific mitigation measures that will be undertaken.

### 15.3.14 Section 14 – Navigation, Safety, and Security

Section 14 – Navigation, Safety, and Security discusses the existing conditions in the vicinity of the Proposed Project and the Alternative Project, and the anticipated impacts to navigation and safety to onshore, inshore and offshore areas due to the construction, operation, and decommissioning of the Proposed Project and the Alternative Project.

#### 15.3.14.1 Proposed Project Navigation, Safety, and Security Impacts

During construction and decommissioning there may be some disruption to navigation due to GIWW and channel closures around construction vessels. This impact will be temporary for a short period of time and can be planned to reduce impact to surrounding vessel activity. Vessel traffic and navigation in the offshore area at the DWP is not anticipated to impact the DWP or be impacted by the DWP in construction or decommissioning. Closures around construction vessels or activities could have a minor and temporary impact on surrounding navigation in the channels and GIWW crossings as discussed above.

Spill or discharge from a construction or decommissioning vessel could have a minimal impact. These vessels, as long as they are operating professionally, should not pose a threat to the environment. The pipelines and HDD crossings in the GIWW and inland waters will be routed to minimize impact and will not reduce the controlling depths of the GIWW channels.

Collision or grounding could have a significant impact; however, the risk of collision and grounding is mitigated through choosing a location in greater than the minimum water depth and upwind of high traffic areas. Vessel traffic and navigation in the offshore area at the DWP could have minimal to no impact on the DWP and minimal to no impact from the DWP during normal operation.

A minimal to severe impact on safety and security during all phases of the project could occur. If Right of way crossings, markings and barriers are well maintained then the likelihood of security breaches and tampering will be minimal. If security and safety onshore are impacted by tampering or a breach of security, fire, oil spill, or vapor emissions could impact the environment or cause injury.

Safety of personnel and property could be impacted if vessels and equipment are not designed operated and maintained to a minimum standard. Classification societies and the USCG's certifying entities provide rules and oversight to ensure that the design of the system meets the requirements. This ensures impacts from equipment failures, fire, loss of stability, and other casualties is reduced or avoided. The IMO is the regulatory body that promulgates laws pertaining to tanker operator standards, training and experience, as well as safety management systems.

An oil spill onshore, inshore, or offshore, could have a significant impact on the public, area navigation, and the environment. For this reason, prevention and spill response planning are extremely important and a major focus of the Applicant. Impact on the marine traffic could be significant

#### 15.3.14.2 Alternative Project Navigation, Safety, and Security Impacts

Generally, impacts from the Alternative Project are the same as the Proposed Project for onshore and offshore pipeline construction and operation.

Collision or grounding offshore with the tanker or with the SPM buoy could have a significant impact. The risk of collision is mitigated through the use of active patrol tugs. Grounding is mitigated through choosing a location with adequate under keel clearance in all tanker loading conditions. The Proposed Project Area is preferred over the Alternative Project because the Alternative Location is situated at a confluence of shipping fairways and in summer months is downwind of prevailing weather conditions from the sea fairway and during winter months is downwind of the anchorage.

Vessel traffic and navigation in the offshore area at the DWP could have minor to negligible impact on the DWP and minor to negligible impact from the DWP during normal operation. Commercial shipping traffic utilize the sea fairways in and out of Aransas Pass. Both the Proposed and the Alternative Projects are adjacent to fairways, however the Alternative Project has fairways on 3 sides. The likelihood of collision near the Alternative Project location, due to higher traffic around the area, could be higher and for this reason it is less preferred.

Spill or discharge from a construction or decommissioning vessel could have a minor to significant impact depending on the volume and type of discharge. These vessels, during normal operation, should have a negligible impact to the environment. If a spill were to occur, the Alternative Project area is less desirable as the inshore pipeline crosses the Corpus Christi Ship Channel, two Gulf Intracoastal Waterway crossings and crosses the Corpus Christi Bay north to south. If a spill occurs in a navigable channel, the channel will shutdown for cleanup efforts. This could have a minor to significant impact, short term to the environment and to navigation. Open water areas, like Corpus Christi Bay, make oil recovery more challenging.

An oil spill onshore, inshore, or offshore, could have a significant impact on the public, area navigation, and the environment. For this reason, prevention and spill response planning are extremely important and a major focus of the Applicant. Spill response planning is used to mitigate the impact of an unlikely spill event. Spill in Corpus Christi Bay or the Corpus Christi Ship Channel, in the case of the Alternative project, could have a greater impact as the spill may be harder to contain and recover.

Generally the Alternative Project has less of an impact to public safety due to the pipeline corridor being mostly within industrial use areas rather than residential areas near Port Aransas and Aransas.

#### 15.3.14.3 Navigation, Safety, and Security Impacts Summary

Based on the environmental evaluation of navigation, safety and security impacts for the Proposed Project and the Alternative Project, the Proposed Project is considered the LEDPA with regard to navigation and is therefore considered to be environmentally preferable to the Alternative Project. Either project could be considered the LEDPA for safety and security as the projects are so similar in these regards.

#### 15.3.14.4 Navigation, Safety, and Security Impacts Mitigation

To minimize potential impacts to coastal resources and navigation, the coastal crossing of the offshore pipelines will be installed using HDD.

Risks associated with navigation and navigation safety will be mitigated with employment of competent personnel and extensive training for those conducting the offshore operations. Industry guidelines will be used to keep record of training and competence of personnel in critical position.

Risks due to other marine traffic in the area, considered low in likelihood, will be mitigated through establishing a safety zone around the DWP. The safety zone restricts vessel movement into the area where offshore operations are being conducted.

The DWP will have these types of aids to facilitate navigation and maritime safety:

- Obstruction light on the SPM

- Lights on floating hose strings
- A radar beacon (RACON)
- An approved sound signal

In addition to well-planned and risk-assessed operations procedures and the 2 support tugs per buoy, tanker collision risks associated with berthing operations are mitigated through employing two (2) highly-trained mooring masters on-board the tanker to assist the tanker master. The mooring masters are experienced tanker captains that are employed by the DWP that are intimately familiar with the DWP equipment, operations, personnel and local navigational area and regulations.

The Tactical Response Plan provides specific mitigation measures to protect and limit the impacts to these areas when responding to a release. The draft Tactical Response Plan is reference and included as part of the DWPL application and shows what needs to be deployed to mitigate the impacts. The Tactical Response Plan will have maps showing precisely the location and the type of equipment to deploy for use in planning a response effort. The plan designates response sites along Corpus Christi Bay Systems and associated drainages. These response sites were identified to include the following: site access and waterway information, strategy map, and a work assignment list with required resources to be adapted to a future incident.

The Project will comply with all applicable laws, regulations, and design standard to ensure the safe and secure construction and operation of the proposed DWP. Additionally, the following mitigation measures are proposed to be implemented to enhance the safety and security of the Project:

- The Applicant will petition the USCG to establish Safety Zones, area to be avoided and no anchorage area, per the procedures outlined in 33 CFR 150, Subpart J, and the IMO guidelines;
- The Project plans on securing dedicated support fleet, capable of deploying boom, responding to emergencies, assisting the mooring and disconnect of the tankers.
- The Project will finalize and implement a DWP Marine Operations Manual with specific requirements describing the manning and operation of the DWP, including operation of the SPM buoy, safety and navigation to and from the SPM buoy system by third parties, and safety and operation of the onshore project facilities; and,
- The Project will develop and implement an Emergency Response Plan, a Facility Safety & Security Plan, and any other safety or security documents and personnel guidelines deemed necessary by the project or the USCG.

### 15.3.15 Section 15 – Environmental Evaluation Summary

This section (herein) summarizes the whole of the Bluewater SPM Project Environmental Evaluation.

### 15.3.16 Section 16 – Cumulative Impact Analysis

In accordance with the National Environmental Policy Act of 1966, the U.S. Maritime Administration is required to conduct a cumulative impact analysis for the Project. The Council on Environmental Quality defines cumulative impacts as impacts on the environment resulting from incremental impacts of an action in conjunction with other past, present, and reasonably foreseeable future actions (40 Code of Federal Regulations [CFR] 1508.7) (CEQ 2005).

Cumulative effects generally refer to impacts that are additive or synergistic in nature and result from the construction of multiple actions in the same vicinity and time frame. Cumulative impacts can result from individually minor, but collectively significant actions, taking place over a period of time. In general, small-scale projects with minimal impacts of short duration do not significantly contribute to cumulative impacts.

As previously noted, the geographic ranges assessed for the cumulative assessment vary based on the resource being considered. The western Gulf of Mexico, specifically BOEM’s West Planning Area defines the geographic range for offshore projects, while the coast of Texas defines the geographic range for large onshore oil and gas projects. A maximum 31-mile (50-kilometer) buffer is used to identify other projects that could contribute to cumulative impacts on resources in proximity to the Harbor Island Booster Station, Onshore and Inshore Pipelines. These projects included:

- offshore oil and gas terminals;
- oil and gas exploration and production;
- onshore gas and oil storage and terminals;
- marine traffic (e.g., cruise ships, recreational and commercial fishing vessels);
- waterway improvement projects;
- pipeline projects;
- other industrial, commercial, and residential developments; and
- non-jurisdictional facilities.

Cumulative impacts are assessed for each resource topic in Section 16.

### 15.3.17 Section 17 – List of Preparers

A list of preparers for the Environmental Evaluation is included as Section 17. This list includes all preparers of any aspect of the Environmental Evaluation including project management, lead technical writers, editors, technical field surveyors, data analysts, and other contributors.

## 15.4 Selection of Preferred Bluewater SPM Project

Table 15-1 below shows the selected LEDPA project for each resources section analyzed in the Environmental Evaluation (Sections 4-14).

**Table 15-1: LEDPA Selection for Each Evaluation Resource Topic**

Environmental Resource	Proposed Project	Alternative Project
Water Quality	✓	X
Wetlands and Waters of the U.S.	✓	X
Aquatic Environment	✓	X
Commercial and Recreational Fisheries	✓	X
Wildlife and Protected Species	✓	X
Cultural Resources	✓	✓
Socioeconomics	✓	X
Geologic Resources	✓	X
Coastal Zone Use and Recreation	✓	X
Viewshed and Aesthetics	✓	X
Air Quality and Meteorology	✓	X
Noise	✓	X
Navigation	✓	X
Safety and Security	✓	✓
TOTAL	14	2

Considering all environmental resources and topics, the Proposed Project is considered the least environmentally damaging and thus is selected as the preferred alternative for the Bluewater SPM Project.