Deepwater Port License Application for the

Texas Gulf Terminals Project

Volume I

Deepwater Port License Application (Public)

Deepwater Port License Application for the **Texas Gulf Terminals Project**

The Deepwater Port License Application is submitted as the following Volumes:

Volume I – Deepwater Port License Application (Public)
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Volume I
Deepwater Port License Application (Public)

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ACRONYMS AND ABBREVIATIONS

ABS	American Bureau of Shipping
ac	acre
ACHP	Advisory Council on Historic Preservation
AISC	American Institute of Steel Construction
ANSI	American National Standards Institute
APE	Area of potential effect
API	American Petroleum Institute
Applicant	Texas Gulf Terminals Inc
AQCR	Air Quality Control Regions
A&R	Abandonment and recovery
ASME	American Society of Mechanical Engineers
ASME – BPV	American Society of Mechanical Engineers – Boiler and Pressure Vessel
ASTM	American Society for Testing and Materials
ATBA	Area to be avoided
AWS	American Welding Society
BACT	Best Available Control Technology
AWS	American Welding Society
bbl	barrels
BLM	Bureau of Land Management
BMP	Best Management Practice
BOEM	Bureau of Ocean Energy Management
bph	Barrels per hour
BPVC	Boiler and Pressure Vessel Code
BSSE	Bureau of Safety and Environmental Enforcement
CALM	Catenary anchor leg mooring
CAA	Clean Air Act
CAMx	Comprehensive Air Quality Model with extensions
CE	Certifying entity
CFR	Code of Federal Regulations
CMP	Coastal Management Plan
CMP	Coastal Migratory Pelagic
COC	Certificate of Compliance
COMDINST	Commandant's Instruction
CP	Cathodic Protection
CWA	Clean Water Act
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
DFT	dry film thickness
DGPS	Differential global positioning system
DNV	Det Norske Veritas
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy

DOI	Department of the Interior
DOS	U.S. Department of State
DOT	Department of Transportation
DPLA	Deepwater Port License Application
DP	Dynamic positioning
DTN	Data Transmission Network
DWP	Deepwater Port
DWPA	Deepwater Port Application
DWPL	Deepwater Port License
EA	Environmental Assessment
E&TS	Engineering & Terminal Services, L.P.
Edge	Edge Engineering and Science, LLC.
EFH	Essential Fish Habitat
EHS	Environmental Health and Safety
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESL	Effects Screening Levels
FCAA	Federal Clean Air Act
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FMP	fishery management plan
FTA	Fault tree analysis
FTN	Free Trade Nations
ft.	Feet
GIWW	Gulf Intracoastal Waterway
GLC	Ground level concentrations
GLO	General Land Office
GMFMC	Gulf of Mexico Fishery Management Council
GMPHOM	Guide to Manufacturing and Purchasing Hoses for Offshore Moorings
GOM	Gulf of Mexico
GPS	Global positioning system
Ha	Hectare
HAP	Hazardous Air Pollutants
HAPC	Habitat areas of concern
HAZID	Hazardous identification
HAZOP	Hazard and operability study
HDD	horizontal direction drill
HSSE	Health Safety Security Environmental
IACS	International Association of Classification Societies
i.e.	Latin stands for id est, which means “that is”
IMO	International Maritime Organization
ISM	International Safety Management Code
ISSC	International Ship Security Certificate

Km	Kilometer
LAER	Lowest Achievable Emission Rate
LACM	Lydia Ann Channel Mooring
LEI	Lloyd Engineering, Inc.
LNG	Liquefied Natural Gas
LOOP	Louisiana Offshore Oil Port
M	Meter
MACT	Maximum Achievable Control Technology
MARAD	Maritime Administration
MARPOL	International Convention for the Prevention of Pollution from Ships
MEGI	ExxonMobil Equatorial Guinea Inc
MERA	Modeling and Effects Review Applicability
MHz	Megahertz
MHT	Mean high tide
mi.	miles
mils	A unit of length equal to 0.001 of an inch
MLLW	Mean lower low water
MMbpd	million barrels per day
MMPA	Marine Mammal Protection Act
MPA	Marine Protected Area
MPMS	Marine Pipelines Metering System
MPRSA	Marine Protection Research Sanctuaries Act
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
MT	Metric ton
Mya	Million years ago
NAAQS	National Ambient Air Quality Standards
NACE	National Association of Corrosion Engineers
Naismith	Naismith Marine Services
NEC	National Electric Code
NESC	National Electric Safety Code
NDT	Non-Destructive Testing
NFPA	National Fire Protection Association
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFTN	Non-free trade nations
NFPA	National Fire Protection Association
NHPA	National Historic Preservation Act
NISA	National Invasive Species Act
NNSR	Nonattainment New Source Review
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOx	Nitrogen oxides
NO2	Nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places

NPS	Normal pipe size
NRCS	Natural Resources Conservation Service
NRDA	Natural Resource Damage Assessment
NSA	Noise Sensitive Areas
NRSP	Non-rule Standard Permit
NSPS	New Source Performance Standard
NSR	New Source Review
nT	nanoTesla
OCIMF	Oil Companies International Marine Forum
OCS	Outer Continental Shelf
OCSLA	Outer Continental Shelf Lands Act
OES	Bureau of Oceans and International Environmental and Scientific Affairs
OSHA	Occupational Safety and Health Administration
OSPRA	Oil Spill Prevention and Response Act
OSRP	Oil Spill Response Plan
OSTF	Onshore storage terminal facility
PSD	Prevention of Deterioration
PHMSA	Pipeline and Hazardous Materials Safety Administration
PINS	Padre Island National Seashore
P&I	Protection & Idemnity
P.L.	Public Law
PEM	Palustrine emergent
PHEMSA	Pipeline and Hazardous Materials Safety Administration
PLEM	Pipeline end manifold
Q88	INTERTANKO Standard Tanker Questionnaire
RACT	Reasonably Available Control Technology
RACON	Radar Beacon
RHA	Rivers and Harbors Act
ROV	Remote operated vessel
ROW	Right of Way
RP	Recommended Practice
SAV	submerged aquatic vegetation
SEAMAP	Southeast Area Monitoring and Assessment Program
SER	Significant Emission Rate
SILs	Significant Impact Levels
SIP	State Implementation Plans
SIRE	Ship Inspection Report Program
SMYS	Specified minimal yield strength
SOLAS	International Convention for the Safety of Life at Sea
SPM	single point mooring
SSPC	Society for Protective Coatings
STS	Ship-to-shore
SWCA	SWCA Environmental Consultants
TAC	Texas Administrative Code

TCAA	Texas Clean Air Act
TCEQ	Texas Commission on Environmental Control
TD	Toxicology division
T&E	Threatened and Endangered
TGTI	Texas Gulf Terminals Inc.
TGTI Project	Texas Gulf Terminals Inc. Project
TNRC	Texas Natural Resource Code
TPWD	Texas Parks and Wildlife Department
tpy	tons per year
TRG	The Response Group
Trinity	Trinity Consultants, Inc.
TxSed	Texas Sediment
U.S.	United States of America
USACE	United States Army Corps of Engineers
USC	United States Code
USCG	United States Coast Guard
USEPA	United States Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USFWS/NMFS	U.S. Fish and Wildlife Service / The National Marine Fisheries Service
USGS	U.S. Geological Survey
UT	Ultrasonic testing
VHF	Very high frequency
VLCC	Very Large Crude Carrier
VOC	Volatile Organic compounds
WCD	Worst-case discharge
WOTUS	Waters of the United States
WOUS	Waters of United States
Wt%	Weight Percent

Deepwater Port Application

Completeness Review Checklist

This checklist is to be used to determine the completeness of a deepwater port license application relative to the regulatory requirements. All information required as specified by 33 CFR Parts § 148.105 and § 148.107, to be included in the application is listed below.

√ X	Rule Section	Description of Requirement	Reference to Application	Comments (Anything Missing?)
	§148.105			
	(a)(1)	For each applicant, affiliate, and consultant—The name, address, telephone number, citizenship, and principal business activity of the applicant and its affiliates.	Section 2	
	(a)(2)	The name, address, and principal business activity of each subsidiary, division of the applicant, or its affiliates that participated in the decision to apply for a license to build a deepwater port.	Section 2	
	(a)(3)	A description of how each affiliate is associated with the applicant, and of the ownership interest each affiliate has in the applicant.	Section 2	
	(a)(4)	A list of the applicant's corporate officers and directors, and each affiliate that participated in the decision to apply for a license.	Section 2	
	(a)(5)	A statement for each applicant or affiliate, providing complete and detailed information on any civil or criminal legal proceeding during the preceding 5 years that relates to, or that could materially affect, information in the license application.	Section 2	
	(a)(6)	A declaration by the applicant that neither the applicant nor its affiliate has engaged in any lobbying activities that are prohibited by 31 U.S.C. 1352 or any other applicable Federal anti-lobbying statute.	Section 2	
	(b)(1)	Experience in matters relating to deepwater ports. A description of the applicant's, affiliate's, and consultant's experience in offshore operations, particularly operations involving the transfer and storage of liquid cargo, and the loading and unloading of vessels.	Section 3	
	(b)(2)	For each affiliate that has a significant contract with the applicant for construction of the deepwater port, a description of that affiliate's experience in construction of marine terminal facilities, offshore structures, underwater pipelines, and seabed foundations; in addition to a description of other experiences that would bear on the affiliate's qualification to participate in the construction of a deepwater port.	Section 3	

√ X	Rule Section	Description of Requirement	Reference to Application	Comments (Anything Missing?)
	(c)	Engineering firms. For each engineering firm, if known, that will design the deepwater port or a portion of the port, the application must include the firm's (1) Name; (2) Address; (3) Citizenship; (4) Telephone number; and (5) Qualifications.	Section 4	
	(d)	Citizenship and operating authority. For each applicant or group of applicants, provide: (1) An affidavit that the applicant is a citizen of the United States; (2) For State agency applicants, the law authorizing the applicant to undertake the operations detailed in the application; (3) For private corporation applicants, the current charter or certificate of incorporation and current by-laws; and affidavits of U.S. or foreign citizenship from the president, chairman of the board, and each director or their equivalents; for limited liability companies, the equivalent organizational documents, and affidavits from the members of the Board of Managers, and members; and (4) For partnerships, including limited liability partnerships, or associations not formed or owned solely by individual citizens of the United States, the certificate of formation; the partnership agreement or articles of association; the current by-laws; the minutes of the first board meeting; and affidavits of U.S. or foreign citizenship from the president and each director, or their equivalents.	Section 5	
	(e)	Address for service of documents. The name and address of one individual who may be served with documents if a formal hearing is held concerning the application, and the name and address of one individual who may receive other documents.	Section 6	
	(f)	Location and use. The proposed location and capacity of the deepwater port, a general description of the anticipated use of the port, and whether access will be open or closed.	Section 7	

√ X	Rule Section	Description of Requirement	Reference to Application	Comments (Anything Missing?)
	(g)(1)(i)	Financial information. For the applicant, each affiliate with an ownership interest in the applicant of greater than 3 percent, and affiliates which have a direct contractual relationship with the deepwater port: Annual financial statements, audited by an independent certified public accountant, for the previous 3 years, including, but not limited to, an income statement, balance sheet, and cash flow statement with footnote disclosures prepared according to U.S. Generally Accepted Accounting Principles; provided, however, that the Commandant (G-P), in concurrence with MARAD, may waive this requirement upon finding: (A) That the affiliate does not, in the normal course of business, produce audited statements; and (B) That the affiliate is part of a larger corporate group whose audited statement provides sufficient information to support an adequate assessment of the affiliate's relationship with and impact on the applicant.	Section 8	
	(g)(1)(ii)	Interim income statements and balance sheets for each quarter that ends at least 30 days before submission of the application, unless it is included in the most recent annual financial statement.	Section 8	
	(g)(2)(i)	An estimate of construction costs, including: A phase-by-phase breakdown of costs;	Section 8	
	(g)(2)(ii)	The estimated completion dates for each phase;	Section 8	
	(g)(2)(iii)	A preliminary estimate of the cost of removing all of the deepwater port marine components, including pipelines that lie beneath the seabed. The operator of a deepwater port is responsible for the costs associated with removal of all port components. Should a license be granted, MARAD will require a bond, guarantee, or other financial instrument to cover the complete cost of decommissioning as a condition of the license.	Section 8	
	(g)(3)(i)	Annualized projections or estimates, along with the underlying assumptions, for the next 5 years and at reasonable intervals throughout the life of the deepwater port, of each of the following: Total oil or natural gas throughput, and subtotals showing throughput owned by the applicant and its affiliates and throughput owned by others;	Section 8	
	(g)(3)(ii)	Projected financial statements, including a balance sheet and income statement;	Section 8	
	(g)(3)(iii)	Annual operating expenses, showing separately any payment made to an affiliate for any management duties carried out in connection with the operation of the deepwater port.	Section 8	

√ X	Rule Section	Description of Requirement	Reference to Application	Comments (Anything Missing?)
	(g)(4)	A copy of all proposals or agreements concerning the management and financing of the deepwater port, including agreements relating to throughputs, capital contributions, loans, guarantees, commitments, charters, and leases.	Section 8	
	(g)(5)(i)	The throughput reports for the calendar year preceding the date of the application, for the applicant and each of the applicant's affiliates engaged in producing, refining, or marketing oil or natural gas and natural gas liquids, along with a copy of each existing or proposed throughput agreement. Each throughput report must list the throughput of the following products: Crude oil; and if crude oil is the only product the port is designed to transport, the throughput report may be limited to reporting crude oil;	Section 8	
	(g)(5)(ii)	Gasoline;	Section 8	
	(g)(5)(iii)	Jet aviation fuel;	Section 8	
	(g)(5)(iv)	Distillate fuel oils;	Section 8	
	(g)(5)(v)	Other refinery products;	Section 8	
	(g)(5)(vi)	Natural gas;	Section 8	
	(g)(5)(vii)	Natural gas liquids.	Section 8	
	(h)(1)	Construction contracts and construction-related studies. A copy of each contract that the applicant made for the construction of any component of the deepwater port or for the operation of the port.	Section 9	
	(h)(2)(i)	A listing and abstract of: All completed or ongoing studies on deepwater ports conducted by or for the applicant;	Section 9	
	(h)(2)(ii)	All other construction-related studies used by the applicant.	Section 9	
	(h)(3)(i)	The identity of each contractor, if known, that will construct or install the deepwater port or a portion of the port, including each firm's: Name;	Section 9	
	(h)(3)(ii)	Address;	Section 9	
	(h)(3)(iii)	Citizenship;	Section 9	
	(h)(3)(iv)	Telephone number;	Section 9	
	(h)(3)(v)	Qualifications.	Section 9	
	(h)(i)(1)	Compliance with Federal water pollution requirements. Evidence, to the extent available, that the requirements of section 401(a)(1) of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1341(a)(1), will be satisfied. If complete information is not available by the time MARAD must either approve or deny the application under 33 U.S.C. 1504(i)(1), the license for the deepwater port is conditioned upon the applicant demonstrating that the requirements of section 401(a)(1) of the Federal Water Pollution Control Act Amendments of 1972, 33 U.S.C. 1341(a)(1), will be satisfied.	Section 10	

√ X	Rule Section	Description of Requirement	Reference to Application	Comments (Anything Missing?)
	(h)(i)(2)	In cases where certification under 33 U.S.C. 1341(a)(1) must be obtained from the Environmental Protection Agency Administrator, the request for certification, and pertinent information, such as plume modeling, related to the certification.	Section 10	
	(h)(j)	Coastal zone management. A request for each certification required by section 307 of the Coastal Zone Management Act of 1972, 16 U.S.C. 1456, as amended.	Section 11	
	(k)(1)(i)	Identification of lease block. Identification of each lease block where any part of the proposed deepwater port or its approaches is located. This identification must be made on Official Outer Continental Shelf Leasing Maps or Protraction diagrams, where available. Each map and diagram must be certified by a professional surveyor. For each lease block, provide the following: A description of each pipeline, or other right-of-way crossing, in enough detail to allow plotting of the rights-of-way to the nearest one-tenth of a second in latitude and longitude;	Section 12	
	(k)(1)(ii)	The identity of the lessee or grantee of each pipeline or other right-of-way.	Section 12	
	(k)(2)	Detailed information concerning any interest that anyone, including the applicant, has in each block.	Section 12	
	(k)(3)	Detailed information concerning the present and planned use of each block.	Section 12	
	(l)(1)	Overall site plan. Single-line drawings showing the location and type of each component of the proposed deepwater port and its necessary facilities, including: Floating structures;	Section 13	
	(l)(2)	Fixed structures;	Section 13	
	(l)(3)	Aids to navigation;	Section 13	
	(l)(4)	Manifold systems;	Section 13	
	(l)(5)	Onshore storage areas, pipelines, and refineries.	Section 13	
	(m)(1)(i)	Site plan for marine components. A site plan consisting of the following: The proposed size and location of all: Fixed and floating structures and associated components seaward of the high water mark, only if the proposal does not involve a connected action, for example, installation of new pipeline extending inshore of the state boundary line;	Section 14	
	(m)(1)(ii)	Recommended ships' routing measures and proposed vessel traffic patterns in the port area, including aids to navigation;	Section 14	
	(m)(1)(iii)	Recommended anchorage areas and, for support vessels, mooring areas;	Section 14	

√ X	Rule Section	Description of Requirement	Reference to Application	Comments (Anything Missing?)
	(m)(2)	A reconnaissance hydrographic survey of the proposed marine site. This survey should provide data on the water depth, prevailing currents, cultural resources, and a general characterization of the sea bottom. A requirement to submit an engineering hydrographic survey of the final marine site will be imposed as a condition in the license. The latter survey will require more extensive analysis of the soil, and detailed study to determine its physical composition, such as minerals, and if the sea bottom can support fixed components comprising a deepwater port. The applicant may submit existing data, gathered within the previous 5 years, but it must be supplemented by field data for the specific locations in which a high degree of variability exists.	Section 14	
	(n)(1)	Soil data. An analysis of the general character and condition of the ocean bottom, sub-bottom, and upland soils throughout the marine site. The applicant may use existing data, so long as it was collected within the last 5 years and continues to provide accurate information about conditions throughout the site. If not, a new survey must be completed to provide supplemental data. The analysis must include an opinion by a registered professional engineer specializing in soil mechanics concerning: The suitability of the soil to accommodate the anticipated design load of each marine component that will be fixed to or supported on the ocean floor;	Section 15	
	(n)(2)	The stability of the seabed when exposed to environmental forces resulting from severe storms or lesser forces that occur over time, including any history of accretion or erosion of the coastline near the marine site.	Section 15	
	(o)	Archeological information. An analysis of the information from the reconnaissance hydrographic survey by a qualified underwater archeologist to determine the historical or other significance of the area where the site evaluation and pre-construction testing activities were conducted. The analysis must meet standards established by the Mineral Management Service for activities on the Outer Continental Shelf, or an alternate standard that has been submitted to and approved by the Coast Guard. The survey must include the areas potentially affected by the deepwater port, or any other associated platforms, and its pipeline route(s).	Section 16	

√ X	Rule Section	Description of Requirement	Reference to Application	Comments (Anything Missing?)
	(p)(1)	Vessel information. The nation of registry for, and the nationality or citizenship of, officers and crew serving on board vessels transporting natural gas that are reasonably anticipated to be servicing the deepwater port;.	Section 17	
	(p)(2)	Description of the information that will be provided in the operations manual pertaining to vessel operations, vessel characteristics, and weather forecasting.	Section 17	
	(q)(1)	Information on floating components. A description and preliminary design drawing of each floating component, including the hoses, anchoring or securing structure, and navigation lights if the component is a mooring buoy.	Section 18	
	(q)(2)	The criteria, developed under part 149 of this chapter, to which each floating component will be designed and built.	Section 18	
	(q)(3)	The design standards and codes to be used.	Section 18	
	(q)(4)	The title of each recommended engineering practice that will be applied.	Section 18	
	(q)(5)	A description of safety, fire-fighting, and pollution prevention equipment to be used on each floating component.	Section 18	
	(q)(6)	A description of lighting that will be used on floating hoses, for night detection.	Section 18	
	(r)(1)	Information on dedicated fixed offshore components. A description and preliminary design drawing for each dedicated fixed offshore component.	Section 19	
	(r)(2)	The design criteria, developed under part 149 of this chapter, to which each fixed offshore component will be designed and built.	Section 19	
	(r)(3)	The design standards and codes to be used.	Section 19	
	(r)(4)	The title of each recommended engineering practice to be followed.	Section 19	
	(r)(5)(i)	A description of the following equipment that will be installed: Navigational lighting;	Section 19	
	(r)(5)(ii)	Safety equipment;	Section 19	
	(r)(5)(iii)	Lifesaving equipment;	Section 19	
	(r)(5)(iv)	Firefighting equipment;	Section 19	
	(r)(5)(v)	Pollution prevention equipment, excluding response equipment which must be outlined in the facility response plan;	Section 19	
	(r)(5)(vi)	Waste treatment equipment.	Section 19	
	(r)(6)(i)	A description and preliminary design drawing of the following: The cargo pumping equipment;	Section 19	
	(r)(6)(ii)	The cargo piping system;	Section 19	
	(r)(6)(iii)	The control and instrumentation system;	Section 19	
	(r)(6)(iv)	Any associated equipment, including equipment for oil or natural gas throughput-measuring, leak-detection, emergency-shutdown, and the alarm system.	Section 19	

√ X	Rule Section	Description of Requirement	Reference to Application	Comments (Anything Missing?)
	(r)(7)	The personnel capacity of each deepwater port pumping platform complex.	Section 19	
	(s)(1)	Refurbished OCS facilities and co-located fixed offshore components. A description and preliminary design drawing for each such facility or component.	Section 20	
	(s)(2)	The design criteria, developed under part 149 of this chapter, to which each facility or component will be designed and built or modified;	Section 20	
	(s)(3)	The design standards and codes to be used;	Section 20	
	(s)(4)	The title of each recommended engineering practice to be followed;	Section 20	
	(s)(5)(i)	A description of the following equipment to be installed or refurbished: Navigational lighting;	Section 20	
	(s)(5)(ii)	Safety equipment;	Section 20	
	(s)(5)(iii)	Lifesaving equipment;	Section 20	
	(s)(5)(iv)	Firefighting equipment;	Section 20	
	(s)(5)(v)	Pollution prevention equipment, excluding response equipment which must be outlined in the facility response plan;	Section 20	
	(s)(5)(vi)	Waste treatment equipment;	Section 20	
	(s)(5)(vii)	Cathodic protection.	Section 20	
	(s)(6)(i)	A description and preliminary design drawing of the following: The cargo pumping equipment;	Section 20	
	(s)(6)(ii)	The cargo piping system;	Section 20	
	(s)(6)(iii)	The control and instrumentation system;	Section 20	
	(s)(6)(iv)	Any associated equipment, including equipment for oil or natural gas throughput measuring, leak detection, emergency shutdown, and the alarm system.	Section 20	
	(s)(7)	The personnel capacity of each deepwater port pumping platform complex.	Section 20	
	(t)(1)(i)	Information on offshore pipelines. A description and preliminary design drawing of the marine pipeline, including: Size;	Section 21	
	(t)(1)(ii)	Throughput capacity;	Section 21	
	(t)(1)(iii)	Length;	Section 21	
	(t)(1)(iv)	Depth of cover;	Section 21	
	(t)(1)(v)	Protective devices.	Section 21	
	(t)(2)	The design criteria to which the marine pipeline will be designed and built.	Section 21	
	(t)(3)	The design standards and codes to be used.	Section 21	
	(t)(4)	The title of each recommended engineering practice to be followed.	Section 21	
	(t)(5)	A description of the metering system that will measure the flow rate.	Section 21	
	(t)(6)	Information concerning all submerged or buried pipelines that will crossed by the offshore pipeline, and how each crossing will be made.	Section 21	

√ X	Rule Section	Description of Requirement	Reference to Application	Comments (Anything Missing?)
	(t)(7)	Information on the pipeline that will connect to the port, including a detailed analysis that shows throughput and capacity rates of all pipelines involved	Section 21	
	(u)(1)	Information about onshore components. To the extent known by the applicant: A description of the location, capacity, and ownership of all planned and existing onshore pipelines, storage facilities, refineries, petrochemical facilities, and transshipment facilities that will be served by the deepwater port. Crude oil or natural gas gathering lines and lines wholly within a deepwater port must be included in data about onshore components only if specifically required. Entry point and major connections between lines and with bulk purchasers must be included.	Section 22	
	(u)(2)(i)	A chart showing the location of all planned and existing facilities that will be served by the port, including: Onshore pipelines;	Section 22	
	(u)(2)(ii)	Storage facilities;	Section 22	
	(u)(2)(iii)	Refineries;	Section 22	
	(u)(2)(iv)	Petrochemical facilities;	Section 22	
	(u)(2)(v)	Transshipment facilities.	Section 22	
	(u)(3)	A copy of all proposals or agreements with existing and proposed refineries that will receive oil transported through the deepwater port, the location and capacity of each such refinery, and the anticipated volume of such oil to be refined by each such refinery.	Section 22	
	(v)(1)	Information on miscellaneous components. A description of each radio station or other communications facility to be used during construction and operation of the deepwater port and its proposed concept of operation.	Section 23	
	(v)(2)	A description of the radar navigation system to be used in operation of the deepwater port outlined in the operations manual.	Section 23	
	(v)(3)	A description of the method that will be used for bunkering vessels using the deepwater port.	Section 23	
	(v)(4)	A brief description of the type, size, and number of vessels that will be used in bunkering, mooring, and servicing the vessels using the deepwater port.	Section 23	
	(v)(5)	A description and location of the shore-based support facilities, if any, that will be provided for vessels that will be used in bunkering, mooring, and servicing the vessels using the deepwater port; or that serve as offices or facilities in support of the deepwater port operations.	Section 23	
	(v)(6)	A copy of the actual radio station license, or, if not available, a copy of the application sent to the Federal Communications Commission, if available.	Section 23	

√ X	Rule Section	Description of Requirement	Reference to Application	Comments (Anything Missing?)
	(w)	Construction procedures. A description of the method and procedures to be used in constructing each component of the deepwater port, for example, shore-side fabrication, assembly and support, including anticipated dates of completion for each specific component during each phase of construction.	Section 24	
	(x)	Operations manual. A draft of the operations manual for the proposed port, containing the information under §150.15 of this chapter, must demonstrate the applicant's ability to operate the port safely and effectively. To the extent that circumstances are similar, this demonstration can be in the form of evidence appended to the draft operations manual of the applicant's participation in the safe and effective management or operation of other offshore facilities, for example, evidence of compliance with the Bureau of Ocean Energy Management (BOEM) requirements for those facilities. If the information required for the manual is not available, state why it is not and when it will be available.	Section 25	
	(y)	Risk and consequence assessment. Data to support an independent, site-specific analysis to assess the risks and consequences of accidental and intentional events that compromise cargo containment. At minimum, potential events that result in liquefied natural gas or oil spill, vapor dispersion and/or fire will be analyzed. The Coast Guard will utilize validated models, for example computational fluid dynamics or an equivalent model. The applicant may consult with Commandant CG-OES-2, on behalf of (CG-G-5P) to ensure that appropriate assessment procedures are used.	Section 26	
	(z)	Environmental evaluation. An analysis, sufficient to meet the requirements of the National Environmental Policy Act, and as outlined in subpart G of this part, of the potential impacts on the natural and human environments, including sufficient information that complies with all applicable Federal, tribal, and State requirements for the protection of the environment.	Section 27	
	(aa)(1)	Aids to navigation. For each proposed aid to navigation, the proposed position of the aid, described by latitude and longitude coordinates to the nearest second or tenth of a second, as determined from the largest scale chart of the area in which the aid is to be located. Specify latitude and longitude to a level obtained by visual interpolation between the finest graduation of the latitude and longitude scales on the chart.	Section 28	

√ X	Rule Section	Description of Requirement	Reference to Application	Comments (Anything Missing?)
	(aa)(2)(i)	For each proposed obstruction light and rotating lit beacon: Color;	Section 28	
	(aa)(2)(ii)	Characteristic;	Section 28	
	(aa)(2)(iii)	Effective intensity;	Section 28	
	(aa)(2)(iv)	Height above water;	Section 28	
	(aa)(2)(v)	General description of illumination apparatus.	Section 28	
	(aa)(3)	For each proposed sound signal on a structure, a general description of the apparatus.	Section 28	
	(aa)(4)(i)	For each proposed buoy: Shape;	Section 28	
	(aa)(4)(ii)	Color;	Section 28	
	(aa)(4)(iii)	Number or letter;	Section 28	
	(aa)(4)(iv)	Depth of water in which located;	Section 28	
	(aa)(4)(v)	General description of any light and/or sound signal apparatus on the buoy.	Section 28	
	(aa)(5)	For the proposed radar beacon, or RACON, height above water and a general description of the apparatus.	Section 28	
	(bb)	National Pollutant Discharge Elimination System (NPDES). A copy of the NPDES Application for Permit to Discharge Short Form D, for applying for a discharge permit from the Environmental Protection Agency (EPA) and any accompany studies and analyses. If complete information is not available by the time the MARAD must either approve or deny the application for a designated application area under 33 U.S.C. 1504(i)(1), the license for the deepwater port is conditioned upon the applicant receiving the required discharge permit from the EPA before the start of any discharge requiring such a permit. The issuance of the permit demonstrates that all potential water discharges have been satisfactorily analyzed and water quality control measures implemented to mitigate discharges to meet NPDES.	Section 29	
	(cc)	Structures' placement and the discharge of dredged or fill material. The information required to obtain a Department of Army permit for placement of structures and the discharge of dredged or fill material.	Section 30	
	(dd)	Additional Federal authorizations. All other applications for Federal authorizations not listed elsewhere in this subpart that are required for ownership, construction, and operation of a deepwater port.	Section 31	
	(ee)	Sworn statement. A statement that the information in the application is true must be placed at the end of the application, sworn to before a notary public, and signed by a responsible applicant official.	Section 32	

1.0 Introduction

1.1 Project Overview

Texas Gulf Terminals Inc. (TGTI; also referred to as Applicant), a Delaware Corporation, is proposing to construct, own, and operate a deepwater port (DWP), associated pipeline infrastructure, booster station, and an onshore storage terminal facility (OSTF), collectively known as the Texas Gulf Terminals Project (Project), for the export of crude oil to support the continued economic growth of the United States of America (U.S.). The Applicant is filing this Deepwater Port License (DWPL) application to obtain a license to construct, own, and operate the Project pursuant to the Deepwater Port Act of 1974, as amended (DWPA), and in accordance with the United States of America (U.S.) Coast Guard (USCG) and the Maritime Administration's (MARAD's) implementing regulations.

The purpose of the proposed Project is to provide a safe, efficient, and cost-effective logistical solution for the export of crude oil to support the continued economic growth of the U.S. The proposed Project would fulfill the need for a safe, efficient, reliable, and cost-effective logistical outlet for abundant supplies of U.S. crude oil from existing and future oil fields. Projections indicate U.S. crude oil production will increase to over 13 million barrels per day (MMbpd) by 2022 and beyond. During 2017, U.S. crude exports were over 1.1 MMbpd, which is expected to increase proportionally as U.S. crude oil production increases during the next several years.

The Applicant is proposing to construct and operate the proposed Project to allow for the loading of Very Large Crude Carriers (VLCC) at the proposed DWP via a single point mooring (SPM) buoy system. VLCC size vessels can weigh up to 320,000 deadweight tonnage (DWT) and require water depths of 71 feet (ft.), or greater when fully loaded. Currently, existing U.S. ports and navigation channels do not have sufficient depths to allow a fully laden VLCC size vessels to transport its cargo safely. As such, ship-to-ship (STS) transfers are required to fully load VLCC size vessels. As the first of its kind in the U.S., the Project is being proposed to serve as a crude oil VLCC export facility capable of directly and fully loading VLCC vessels. The proposed Project infrastructure would be capable of loading VLCCs at rates of approximately 60,000 barrels per hour (bph) and throughput capacities of approximately eight VLCCs per month.

1.2 Project Location

The proposed Project involves the design, engineering, and construction of a DWP, 26.81 miles of pipeline infrastructure, booster station, and an OSTF. For the purposes of this DWPL application, the proposed Project is described in three distinguishable segments by locality including "offshore", "inshore", and "onshore".

Offshore components associated with the proposed Project are defined as those components located seaward of the mean high tide (MHT) line located at the interface of North Padre Island and the Gulf of Mexico (GOM). The Offshore Project components include approximately 14.71 miles of two (2) new 30-inch-diameter crude oil pipelines and a DWP. The proposed offshore pipelines would extend from the MHT line located at the interface of North Padre Island and the GOM to the proposed DWP. The offshore pipelines would intersect portions Texas State submerged lease tracts 817, 818, 927, 928, 929, 933, and Outer Continental Shelf (OCS) Mustang Island Area TX3 Bureau of Ocean Energy Management (BOEM) blocks 816, 822, and 823. The proposed DWP would be installed offshore, within the GOM, outside of U.S. territorial seas, within BOEM block number 823. The proposed DWP is positioned at Latitude N27° 28' 42.60" and Longitude W97° 00' 48.43", approximately 12.7 nautical miles (14.62 statute miles) off the coast of North Padre Island in Kleberg County, Texas.

Inshore components associated with the proposed Project are defined as those components located between the western Laguna Madre MHT line and the MHT line located at the interface of North Padre Island and the GOM. Inshore Project components includes approximately 5.74 miles of two (2) new 30-inch-diameter crude oil pipelines and an onshore valve station located on North Padre Island.

Onshore components associated with the proposed Project are defined as those components landward side of the western Laguna Madre MHT line, located in Kleberg and Nueces Counties, Texas. Onshore Project components includes an approximate 150-acre OSTF, an 8.25-acre booster station, and approximately 6.36 miles of two (2) new 30-inch-diameter crude oil pipelines extending from the OSTF to the booster station and continue to the landward side of the MHT line of the Laguna Madre.

Refer to Figure 1, in Appendix A for a Vicinity Map depicting the location of the proposed Project. Refer to Figure 2 in Appendix A for a Project Component Map detailing the locations of the onshore, inshore, and offshore components associated with the proposed Project.

1.3 Project Components

The operation of the proposed Project as described within this DWPL application requires the installation and operation of offshore, inshore, and onshore Project components to allow for the loading of vessels at the proposed DWP. Refer to Figure 2 in Appendix A for a Project Component Map detailing the locations of the onshore, inshore, and offshore components associated with the proposed Project.

Offshore components associated with the proposed Project includes 14.71 miles of two (2) new paralleling 30-inch diameter offshore pipelines and the DWP. The proposed DWP would utilize a SPM buoy system as the primary device for the loading vessels berthed at the DWP with crude oil. The SPM buoy system would be positioned in water depths of approximately 93 ft. and consists of a pipeline end manifold (PLEM), catenary anchor leg mooring (CALM) system, mooring hawsers, sub-marine hoses, and floating hoses for the transfer of crude oil from the SPM buoy system to vessels berthed at the DWP.

Inshore components associated with the proposed Project includes 5.74 miles of two (2) new 30-inch-diameter pipelines and onshore valve station, for the purposes of connecting onshore Project components to offshore Project components for the operation of the proposed DWP. The inshore portions of the proposed pipeline infrastructure cross the Laguna Madre bay complex, the Gulf Intracoastal Waterway (GIWW), and extend across North Padre Island to the MHT line located at the interface of North Padre Island and the GOM. Additionally, the inshore Project components includes the installation of an onshore valve station on North Padre Island to allow for the isolation of portions of the proposed pipeline infrastructure for routine servicing, maintenance, and inspection operations.

Onshore components associated with the proposed Project include the construction and operation of an OSTF, booster station, and approximately 6.36 miles of two (2) new paralleling 30-inch-diameter pipelines located within Nueces and Kleberg Counties, Texas. The OSTF would occupy approximately 150 acres in Nueces County, Texas and consists of the necessary infrastructure to receive, store, measure, and crude oil to be transported through the proposed pipeline infrastructure to the DWP. Crude oil will be received at the OSTF through one or more incoming crude oil pipeline(s). The number, precise routing, ownership, extent to which destinations other than the OSTF will be served and other details relating to the incoming pipeline(s) are currently unknown. Accordingly, the Applicant currently has no basis upon which to describe the pipeline infrastructure that will feed the OSTF. Once more information is available about this pipeline infrastructure, the Applicant may supplement this application. The proposed booster station would occupy approximately 8.25 acres in Kleberg County, Texas and would consists of the necessary pumping infrastructure to support the transport of crude oil from the OSTF to the DWP. Onshore pipeline infrastructure would consist of approximately 6.36 miles of two (2) new paralleling 30-inch-diameter pipelines extending from the OSTF to the landward side of the MHT line located at the interface of the western shore line of the Laguna Madre.

All of the above described components are discussed within this DWPL application for overall Project clarity. The Applicant is requesting authorization from MARAD under this application for offshore Project components for which it has jurisdiction (i.e. Project components extending seaward of the MHT line located at the interface of North Padre Island and the GOM). Additionally, the Applicant has also prepared and submitted a separate permit application to the U.S. Army Corps of Engineers (USACE) for the

authorization under Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act (RHA) for the proposed Project components, as necessary, for full authorization for the construction and operation of the proposed Project (a connected action). Refer to Appendix A, Figure 2, for a Project Component Map detailing the locations of the onshore, inshore, and offshore components.

2.0 §148.105(a) Applicant, Affiliate, and Consultant Information

This section provides corporate information on the Applicant and the affiliates, as that term is defined in 33 CFR §148.5, which participated in the decision to form the Applicant and to cause the Applicant to file this Application (the "Participating Affiliates").

2.1 §148.105(a) (1) Identities of the Applicant, Participating Affiliate(s), Their Owners and Consultant(s)

Applicant
Texas Gulf Terminals Inc.
1401 McKinney, Suite 1500
Houston, Texas 77010
832-203-6400

Citizenship: U.S. (Delaware corporation)
Principal Business Activity: Crude oil storage, terminaling and export.

Texas Gulf Terminals Inc. ("Applicant") has been formed for the purpose of developing, permitting, owning, operating and maintaining the Project, and of performing activities directly related to these purposes. It is wholly owned by Trafigura US, Inc.

Affiliate of Applicant (Participating Affiliate)
Trafigura Trading LLC
1401 McKinney, Suite 1500
Houston, Texas 77010
832-203-6400

Citizenship: U.S. (Delaware limited liability company)
Principal Business Activity: Commodity trading in oil, petroleum products, natural gas, liquefied natural gas, minerals and metals markets and the supply and transportation of crude oil, petroleum products, liquefied natural gas, metals, metal ores and concentrates. It is wholly owned by Trafigura US, Inc.

Texas Gulf Terminals Inc. will finance the Project through an intercompany loan from its participating affiliate Trafigura Trading LLC. Trafigura Trading LLC is the primary U.S. legal entity for Trafigura's U.S. trading and logistics operations.

Affiliate of Applicant
Trafigura US, Inc.
1401 McKinney McKinney, Suite 1500
Houston, Texas 77010
832-203-6400

Citizenship: US (Delaware corporation)
Principal Business Activity: Trafigura US, Inc. is a holding company which holds ownership interests in US entities, including Texas Gulf Terminals Inc. and Trafigura Trading LLC, which are ultimately owned by Trafigura Group Pte. Ltd. (a Singapore corporation) ("Trafigura"). Trafigura is principally engaged through its subsidiaries in trading and investing in crude oil and petroleum products, non-ferrous concentrates, refined metals and bulk commodities such as coal and iron ore. Trafigura, taken together with its subsidiaries, is one of the world's largest traders by volume in oil and petroleum products, and one of the world's largest metals and minerals traders. Trafigura also invests in assets, directly or through

investments in associates, which have strong synergies with its core trading activities. These assets include storage terminals, service stations, metal warehouses and mines.

The affiliates of the Applicant which participated in the decision to file the Application are identified and discussed in Section 2.2, §148.105(a)(2) below.

Information on the engineering and consulting firms currently working on the Project is provided in Section 3.0, §148.105(b), Experience Related to Deepwater Ports, and Section 4.0, §148.105(c), Engineering Firms.

2.2 §148.105(a)(2) Identities of Applicant's Subsidiaries and Divisions

The Applicant's affiliates Trafigura US, Inc. and Trafigura Trading LLC participated in the decision to form Texas Gulf Terminals Inc., the Applicant. The Applicant, together with Trafigura Trading LLC (the "Participating Affiliate"), took the decision to apply for a license to construct, own, and operate the proposed Project. Contact information including name, address, and principal business activities of these entities is listed in Section 2.1, §148.105(a)(1).

2.3 §148.105(a)(3) Affiliate Relationship(s) to Applicant

A description of each affiliate of Applicant, as required by 33 CFR §148.105(a), and their associated ownership interests in the Applicant, is provided in Section 2.1, §148.105(a)(1).

2.4 §148.105(a)(4) Corporate Officers and Directors of Participating Affiliates

As stated in Section 2.2, §148.105(a)(2), the Applicant and Trafigura Trading LLC participated in the decision to apply for a license to construct, own, and operate the Project. Table 2-1 through 2-2 details the names and titles of the corporate officers and directors of the Applicant and the Participating Affiliate.

Table 2-1: Corporate Officers and Directors of Texas Gulf Terminals Inc.

Title	Name
Director/President	**Corey Prologo**
Director/Secretary	**Andrew Smolenack**
Treasurer/Authorized Representative	**Rodney Malcolm**

Table 2-2: Corporate Officers and Directors of Trafigura Trading LLC

Title	Name
Director/President	**Corey Prologo**
Director/Secretary	**Andrew Smolenack**
Treasurer/Authorized Representative	**Rodney Malcolm**

2.5 §148.105(a)(5) Applicant's and Affiliates' Five-Year Histories

Neither the Applicant nor its Participating Affiliate have been subject to any civil or criminal legal proceedings during the preceding 5 years that relate to or could materially affect information provided in this Application. Neither Applicant nor its Participating Affiliate has filed for protection under bankruptcy laws or has been a party to any litigation during the past five years that relates to, or could materially affect, the construction, ownership or operation of the Project.

2.6 §148.105(a)(6) Lobbying Activities, 31 U.S.C. §1352

Neither the Applicant nor its Participating Affiliate has engaged in any lobbying activities that are prohibited by 31 USC §1352 or any other applicable federal anti-lobbying statute.

3.0 §148.105(b) Experience Related to Deepwater Ports

This section provides an overview of the Applicant and current Project consultant experience related to DWPs.

3.1 §148.105(b)(1) Offshore Operations Experience

3.1.1 Applicant Offshore Experience

Texas Gulf Terminals Inc. (TGTI), a Delaware Corporation, will permit, construct, own, and operate the proposed Project as described within this DWPL application. Refer to Attachment B of Volume IV (Confidential) for information regarding the Applicants qualifications, key highlights, and key Project personnel biographies.

3.1.2 Consultants Offshore Experience

The Applicants consultants have considerable experience with deepwater port (DWP) projects. Of the current Project consultants is Lloyd Engineering, Inc. (LEI), Engineering & Terminal Services, L.P. (E&TS), Trinity Consultants, Inc. (Trinity), Naismith Marine Services (Naismith), The Response Group, Edge Engineering and Science, LLC (EDGE), and SWCA Environmental Consultants (SWCA). The following sections provide an overview of the Project consultants experience related to DWPs.

3.1.2.1 Lloyd Engineering, Inc.

LEI specializes in the design and construction management of offshore transfer terminals for liquid cargo, port and harbor facilities, industrial, structural, and civil engineering projects. The staff of LEI is comprised of highly seasoned and experienced personnel. The majority of the staff has experience levels that exceed 20 years in their fields of expertise. Personnel biographies of LEI staff can be found in Appendix B.

LEI, a Texas-based corporation, provides engineering and consulting services to private and public industries. These services include site investigation and evaluations, conceptual plans, feasibility studies, opinion of construction cost estimates, preliminary designs, permitting, and final designs for construction. As a consulting service, LEI provides project management to ensure timely and professional completion of design recommendations. LEI is experienced in providing DWP services along the U.S. Gulf Coast, the Caribbean, Latin America, and other areas of the world. The DWP which LEI has provided services for transfer of crude oil & other liquids includes both land-based terminals and deepwater loading/unloading facilities.

<u>Deepwater Ports and Harbor Development</u>

LEI has been recognized for its involvement in the development of DWP and harbors. The diversity of marine terminals designed and developed by LEI and the positive environmental and socioeconomic influence these terminals have represented, has frequently demonstrated that LEI has an in-depth understanding of the process required to successfully complete these projects. Detailed project sheets describing LEI's involvement in deepwater projects can are provided in Appendix B. Services cover a broad range of specialization and include but are not limited to:

- Feasibility Studies
- Conceptual Design
- Permitting
- Opinion of Cost Estimates
- Final Design Plans and Specifications
- Vessel Maneuvering Studies
- Mooring Studies
- Contract Administration

- Project/Construction Management/Coordination

Engineer, Procure, and Construct

LEI, through its involvement as the engineer of record on several major projects, enjoys a favorable working relationship with various contractors in several geographic locations. LEI has gained the respect of these contractors over the years by our understanding of constructability and economical design solutions.

Lloyd Engineering Client List

Below is a partial list of past and present clients of LEI:

- Amerada Hess
- Arco Pipe Line
- Buckeye Partners, LP
- Citgo Petroleum
- City of Valdez, Alaska
- Chiquita International
- ConocoPhillips
- EGE Haina
- El Paso Corporation
- Freeport LNG
- Formosa Plastics
- Itabo Power
- ITC
- Kinder Morgan
- MARAD
- MI SWACO
- Newpark Resources
- Oiltanking
- Port of Corpus Christi
- Port of Freeport, Texas
- Port of Galveston
- Port of Houston
- Puerto Caucedo
- Solar Turbines
- Stolt Terminals
- Valero
- Westway Terminals
- Trafigura

3.1.2.2 Engineering & Terminal Services, L.P.

E&TS is an engineering firm focused in midstream storage and transportation facilities. E&TS is a multidisciplinary engineering and design team including process, civil, structural, mechanical, and electrical/instrumental disciplines. E&TS key management personnel has more than 100 years combined experience in the petrochemical terminal industry.

Refer to Appendix B for E&TS's qualifications and Project personnel biographies.

3.1.2.3 Trinity Consultants, Inc.

Trinity provides consulting and auditing, software, and training services in areas related to environmental management and regulatory compliance. Trinity was ranked as the number one air quality consulting firm in the U.S. in an independent survey performed by LEK Consulting. Trinity is a worldwide leader in providing permitting, dispersion modeling, and compliance support for the Clean Air Act (CAA) and its accompanying regulations including Prevention of Deterioration (PSD), Nonattainment New Source Review (NNSR), Title V Federal Operating Permits, minor NSR, emissions and control technology standards including NSPS, MACT, RACT, BACT, LAER, and air quality evaluations supporting National Environmental Policy Act (NEPA) and Federal Energy Regulatory Commission (FERC) licenses. Trinity's air quality expertise is represented by the fact that:

- Trinity has performed over 20,000 environmental permitting projects
- Trinity performs approximately 2,500 air quality projects for 1,500+ industrial clients annually including more than 300 PSD projects in the past five years
- Trinity offers more than 350 EHS compliance training courses annually to more than 2,000 industry and regulatory agency professionals annually

Trinity's consultants have an in-depth understanding of the regulatory demands affecting the petroleum processing, pipeline, liquefied natural gas (LNG), liquid terminals, and offshore exploration and production industries. Trinity's support for Deepwater Port and FERC LNG licensing projects include:

- Port Dolphin LNG – Air Quality Offshore Dispersion Modeling Analysis
- Main Pass Energy Hub Import LNG – Air Quality Offshore Dispersion Modeling Analysis
- Cheniere Sabine Pass LNG – PSD Permitting and Dispersion Modeling
- Cheniere Corpus Christi LNG – PSD Permitting and Dispersion Modeling
- Freeport LNG – PSD Dispersion Modeling
- Golden Pass LNG – PSD Permitting and Dispersion Modeling
- Trunkline LNG – FERC Permitting, PSD Permitting and Dispersion Modeling
- Eagle LNG – FERC Permitting, State Air Permitting and Dispersion Modeling
- Dominion Cove – FERC Permitting, PSD Permitting and Dispersion Modeling
- Driftwood LNG – FERC Permitting, PSD Permitting and Dispersion Modeling
- Venture Global Calcasieu Pass LNG – Peer Review of Air Dispersion Modeling

Refer to Appendix B for Trinity's qualifications and Project personnel biographies.

3.1.2.4 Naismith Marine Services

Naismith is a collection of surveying and environmental professionals with a love for coastal/ocean environment. Naismith collects survey, geophysical, sediment, oyster, seagrass, and physical oceanographic data in marshes, surf zones, inlets, offshore, and deep draft channels. Naismith's extensive personal knowledge coupled with an extensive education in surveying, engineering, and hydrography provides a unique level of ability in this environment. Naismith's services are in three primary areas; beach, bay and marsh; energy, oil and gas, engineering and construction. Naismith has completed numerous surveys for deep and shallow draft ports in Texas. Naismith Marine has completed numerous projects at deep water ports and facilities, projects include:

- Oxy Ingleside Energy Center – Surveying support for the Very Large Crude Carrier (VLCC) "Anne"
- Cheniere Corpus Christi LNG – Surveying support for permit and dredging operations, Ingleside
- Freeport LNG – Surveying support for ship channel widening permitting and design
- Port Corpus Christi – Surveying support for all deep-water docks (oil, cargo, etc.)
- Brownsville Navigation District – Surveying support for all deep-water docks (oil, cargo, etc.)

- NuStar Energy – Surveying support for Dock 16, Port Corpus Christi
- Kiewit Offshore Services – Surveying support for wharf and deep hole facilities, Ingleside
- Denbury Green 24-inch CO2 pipeline – Permit, Design, and Construction Surveying, Galveston

Refer to Appendix B for Naismith's qualifications and Project personnel biographies.

3.1.2.5 The Response Group

TRG is the industry leader in crisis management and emergency response with a depth of combined experience in the oil and gas, chemical, and emergency response industries. TRG provides quality products and services with a suite of emergency response software and services from plans to actual response support.

TRG support for Deepwater Port projects include:

- Louisiana Offshore Oil Port (LOOP) – Trajectory Modeling Analysis
- Chevron, U.S.A. Inc. - Trajectory Modeling Analysis, Oil Spill Response Plan (OSRP) Gulf of Mexico, Pascagoula Tactical Response Plan
- ExxonMobil - Trajectory Modeling Analysis, OSRP Gulf of Mexico and Pacific Region
- ExxonMobil Mobil Equatorial Guinea Inc. (MEGI) - FPSO Serpentina Emergency Response Plan, Trajectory Modeling Analysis, Bioko Island Oil Spill Tactical Response Plan
- TP Terminals, S.A. – SPM project, Trajectory Modeling Analysis, Manzanillo Tactical Response Plan

Refer to Appendix B for TRG's qualifications and Project personnel biographies.

3.1.2.6 Edge Engineering and Science, LLC

EDGE provides high quality environmental science and engineering consulting services to the energy, chemical, oil and gas, manufacturing, power, and transportation industry sectors. EDGE has three primary service divisions, including National Environmental Policy Act (NEPA), Air Quality Management Staff, and Investigation and Remediation. Our uniquely qualified staff of scientists and engineers has assisted clients with environmental permitting and compliance for pipeline projects and facilities across North America. Their NEPA team has been carefully chosen for their expertise and experience and has successfully completed NEPA assessments and/or applications for the Federal Energy Regulatory Commission (FERC), the U.S. Coast Guard (USCG), the Bureau of Land Management (BLM), the U.S. Department of Energy (DOE), the U.S. Army Corps of Engineers (ACOE), the U.S. Department of State (DOS), and the National Marine Fisheries Service (NMFS). EDGE and EDGE team members have extensive experience developing third-party pipeline and LNG facility EAs and EISs, as well as applications for FERC-regulated facilities. Our staff members have been heavily involved in FERC projects and have assisted in the development of over 20 third-party/applicant-prepared EAs or EISs. Their staff has also worked extensively on Deepwater LNG Ports, including development of Topic Reports in support of a multi-phase Deepwater Port License Application, as well as EISs in support of the USCG's NEPA requirements. EDGE's support for Deepwater Port and FERC LNG licensing projects include:

- Rio Grande LNG – Third-party contractors for development of the Environmental Impact Statement (EIS)
- Louisiana LNG - Third-party contractors for development of the EIS
- Golden Pass LNG – Third-party contractors for development of the EIS
- Casotte Landing LNG - Third-party contractors for development of the EIS
- Calypso LNG Deepwater Port – Third-party contractors for development of the EIS
- Broadwater LNG Project - Third-party contractors for development of the EIS
- Bienville Offshore Energy Terminal – Third-party contractors for development of the Environmental Impact Statement

- Compass Port LNG - Third-party contractors for development of the EIS

Refer to Appendix B for EDGE's qualifications and Project personnel biographies.

3.1.2.7 SWCA Environmental Consultants

SWCA is an employee-owned company of natural and cultural resources scientists and planners. SWCA's professionals specialize in environmental and cultural resource permitting, compliance, and management. SWCA's technical staff includes individuals with diverse expertise in natural and cultural resources disciplines. Natural resources expertise includes such areas as the National Environmental Policy Act, Clean Water Act, and Endangered Species Act, as well as water resources and biological resources. SWCA has extensive experience in marine, coastal, and terrestrial settings. Cultural resources experience includes application of the National Historic Preservation Act, historic preservation, all facets of cultural resource survey, data recovery, and report preparation, as well as specialized expertise in anthropology, artifact analysis and curation, and sociocultural interpretation of numerous peoples and artifacts from historic and prehistoric cultures.

SWCA support for coastal and marine port and pipeline projects include:

- Enbridge Valley Crossing Pipeline – Onshore, Inshore and Offshore siting studies, natural and cultural resources technical studies, USACE and FERC permitting, USFWS/NMFS Biological Assessment, environmental and biological monitoring during construction
- Lydia Ann Channel Mooring (LACM), LLC – endangered species analysis, USACE Section 10 Permit Application, alternatives analysis, NMFS/USFWS Biological Assessment, and expert witness testimony at trial, on behalf of LACM.
- Cheniere Liquids Terminals – cultural resources, natural resources and multi-media permitting and compliance
- Plains All America Corpus Christi Dock – wetlands and endangered species evaluation and permitting
- Freeport LNG – archaeological monitoring, environmental compliance, FERC Phase I data response, wetland mitigation planting and monitoring.
- Beaconport LNG – fisheries and ichthyoplankton sampling

Refer to Appendix B for SWCA's qualifications and Project personnel biographies.

3.2 §148.105(b)(2) Contracted Affiliates' Marine and Offshore Construction Experience and Qualifications

At the time of submitting this DWPL application, the Applicant has not entered into any contract for the construction of the DWP facility. Once contracts are executed, the Applicant will provide copies of these contracts to the USCG. As described in Section 3.1, the Applicants consultants have considerable experience with DWP projects and have identified reputable marine and offshore construction contractors for potential use the construction of the proposed Project. A list of these potential contractors and their websites for more information is included below (this list is not all inclusive):

Single Point Mooring Buoy System

- Imodco
- Sofec
- Bluewater

Offshore Pipeline Construction and Installation

- Ranger Offshore
- Quanta Marine
- Axis Pipeline Construction Group

4.0 §148.105(c) Engineering Firms

Lloyd Engineering, Inc. (LEI) and Engineering & Terminal Services, L.P. (E&TS) have served as the primary engineering firms involved in the development of the technical details included within this DWPL application (Table 4-1). Refer to Appendix B for LEI's and E&TS's qualifications, personnel biographies, and project sheets describing involvements in DWP projects. Should additional engineering firms be identified during further design of this project, the Applicant will provide notification to the USCG regarding the additionally contracted engineering firms.

Multiple non-engineering consultants with considerable experience with DWP projects were utilized for the development of this DWPL application. Refer to Section 3, §148.105(b), for the qualifications of the Project consultants utilized for the development of this DWPL application.

Table 4-1: Identity of Participating Engineering Firms and Contact Information

Company Name	Address	Citizenship	Telephone Number
Lloyd Engineering, Inc.	6565 West Loop South, Suite 708 Houston, Texas 77401	USA	(832) 426-4656
Engineering & Terminal Services, L.P.	411 North Sam Houston Parkway East, Suite 150 Houston, Texas 77060	USA	(281) 405-0023

Note: Refer to Appendix B for Engineering and Consulting Firms Qualifications.

5.0 §148.105(d) Applicant's Citizenship and Operating Authority

Texas Gulf Terminals Inc is a corporation organized under the laws of the State of Delaware. Affidavit of citizenship of the officers and directors of the Applicant are provided in Attachment C of Volume IV (Confidential) of this DWPL application. Refer to Attachment C of Volume IV (Confidential) for legal formation documents of the Applicant.

6.0 §148.105(e) Address for Service of Documents

Name and contact details to serve documents in the event a formal hearing is held:

Texas Gulf Terminals Inc. – Legal Representative
Nicolas Gomez
1401 McKinney, Suite 1500
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832-320-2871
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7.0 §148.105(f) Proposed Location and Use of the Deepwater Port

The proposed Project consists of the construction and operation of a DWP, 26.81 miles of pipeline infrastructure, 8.25-acre booster station, and a 150-acre onshore storage terminal facility (OSTF). For the purposes of this DWPL application, the proposed Project is described as three distinguishable segments by locality including “onshore”, “inshore”, and “offshore”.

Onshore components associated with the proposed Project are defined as those components landward side of the western Laguna Madre mean high tide (MHT) line, in Nueces and Kleberg Counties, Texas. Onshore Project components includes the approximate 150-acre OSTF, 8.25-acre booster station, and approximately 6.36 miles of two (2) new 30-inch-diameter crude oil pipelines extending from the OSTF to the booster station and continue to the landward side of the MHT line of the Laguna Madre.

Inshore components associated with the proposed Project are defined as those components located between the western Laguna Madre MHT line to the MHT line located at the interface of North Padre Island and the Gulf of Mexico. Inshore Project components includes approximately 5.74 miles of two (2) new 30-inch-diameter crude oil pipelines and an onshore valve station located on North Padre Island.

Offshore components associated with the proposed project are defined as those components located seaward of the MHT line located at the interface of North Padre Island and the Gulf of Mexico. Offshore Project components includes approximately 14.71 miles of two (2) new 30-inch-diameter crude oil pipelines and a DWP.

The operation of the proposed Project as described within this DWPL application requires the installation and operation of onshore, inshore, and offshore Project components. All of the above described components are discussed in this DWPL application for overall Project clarity. The Applicant is requesting authorization from MARAD under this application for offshore Project components which it has jurisdiction (i.e. Project components extending seaward of the MHT line located at the interface of North Padre Island and the Gulf of Mexico). Additionally, the Applicant has also prepared and submitted a separate permit application to the U.S. Army Corps of Engineers (USACE) for the authorization under Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act (RHA) for the proposed Project components, as necessary, for full authorization for the construction and operation of the proposed Project (a connected action). Refer to Appendix A, Figure 2, for a Project Component Map detailing the locations of the onshore, inshore, and offshore components.

Offshore components associated with the proposed Project include approximately 14.71 miles of two (2) new 30-inch-diameter pipelines and a proposed DWP. The proposed offshore pipelines would extend from the MHT line located at the interface of North Padre Island and the Gulf of Mexico to the proposed DWP. The offshore pipelines would intersect portions Texas State submerged lease tracts 817, 818, 927, 928, 929, 933, and Outer Continental Shelf (OCS) Mustang Island Area TX3 Bureau of Ocean Energy Management (BOEM) blocks 816, 822, and 823. Section 12.0, §148.105(k), provides detailed lease block information as it relates to the proposed Project.

The proposed DWP would be installed offshore, within the Gulf of Mexico, outside of U.S. territorial seas, within BOEM block number 823. The proposed DWP includes the installation and operation of one (1) single point mooring (SPM) buoy system at Latitude N27° 28’ 42.60” and Longitude W97° 00’ 48.43”. The proposed SPM buoy system would serve as the principle DWP component used for the loading of crude carrier vessels at the DWP. The proposed SPM buoy system consists of multiple components including a Pipeline End Manifold (PLEM), catenary anchor leg mooring (CALM) system, mooring hawsers, sub-marine hoses, and floating hoses. Section 18.0, §148.105(q), provides a detailed description of the SPM buoy system associated with the proposed Project.

The purpose of the proposed Project is to provide a safe, efficient, and cost-effective logistical solution for the export of crude oil to support the continued economic growth of the U.S. If necessary, based on market conditions the design of the proposed Project can be modified for the export of product. The

proposed Project would fulfill the need for a safe, efficient, reliable, and cost-effective outlet for abundant supplies of crude oil from existing and future oil fields located in the U.S. Projections indicate U.S. crude oil production will increase to over 13 million barrels per day (MMbpd) by 2022 and beyond. During 2017, U.S. crude exports were over 1.1 MMbpd, which is expected to increase proportionally as U.S. crude oil production increases during the next several years.

The proposed Project would originate at the OSTF which would consist of the necessary infrastructure to receive, store, measure, and crude oil to be transported through the proposed pipeline infrastructure to the DWP. Crude oil will be received at the OSTF through one or more incoming crude oil pipeline(s). The number, precise routing, ownership, extent to which destinations other than the OSTF will be served and other details relating to the incoming pipeline(s) are currently unknown. Accordingly, the Applicant currently has no basis upon which to describe the pipeline infrastructure that will feed the OSTF. Once more information is available about this pipeline infrastructure, the Applicant may supplement this application. Crude oil would be transported from the OSTF to the proposed SPM buoy system via approximately 26.81 miles of two (2) new 30-inch-diameter pipelines. The SPM buoy system is the principle floating component for the loading of crude oil to vessels moored at the DWP. Two mooring hawsers will be used for the mooring of vessels to the SPM buoy. Two floating hoses extending from the SPM buoy to the vessel will transfer crude oil from the SPM buoy for the loading of moored vessels.

Use of the DWP would include the loading of various grades of crude oil at flow rates of approximately 60,000 barrels per hour (bph) onto vessels from the SPM mooring buoy system. Approximately 8 VLCC vessels (or equivalent volumes) can be loaded per month from the proposed DWP. Loading operations of one VLCC vessel is anticipated to be carried out within 48 hours, including vessel approach, mooring, cargo transfer, and vessel departure. The primary purpose of the proposed DWP is to serve as a crude export facility. As such, based on the Applicants' understanding, the classification as either an open or closed port is not applicable.

Details and specifications of vessels that would be utilizing the DWP are discussed in Section 17, §148.105(p). The Draft Operations Manual prepared for the proposed project is provided as Appendix A in Volume III (Confidential) and is discussed in detail in Section 25, §148.105(x).

8.0 §148.105(g) Financial Information

This section provides current financial information regarding the Applicant and associated affiliates. A more detailed descriptions of the Applicants financial plan is provided in Volume IV, Confidential Applicant Information and Financial Documents.

8.1 §148.105(g)(1) Applicant and Affiliates' Financial Information

The Applicant has provided annual financial statements and interim income statements for previous years as maintained in the normal course of business in Volume IV, Attachment D (Confidential) for the Applicant's affiliates with an ownership interest of greater than 3 percent; and the Applicant's contractual affiliates. The remaining affiliates which no financial statements are provided do not in the normal course of business produce such auditable financial statements. The Applicant's financial statements are provided in Volume IV, Attachment D (Confidential).

8.2 §148.105(g)(2) Construction Cost Estimates

8.2.1 (g)(2)(i) Cost of Construction

The project will be constructed in phases beginning with the final design phase. The Project will then proceed with the solicitation and contract award phase, the delivery phase, the installation phase and the testing and commissioning phase. Estimates of the anticipated construction costs and completion dates for the proposed DWP is provided in Volume IV, Attachment D (Confidential).

8.2.2 §148.105(g)(2)(ii) Construction Schedule

A preliminary schedule for the construction of the proposed Project is included in Volume I, as Appendix C. The exact start date of each phase will be based on a notice to proceed that has not been determined at this stage of the Project. The start dates indicated in the schedule are for illustration purposes only. A Microsoft Project preliminary project schedule is included in Volume I, as Appendix C, and Volume IV, Attachment D (Confidential) for reference.

8.2.3 §148.105 (g)(2)(iii) Cost of Decommissioning

The estimated cost to remove the DWP components, including the offshore pipelines that are buried beneath the seabed is included in Volume IV, Attachment D (Confidential). These components are within the limits of the DWP license area. A preliminary estimate of the cost of decommissioning all DWP marine components, including offshore pipelines buried beneath the seabed, is provided in Volume IV, Attachment D (Confidential).

8.3 §148.105(g)(3) Future Projections

The Applicant has provided a financial plan as in Volume IV, Attachment D (Confidential) which includes annualized projections for the operation of the DWP, along with projections at intervals throughout the life of the DWP. Included within the financial plan are financial statements, including balance sheets and income statements, and operating expenses.

8.4 §148.105(g)(4) Proposals and Agreements

Refer to Attachment D in Volume IV (Confidential) for information regarding financing for the proposed Project.

8.5 §148.105(g)(5) Throughput Reports

The proposed DWP is a new facility and not currently in operation. As such, there are no throughput reports preceding this DWPL application that can be provided at this time. Additional information regarding estimated throughputs is provided in Volume IV, Attachment D (Confidential).

9.0 §148.105(h) Construction Contracts and Studies

At the time of the submission of this DWPL application, the Applicant has not entered into any contracts for the construction of the DWP. Once contracts are executed, the Applicant will provide copies to the USCG.

9.1 §148.105(h)(2) Studies

Construction-related studies conducted for the Project are listed below. These studies are provided as part of this DWPL application. The Applicant will provide the USCG with copies of any future studies conducted for the Project.

- Offshore Geophysical Survey (Volume I, Appendix D)
- Laguna Madre Geophysical Survey (Volume I, Appendix E)
- Marine Archaeological Assessment (Volume III – Confidential Appendices)
- Offshore Surficial Sediment Sampling (Volume I, Appendix F)
- Shoreline Stability Analysis (Volume I, Appendix G)
- SPM Feasibility Mooring Analysis (Volume I, Appendix H)
- Gulf of Mexico Oceanographic Study (Volume I, Appendix I)
- Inshore Geotechnical Investigations Study (Volume I, Appendix J)

9.2 §148.105(h)(3) Contractor Identities

At the time of submitting this DWPL application, the Applicant has not entered into any contracts for the construction of the proposed Project. As described in Section 3, the Applicant's consultants have considerable experience with DWP projects and have identified potential reputable marine and offshore construction contractors. Once contracts are executed, the Applicant will provide copies of such contracts to the USCG. A list of these potential contractors is provided below (this list is not all inclusive):

Single Point Mooring Buoy System

- Imodco
- Sofec
- Bluewater

Offshore Pipeline Construction and Installation

- Ranger Offshore
- Quanta Marine
- Axis Pipeline Construction Group

10.0 §148.105(i) Compliance with Federal Water Pollution Requirements

The proposed Project would involve activities that require permits to insure compliance with federal water pollution regulations. The following sections detail the regulations which compliance must be demonstrated to fulfill federal water pollution requirements.

10.1 Clean Water Act 401(a)(1) State Certification

The Federal Water Pollution Control Act Amendments of 1972, known as the Clean Water Act (CWA), regulates water quality standards for surface waters, and regulates discharges into the waters of the U.S. The CWA Section 401(a)(1) directs that any applicant for a federal license or permit to conduct an activity which may result in discharge(s) into navigable waters, to provide a certification from the State that such discharge will comply with applicable provisions of sections 301, 302, 303, 306, and 307 of the CWA.

In Texas, the Environmental Protection Agency (USEPA) Region 6 has delegated authority to the Texas Commission on Environmental Quality (TCEQ) to determine whether a discharge will comply with state water quality standards. Typically, the TCEQ is the lead state agency that administers the Section 401 certification program. However, the Railroad Commission of Texas (RRC) has jurisdictional authority over the transportation and storage of crude oil in the State of Texas per TEXAS NATURAL RESOURCE CODE, '91.101 and TEX. WATER CODE, Section 26.131 for projects that require:

- dredging an access channel to conduct drilling or production operations in critical area;
- in connection with construction of a drilling pad or installation of a production platform in a critical area; or
- in connection with construction, operation, or maintenance of a crude oil or natural gas pipeline facility in a critical area.

The proposed Project requires construction, operation and maintenance of a crude oil pipeline; therefore, the RRC will issue the water quality certification for the proposed Project concurrent with the processing of a U.S. Army Corps of Engineers (USACE) permit application, under Section 401 of the CWA and Title 16, Texas Administrative Code, Section 3.93.

10.2 Section 10 of the Rivers and Harbors Act

The Rivers and Harbors Act (RHA) of 1899, requires a permit for any obstruction or alteration occurring in navigable waters of the U.S. Section 4(f) of the Outer Continental Shelf Lands Act (OCSLA) extends the authority of the USACE under Section 10 of the RHA to regulate installations on the seabed to the seaward limit of the Outer Continental Shelf (OCS). Activities associated with the proposed Project that would occur in navigable waters, over the OCS, and on the seafloor will be permitted under the Coastal Zone Management (CZM) Joint Permit Application coordinated between the USACE and the Texas General Land Office (GLO). Refer to Appendix K for the permit application submitted to the USACE requesting authorization for Project components regulated under Section 404 of the CWA and Section 10 of the RHA.

10.3 Section 404 of the Clean Water Act

Section 404 of the CWA regulates discharges of dredged or fill material into waters of the U.S. The Applicant will coordinate directly with the USACE to ensure that construction of the proposed Project will be conducted in compliance with Section 404 of the CWA. Activities associated with the proposed Project that would occur in wetlands and/or other waters of the U.S. will be permitted by the USACE under Section 404 of the CWA. Refer to Appendix K for the permit application submitted to the USACE requesting authorization for Project components regulated under Section 404 of the CWA and Section 10 of the RHA.

10.4 Section 403 of the Marine Protection, Research, and Sanctuaries Act

16 USC § 1431 et seq. and 33 USC §1401 et seq. (1988) Titles I and II of the MPRSA, also referred to as the Ocean Dumping Act, generally prohibits (1) transportation of material from the U.S. for the purpose of ocean dumping; (2) transportation of material from anywhere for the purpose of ocean dumping by U.S. agencies or U.S. flagged vessels; (3) dumping of material transported from outside the U.S. into the U.S. territorial sea. Based on current project plans, this act is not applicable, as no material would be placed in a designated offshore location.

10.5 Coastal Zone Management Act of 1972 (CZMA)

The proposed activities will occur within the Texas Coastal Zone and therefore will require a Coastal Management Program (CMP) Consistency Statement to demonstrate that the activities are consistent with the Texas Coastal Management Plan. Texas GLO CMP has oversight and review authority for projects and activities that occur within the Texas Coastal Zone and coordinates with the USACE during the Section 10 of the RHA and Section 404 of the CWA permitting process. The CMP Consistency Statement is provided as Appendix L.

10.6 Section 402 of the Clean Water Act - National Pollutant Discharge Elimination System (NPDES)

The CWA authorizes the USEPA to issue National Pollutant Discharge Elimination System (NPDES) permits. This authority has been delegated to 45 of the 50 states. In 1998, the USEPA delegated authority to the state of TCEQ to implement the NPDES to permit surface water and stormwater discharges, predominately from industrial and domestic wastewater facilities, as well as from certain construction sites. However, the RRC has jurisdictional authority over the transportation and storage of crude oil in the State of Texas. The RRC has not been delegated authority by USEPA to administer the NPDES program for non-exempt oil and gas operations. Based on input from USEPA Region 6, the onshore portion of the facility will not be included in the CWA 402(l)(2) exemption for uncontaminated storm water discharges from oil and gas exploration, production, processing, or treatment operations or transmission facilities. Hence, the onshore storage terminal facility (OSTF) will be required to obtain authorization to discharge stormwater during construction activities and normal operation. Both the RRC and USEPA Region 6 are required to authorize discharge of hydrostatic test waters from the terminal prior to placing the crude storage tanks in-service. All hydrostatic discharges would be released from the inshore and onshore locations of the proposed Project.

An NPDES permit would be required for operation of the proposed Project; however, because the facility would operate in federal waters outside of state of Texas waters, the NPDES permit application for the Project would be submitted to the USEPA. Section 304(a)(1) of the CWA [33 U.S. Code [U.S.C.] 1314 (a)(1)] requires the USEPA to develop and publish water quality criteria recommendations using current scientific information on water quality criteria. These criteria are used for evaluating potential environmental effects of pollutants to develop regulatory requirements based on potential impacts to water quality. Refer to Section 29.0, §148.105(bb), and Section 31.0 §148.105(dd), for additional information regarding NPDES applicability for the proposed Project.

11.0 §148.105(j) Coastal Zone Management

33 CFR 148.105(j) requires that "a request for each certification required by Section 307 of the Coastal Zone Management Act (CZMA) of 1972, 16 U.S.C. 1456, as amended" be included in the DWPL application. 33 CFR 148.730 states that DWP proposals must be reviewed for consistency with coastal management plans of each adjacent coastal state, as defined under the DWPA (33 U.S.C. 1502). As part of the proposed project, liquid petroleum products would be transported from the proposed OSTF located in Nueces County, Texas, through proposed pipeline infrastructure to a proposed DWP located at Latitude N27° 28' 42.60" and Longitude W97° 00' 48.43", approximately 12.7 nautical miles (14.62 statute miles) off the coast of North Padre Island in Kleberg County, Texas.

Activities associated with all onshore aspects, and all activities that would occur within the Texas state seaward boundary (i.e., 9 nautical miles (10.35 statute miles) into the Gulf of Mexico, occur within the Texas Coastal Zone and require a Texas Coastal Management Plan (CMP) Consistency Statement. The Texas General Land Office (GLO) CMP has review authority for projects and activities that occur within the Texas Coastal Zone. The State of Texas is the adjacent coastal state for the Project in accordance with the DWPA (33 U.S.C. 1502). No other state appears to meet the definition of an adjacent coastal state to the proposed Project as defined in 33 U.S.C. 1502 or would appear to be capable of that designation by the Administrator of MARAD in accordance with Section 33 U.S.C. 1508(a)(2). The Applicant has submitted a consistency determination request to the Texas GLO for consistency review with the Texas CMP. The Project's adjacent coastal state agency information is:

Texas General Land Office
Texas Coastal Management Program
Attention: Jesse Solis, Coastal Resources Division
6300 Ocean Drive Coastal Resources Division
TAMU-CC Natural Resource Center Ste., 2800
Corpus Christi, Texas 78412-5599
Jesse.Solis@glo.texas.gov

The Applicant has submitted a consistency determination request that describes the Project's compliance with the enforceable policies of the Texas CMP, and certifies that the proposed Project would be constructed, operated, and decommissioned in a manner consistent with the goals, policies and objectives of the CMP. Once the Texas CMP administrators have reviewed the consistency certification and any other necessary data, they will have up to 180 days to concur with or object to the consistency certification. The Texas consistency certifications submitted for the proposed Project is provided as Appendix L. Refer to the Section 11 of the Environmental Evaluation provided as Volume II of this DWPL application for additional information on Texas's coastal zone uses, recreation, and aesthetics.

12.0 §148.105(k) Lease Block Information

The proposed Project consists of a DWP, 26.81 miles of pipeline infrastructure, booster station, and an onshore storage terminal facility (OSTF) located in Nueces and Kleberg Counties, Texas. The proposed pipeline infrastructure consists of two (2) new 30-inch-diameter crude oil pipelines extending from the OSTF located in Nueces County, Texas to the proposed DWP located in the Gulf of Mexico.

12.1 §148.105(k)(1) Lease Block(s) where Proposed Deepwater Port or its Approaches are Located

The lease blocks intersected by the proposed Project are shown in Appendix A, Figure 4. Lease blocks which any portion of the proposed Project is located within are listed in Table 12-1. Offshore components associated with the proposed Project are located within both state and federal waters. Offshore components include approximately 14.71 miles of two (2) new 30-inch-diameter crude oil pipelines and a proposed DWP. The proposed offshore pipelines would extend from the mean high tide (MHT) line located at the interface of North Padre Island and the Gulf of Mexico to the proposed DWP. The offshore pipelines would intersect portions of Texas State submerged lease tracts 817, 818, 927, 928, 929, 933, and Outer Continental Shelf (OCS) Mustang Island Area TX3 Bureau of Ocean Energy Management (BOEM) blocks 816, 822, and 823. The proposed DWP would be installed offshore, within the Gulf of Mexico, outside of U.S. territorial seas, within BOEM block number 823. The proposed DWP includes the installation and operation of one (1) single point mooring (SPM) buoy system at Latitude N27° 28’ 42.60” and Longitude W97° 00’ 48.43”.

Table 12-1: Lease Block Information

Project Component	Lease Block ID	Project Quadrant Location	Federal/State	Lease Status	Location
Inshore Pipelines	146	NE/2	TX	None	Laguna Madre
Inshore Pipelines	146	SW/2	TX	Inactive	Laguna Madre
Inshore Pipelines	146A	ALL	TX	None	Laguna Madre
Inshore Pipelines	155	ALL	TX	Inactive	Laguna Madre
Inshore Pipelines	170	NE/2	TX	Inactive	Laguna Madre
Inshore Pipelines	170	SW/2	TX	Inactive	Laguna Madre
Inshore Pipelines	178	ALL	TX	Inactive	Laguna Madre
Inshore Pipelines	179	ALL	TX	Inactive	Laguna Madre
Offshore Pipelines	817	S/2	TX	None	Gulf of Mexico
Offshore Pipelines	817	N/2	TX	None	Gulf of Mexico
Offshore Pipelines	817	N/2	TX	None	Gulf of Mexico
Offshore Pipelines	817	S/2	TX	None	Gulf of Mexico
Offshore Pipelines	818	N/2	TX	Inactive	Gulf of Mexico
Offshore Pipelines	818	N/2	TX	None	Gulf of Mexico
Offshore Pipelines	818	S/2	TX	None	Gulf of Mexico
Offshore Pipelines	927	S/2	TX	None	Gulf of Mexico
Offshore Pipelines	928	N/2	TX	None	Gulf of Mexico
Offshore Pipelines	928	S/2	TX	None	Gulf of Mexico
Offshore Pipelines	929	N/2 OF E/640	TX	None	Gulf of Mexico
Offshore Pipelines	929	W/310	TX	None	Gulf of Mexico
Offshore Pipelines	933	N/2	TX	None	Gulf of Mexico
Offshore Pipelines	816	SW/SE	FED	None	Gulf of Mexico
Offshore Pipelines	822	NE	FED	None	Gulf of Mexico
Offshore Pipelines and DWP	823	NW/NE	FED	None	Gulf of Mexico

The Applicant has prepared exhibits for the request of right-of-way (ROW) to construct, maintain, and operate the proposed two (2) 30-inch-diameter pipelines and a DWP on submerged lands under the management authority of the Texas General Land Office (GLO) and BOEM. Refer to Appendix M for the state and federal lease block exhibits prepared for the proposed Project.

12.2 §148.105(k)(2) Interest in Lease Block(s)

An initial assessment indicates that there are no federal lease blocks with active leases traversed by the proposed Project. This assessment included the status of state and federal lease blocks for both the proposed DWP location and those blocks traversed by the proposed pipeline infrastructure extending from the OSTF. One active lease was identified within the federal protraction area, Mustang Island Area, Block 726, located approximately 28 miles northeast of the nearest Project component. Refer to Appendix A, Figure 4 and Appendix M for a depiction of the lease blocks intersected by the proposed Project. Based on the BOEM 2017–2022 Five-Year Leasing Program, there has been no interest in the OCS lease blocks traversed by or immediately adjacent to the proposed offshore facilities.[1]

12.3 §148.105(k)(3) Present and Planned Use of Lease Block(s)

Based on publicly available information managed by the BOEM, there are two abandoned pipelines that exist in the southeastern quadrant of Block 823, approximately 1.8 miles to the southeast of the nearest proposed Project component. One active lease was identified within the Project's protraction area (Mustang Island Area, Block 726), however is not intersected by the proposed Project. To the Applicant's knowledge, there are no active leases or other currently planned uses in the areas affecting the blocks identified in Table 12-1.

[1] BOEM. 2018. OIL and GAS LEASE Sale 249 Final Bid Recap Gulfwide Lease Sale, August 16, 2017. https://www.boem.gov/Sale-249-Final-Bid-Recap/, Accessed March 2018.

13.0 §148.105(l) Overall Site Plan

The information provided in Sections 13.1 through 13.5 (§148.105(l)) provides an overview of each component associated with the proposed Project. A set of detailed engineering drawings (hereon referred to as Engineering Drawings) have been prepared and submitted as part of this DWPL application for the proposed Project. This set of Engineering Drawings includes 47 sheets depicting the overall Project plan, detailed arrangements of the proposed Project components, proposed pipeline profiles, and plan and profile views of the proposed horizontal directional drills (HDD). Refer to Sheet 3 of the Engineering Drawings for a depiction of the overall plan for the proposed Project.

13.1 §148.105(l)(1) Floating Structures

Principle floating structures associated with the proposed DWP includes one single point mooring (SPM) buoy system consisting of a pipeline end manifold (PLEM) system, mooring hawsers, floating hoses, and sub-marine hoses to allow for the loading of crude oil to vessels moored at the proposed DWP. The proposed SPM buoy system would be anchored in approximately 93 feet of water at a designated location approximately 14.62 miles southeast of North Padre Island at N27° 28’ 42.60” and Longitude W97° 00’ 48.43”. Refer to the Project Figures provided as Appendix A and Engineering Drawings for a depiction of the proposed location of the SPM buoy system. The proposed SPM buoy system will be of the catenary anchor leg mooring (CALM) type permanently moored with a symmetrically arranged six-leg anchor chain system extending to pile anchors fixed on the seafloor. The proposed SPM buoy system will consist of inner and outer cylindrical shells subdivided into twelve equal-sized watertight radial compartments. A rotating table will be affixed to the SPM buoy and allow for the connection of moored vessels to the SPM buoy system via mooring hawsers. Two floating hoses equipped with marine break-away couplings will be utilized for the transfer of crude oil from the SPM buoy system to the moored vessel. Floating hoses will be equipped with strobe lights (Winkler Lights) at 15-foot intervals for detection at night and periods of low-light. Refer to Sheet 8 of the Engineering Drawings for a depiction of the proposed SPM buoy system.

Section 18, §148.105(q), of this DWPL application provides detailed descriptions of the floating components associated with the proposed DWP.

13.2 §148.105(l)(2) Fixed Structures

The proposed Project does not include the installation or operation of any dedicated fixed offshore structures.

13.3 §148.105(l)(3) Aids to Navigation

The proposed DWP would consist of aids to navigation in accordance with 33 CFR 149, Subpart E. The Applicant does not intend to request private aids to navigations under the provisions of 33 CFR 149.510. The location of the proposed DWP and surrounding vicinity is considered a low vessel traffic area. As such, there is no need to add new navigational aids to mark channels into or out of the proposed DWP. Refer to Appendix A, Figure 3 for a depiction of the proposed DWP in relation to existing fairways, anchorage areas, and vessel traffic densities.

Aids to navigation would be located on the SPM buoy system and on the floating hoses extending to vessels moored at the DWP. Refer to Sheet 8 of the Engineering Drawings for a depiction of the proposed SPM buoy system. Section 28, §148.105(aa), of this DWPL application provides detailed descriptions of the aids to navigation associated with the proposed Project.

13.4 §148.105(l)(4) Manifold Systems

The proposed Project utilizes a PLEM system that will serve as the connection point between offshore pipelines and the SPM buoy through a series of 24-inch-diameter sub-marine hoses. The PLEM system would be a steel frame structure positioned directly beneath the proposed SPM buoy system and would

be anchored directly to the seafloor via four 24-inch-diameter pneumatically installed foundation piles. Refer to Sheet 9 of the Engineering Drawings for a depiction of the general arrangement of the proposed PLEM. Section 18, §148.105(q), of this DWPL application provides detailed descriptions of the manifold systems associated with the proposed Project.

13.5 §148.105(l)(5) Onshore Storage Areas, Pipelines, and Refineries

The onshore facilities in connection with the proposed Project are defined for the purpose of this section as those components extending landward from the mean high tide (MHT) line located at the interface of North Padre Island and the Gulf of Mexico. The Applicant has also prepared and submitted a separate permit application to the U.S. Army Corps of Engineers (USACE) for the authorization under Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act (RHA) for the proposed Project components, as necessary, for full authorization for the construction and operation of the proposed Project (a connected action). Refer to Appendix K for a copy of the USACE permit application submitted for the proposed Project. For the purposes of this section, onshore facilities consist of previously classified “onshore” and “inshore” Project components, as originally identified in Section 1 – Introduction and Section 7.0 – Proposed Location and Use of the Deepwater Port. The proposed Project consists of the following onshore facilities:

- Onshore Storage Terminal Facility – The onshore storage terminal facility (OSTF) consists of an approximate 150-acre facility located in Nueces County, Texas and serves as the primary collection and storage terminal of crude oil to be directly pumped through the proposed pipeline infrastructure to the DWP. The proposed OSTF would be capable of receiving approximately 600,000 barrels (bbl) of crude oil per day from external inbound pipeline infrastructure. Refer to Sheet 10 of the Engineering Drawings for a depiction of the general arrangement of the proposed OSTF. Section 22, §148.105(u), of this DWPA provides detailed descriptions of the onshore components associated with the proposed Project.
- Onshore and Inshore Pipeline Infrastructure – The onshore and inshore pipeline infrastructure consist of two (2) new 30-inch-diameter crude oil pipelines extending approximately 12.10 miles (6.36 miles onshore and 5.74 miles inshore) from the OSTF to the MHT line located at the interface of North Padre Island and the Gulf of Mexico. Refer to Sheet 5 of the Engineering Drawings for a depiction of the onshore and inshore Project layout which details the proposed onshore and inshore pipeline infrastructure. Additionally, the onshore and inshore pipeline infrastructure is depicted in Appendix A, Figure 5 through 12. Section 22, §148.105 (u), of this DWPL application provides detailed descriptions of the onshore components associated with the proposed Project.
- Booster Station – The booster station consists of an approximate 8.25-acre area located in Kleberg County, Texas, positioned approximately 0.35 miles from the western Laguna Madre MHT line. The proposed booster station would house the pumping infrastructure to support the transport of crude oils from the OSTF to the DWP through the proposed pipeline infrastructure. Refer to Sheet 11 of the Engineering Drawings for a depiction of the general arrangement of the proposed booster station. Section 22, §148.105 (u), of this DWPA provides detailed descriptions of the onshore components associated with the proposed Project.
- Onshore Valve Station – The onshore valve station would be a fixed onshore structure located approximately 2,300 feet west of the MHT line located at the interface of North Padre Island and the Gulf of Mexico. The proposed onshore valve station would measure approximately 12-feet by 18-feet and consist of shut off valves to allow for the isolation of offshore and onshore sections of the proposed pipeline infrastructure during emergencies and routine maintenance and inspection operations. Refer to Sheet 13 of the Engineering Drawings for a depiction of the general arrangement of the proposed onshore valve station. Section 22, §148.105 (u), of this DWPA provides detailed descriptions of the onshore components associated with the proposed Project.

14.0 §148.105(m) Site Plan for Marine Components

14.1 §148.105(m)(1)(i) Overall Marine Components Site Plan

Offshore components associated with the proposed Project are defined as those components located seaward of the mean high tide (MHT) line located at the interface of North Padre Island and the Gulf of Mexico. Offshore Project components includes approximately 14.71 miles of two (2) new 30-inch-diameter crude oil pipelines and a DWP.

The proposed offshore pipelines would extend from the MHT line located at the interface of North Padre Island and the Gulf of Mexico to the proposed DWP. The offshore pipelines would intersect portions of Texas State submerged lease tracts 817, 818, 927, 928, 929, 933, and Outer Continental Shelf (OCS) Mustang Island Area TX3 Bureau of Ocean Energy Management (BOEM) blocks 816, 822, and 823.

The proposed DWP would be installed offshore, within the Gulf of Mexico, outside of U.S. territorial seas, within BOEM block number 823. The proposed DWP includes the installation and operation of one (1) single point mooring (SPM) buoy system at Latitude N27° 28’ 42.60” and Longitude W97° 00’ 48.43”. The proposed SPM buoy system would serve as the principle DWP component used for the loading of crude carrier vessels at the DWP. The proposed SPM buoy system consists of multiple components including a Pipeline End Manifold (PLEM), catenary anchor leg mooring (CALM) system, mooring hawsers, sub-marine hoses, and floating hoses. Section 18.0, §148.105(q), provides a detailed description of the SPM buoy system associated with the proposed Project.

The offshore site plan depicting the proposed DWP and offshore pipeline infrastructure is shown as Sheet 6 of the Engineering Drawings submitted as part of this DWPL application.

14.1.1 §148.105(m)(1)(ii) Ships Routing Measures and Proposed Vessel Traffic Plans

The Applicant anticipates the export of crude oil at capacities equivalent to approximately eight (8) very large crude carrier (VLCC) class vessels per month, or approximately one VLCC vessel every 3-4 days. Smaller vessels could be scheduled to arrive at a higher frequency. Vessels would likely approach the proposed DWP from the east or southeast and via the already established safety fairways as shown on NOAA Navigation Chart 11307 and 1117A. Refer Sheet 4 of the Engineering Drawings for a depiction of the proposed location of the DWP in relation to the NOAA navigation charts.

Navigational aids as described in Section 28, §148.105(v), will be fixed to the SPM buoy system. Navigational aids will include light, radar reflector and fog horn. Floating hoses will be equipped with strobe lights (Winkler Lights) at 15-foot intervals for detection at night and periods of low-light.

The Applicant does not intend to request private aids to navigations under the provisions of 33 CFR 149.510. The location of the proposed DWP and surrounding vicinity is considered a low vessel traffic area. As such, there is no need to add new navigational aids to mark channels into or out of the proposed DWP.

The SPM buoy system is located at Latitude N27° 28’ 42.60” and Longitude W97° 00’ 48.43” and will be surrounded by an area to be avoided (ATBA). The ATBA consists of a circle with a radius equal to the vessel and SPM buoy swing radius, including horizontal displacement, which has a radius of 1,614 feet. An additional 1,640-foot (500 meter) safety zone would surround the ATBA. A safety approach fairway is proposed from the already established safety fairway, as shown on NOAA Navigation Chart 11307, to the proposed DWP. The width of the proposed safety approach fairway was determined based on the diameter of the SPM buoy system swing circle with a vessel moored. Refer to Sheet 7 of the Engineering drawing for a depiction of the proposed safety approach fairway, ATAB, and safety zone associated with the proposed Project.

Incoming vessels to the proposed DWP will approach using the existing safety fairway and a pilot will board before entering the proposed safety approach fairway. The pilot will assist the master in making the

2-nautical mile approach to the proposed DWP. The vessel will make all required notifications to the USCG and the DWP before entering the safety zone. Prior to mooring to the DWP, two (2) mooring masters will board the vessel, and the pilot may disembark until departure. The mooring masters will be terminal personnel trained to assist the vessel master specifically for the marine operations at the SPM buoy system. The mooring masters will remain on board during all mooring, hose connection, initial cargo transfer, hose disconnection, and un-mooring operations.

During detail design phases of the proposed Project, navigation, traffic, mooring, and seakeeping analyses will be conducted to define specific functional requirements for support vessels. A marine operations risk assessment, as well as HAZIDs and HAZOPs will also be conducted to define threats and appropriate response measures that may dictate additional support requirements.

At this early stage in the project for operations planning purposes, a minimum of two ocean-going tugs of a minimum of 50,000 to 80,000 horse power range are assumed to be on location at the DWP during berthing and unberthing operations. The support vessels will bring the mooring masters to the DWP prior to tanker arrival to conduct pre-arrival inspections of the moorings, hoses, and all essential equipment to ensure proper functionality.

14.1.2 §148.105(m)(1)(iii) Recommended Anchorage Areas, Support Vessels, and Mooring Areas

An already established anchorage area managed by the Corpus Christi-Aransas Pass Pilots Association is located approximately 14 nautical miles north of the proposed DWP. Refer to Sheet 4 and Sheet 5 of the Engineering Drawings for a depiction of the location of the already established anchorage area. No additional designated anchorage areas are proposed to support the DWP.

Vessels to support operations at the proposed DWP will be operated and managed by a third-party. Support vessels will be moored at their own facility when idle. Support vessels will be capable of temporarily mooring to the proposed SPM buoy system when vessels to be loaded are not present.

14.2 §148.105(m)(2) Hydrographic Survey

Geophysical and archaeological surveys were conducted along the proposed offshore pipeline route and the location of the DWP. Surveys were conducted from January 15 to March 16, 2018. An Offshore Geophysical Survey Report is provided as Appendix D which summarizes the data processing, presents fully integrated interoperations of the survey data, and highlights potential hazards identified along the proposed pipeline route and within the vicinity of the DWP.

The results detailed within the Offshore Geophysical Survey Report are based on bathymetric echosounders, side-scan sonar, sub-bottom profiler, and magnetometer datasets. Geotechnical analysis of surficial sediment samples located along the proposed pipeline corridor and at the proposed DWP was also conducted. Refer to Appendix F for the Offshore Surficial Sediment Sampling Report detailing the results of the results of the geotechnical analysis.

The proposed DWP would be installed offshore, within the Gulf of Mexico, outside of U.S. territorial seas, within BOEM block number 823 at Latitude N27° 28’ 42.60” and Longitude W97° 00’ 48.43”. The proposed offshore pipelines would extend from the MHT line located at the interface of North Padre Island and the Gulf of Mexico to the proposed DWP. The offshore pipelines would intersect portions of Texas State submerged lease tracts 817, 818, 927, 928, 929, 933, and OCS Mustang Island Area TX3 BOEM blocks 816, 822, and 823. Geophysical and archaeological surveys were conducted along all portions of the proposed offshore pipeline route and at the proposed location of the DWP.

Bathymetric contours within the surveyed area indicate that water depths ranged from 0 feet mean lower low water (MLLW) at the shoreline to 96 feet MLLW at the easternmost end of the survey corridor. Based on the bathymetry survey, the proposed offshore pipelines will descend from North Padre Island over a series of three offshore bars with a relief of five feet. The offshore bars are hallmarks of winter beach profiles and may very well be transient features. Eastward of the offshore bars, the seafloor comprises a

gentle concave surface that steadily descends to the 96-foot isobath at slopes that are generally less than 1 degree.

Side-scan sonar records display patches of highly reflective seafloor across subtle mounds and depressions along the survey corridor. Based on their location immediately east of the shore face sand deposits, these patches are likely remnants of seasonal sand migrations and slight changes in sediment grain size.

Distinct light and dark bands are evident in the sonar data, indicating bottom currents are probably active in this area. The bottom currents are oriented shore-parallel, though the flow direction cannot be ascertained from the available data. The bands themselves are not anticipated to result in impacts to the installation or operation of the proposed offshore pipelines.

A total of 359 magnetic anomalies of greater than 3 gammas (nT) intensity were identified within the offshore survey area. Of these, nearly half (187) anomalies are concentrated along or very near the shoreline. A linear trend of anomalies near station 195+00 of the proposed offshore pipeline route corresponded closely with the location of the reported Mustang Island Gathering Pipeline recorded in this area. A collection of anomalies near station 282+00 of the proposed offshore pipeline route were recorded which may indicate an abandon well. None of the remaining anomalies correlate with any visible features in the survey data, or with any reported objects in the survey corridor. The location, reference number, and coordinates of each magnetic anomaly are provided in Charts 1 and 2 (Bathymetry and Seabed Features Maps) of the Offshore Geophysical Survey Report provided as Appendix D.

Thirty-eight (38) sonar contacts were observed within the survey area. Of these, three sonar contacts plausibly correlate with recorded magnetic anomalies. The location, reference number, and coordinates of each sonar contact are provided in Charts 1 and 2 (Bathymetry and Seabed Features Maps) of the Offshore Geophysical Survey Report provided as Appendix D.

The shallow subsurface along the western edge of the survey corridor is acoustically transparent (Chart 5). The offshore bars in this area indicate that it likely comprises sand as they are likely of the “Shoreface Sand” deposit. This deposit overrides an assembly of Holocene paleochannels, which appear to outcrop the seabed immediately east of the Shoreface Sand deposit. The Holocene paleochannels appear to be a series of numerous small sinuous channels that incise one another. It is likely that these are remnant distributary channels from the Nueces River delta that has since backstepped shoreward. Near station 200+00, the dipping layers of the channel fill become a mass of acoustically chaotic reflections. These sediments are probably bioturbated and/or reworked deltaic sediment discharged near the mouth of the distributaries. Even farther east, near station 280+00, the uppermost Holocene deposits become horizontally bedded, indicating the sediments was deposited in a marine environment.

The base of the Holocene sediment is defined by the Wisconsinan unconformity, beneath which the Beaumont Formation presumably lies. At the eastern terminus of the survey area, the Holocene sediment thickness is about 65 ft. This package thins toward shore and is only 10 ft. thick at station 160+00. Given that the bulk of the Holocene sediments have been deposited in only the last few thousand years, it is assumed that the Holocene sediments are under-consolidated muds with varying concentrations of sand. Refer to Charts 3 and 4 (Isopach and Shallow Geological Features Maps) of the Offshore Geophysical Survey Report provided as Appendix D.

The Wisconsinan unconformity is underlain by remnants of Late-Pleistocene paleochannels located between stations 150+00 and 280+00 along the proposed route, but no other channels below are visible farther to the east. The extents and mappable thalwegs of the Pleistocene and Holocene paleochannels are presented on Charts 3 and 4 (Isopach and Shallow Geological Features Maps) of the Offshore Geophysical Survey Report provided as Appendix D.

Near station 130+50, the Wisconsinan unconformity becomes undetectable as Holocene paleochannels have incised through the surface. It is possible that Pleistocene channel remnants exist at some depth

beneath the seabed, but the incision by Holocene channeling makes it impossible to differentiate between the two channel generations based on the sub-bottom profile data alone. Profile views of the subbottom profile and shallow subsurface geology data collected are presented on Chart 5 (Interpreted Profile) of the Offshore Geophysical Survey Report provided as Appendix D.

15.0 §148.105(n) Soil Data

Soil data including regional studies, sediment samples or borings collected at or nearby Project components was compiled and analyzed to assess the general characteristics and conditions and suitability for the proposed Project design. The following data has been compiled and/or collected and included as appendices to this DWPL application for reference:

- Appendix N: Texas General Land Office (GLO) Texas Coastal Sediments Geodatabase (TxSed) Geospatial and Geotechnical Data
- Appendix F: Offshore Surficial Sediment Sampling Analysis
- Appendix D: Offshore Geophysical Survey
- Appendix O: Existing Offshore Platform Photographs
- Appendix P: Terracon Geotechnical Comments and Conceptual Design Recommendations
- Appendix G: Shoreline Stability Analysis
- Appendix J: Inshore Geotechnical Investigations

Sediment-related geospatial and geotechnical data was extracted from the GLO maintained TxSed database to assess general sediment composition within the vicinity of the proposed Project. A total of 14 sediment sampling locations were identified within the vicinity of the proposed Project. Of these, four (4) sediment sampling locations were positioned within the Laguna Madre and ten (10) within the Gulf of Mexico. Based on this data, sediments located within the vicinity of the proposed Project in the Laguna Madre primarily consist of sand. Sediments composition within the Gulf of Mexico progressed from sand to clayey silt as distance from the shoreline of North Padre Island increased. Refer to Appendix N for the GLO TxSed Geospatial and Geotechnical Data utilized to generally assess the characteristics and conditions of the soils within the vicinity of portions of the proposed Project.

Eight (8) surficial sediment samples were collected within the Gulf of Mexico along the offshore pipeline alignment and at the location of the DWP to assess the geotechnical properties of sediments and aid determinations of soil suitability for offshore components associated with the proposed Project. Analysis of sediment samples was processed using American Society for Testing Materials (ATSM) D2487 for classification of soils for engineering purposes, ASTM D422 for grain-size analysis, and ASTM D4318 for liquid limit, plastic limit, and plasticity index. Based on the results of the analysis, sediment types ranged in classification from sand, fat clay with sand, and fat clay. Sediment classifications progressed from sand to fat clay as distance from the coast increased. Liquid limit, plastic limit, and plasticity index of soils ranged from 0 to 83, 0 to 31, and 5 to 52, respectively. For grain-size analysis, standard Sieve Numbers 4, 10, 20, 40, 60, 80, 100, and 200 were utilized and the results are reported as percent finer by weight. Sediment samples contained a range of gravel from 0% to 0.3, percent sand (coarse, medium, and fine combined) ranged from 1.1% to 82.2%, silt ranged from 8.1% to 47.9%, and clay ranged from 2% to 57.5%. Refer to Appendix F for the Offshore Surficial Sediment Sampling Analysis detailing the results of the analysis conducted for the proposed Project. Included within Appendix F is the laboratory analytical report, sample location map, and sampling photographs.

15.1 §148.105(n)(1) Soil Suitability

A sub-bottom profile survey is a standard soils investigation survey used during preliminary subsea pipeline and DWP project planning stages. The surficial sediment samples collected within the Gulf of Mexico along the offshore pipeline alignment, and at the location of the DWP, were utilized to aid in the determination of the general soil conditions and support findings of the offshore sub-bottom profile surveys. The utilization of the offshore sub-bottom profile survey in combination with densities of the surficial sediment samples allows for the relative characterization of the sediments along the seafloor. Refer to Appendix D for the results of the Offshore Geophysical Survey Report, including sub-bottom profile, conducted for offshore components associated with the proposed Project. Refer to Appendix F for the Offshore Surficial Sediment Sampling Analysis detailing the results of the sediment analysis conducted for the proposed Project.

Based on the integrated results of the surficial sediment samples collected and the offshore sub-bottom profile survey, the seafloor is suitable for the installation of the proposed offshore Project components that will be fixed or supported on the ocean floor, including offshore pipeline infrastructure.

Proposed offshore Project components that will be supported on the ocean floor includes:

- Two (2) 30-inch-diameter pipelines to be buried a minimum depth of 5-feet below the seafloor
- PLEM to be anchored by four (4) pneumatically installed 24-inch-diameter piles
- Single point mooring (SPM) buoy system of the catenary anchor leg mooring (CALM) type to be anchored to the seafloor by six (6) pneumatically installed 60-inch-diameter anchor piles

The results of the offshore sub-bottom profile survey and offshore sediment sampling analysis indicate the presence of primarily soft sediments along the offshore pipeline alignment and within the location of the DWP. As such, the sediments at the proposed DWP location are not considered sufficient to support the use of drag anchors as part of the CALM system for the anchoring of the SPM buoy. Neither the offshore sub-bottom profile survey or offshore sediment analysis indicated the presence of hard sediment strata's preventing the utilization of anchor piles for the CALM SPM buoy system or PLEM structure. As such, pneumatically installed piles would be required and are proposed to adequately support the necessary loads of the CALM anchors and secure the PLEM on the seafloor.

Existing offshore platform structures are located within the vicinity of the proposed offshore pipeline alignment. The closest existing platform is positioned approximately 4,570 feet south of the proposed offshore pipeline alignment. The presence of the existing platforms in the vicinity of the proposed offshore components of the Project supports the utilization of pneumatically installed piles as a suitable design for the necessary loads of the CALM anchors and to secure the PLEM on the seafloor. Refer to Appendix O for photographs of the existing platforms located within the vicinity of the proposed offshore Project components. The proposed offshore pipeline infrastructure will be buried a minimum depth of 5 feet below the seafloor for its entire length to ensure stabilization and protection from potential future seabed erosion.

Detailed offshore geotechnical investigation and analysis would be performed during the detailed design stage of the proposed Project. During this phase, anchor pile sizes and lengths, and offshore pipeline depths of cover would be confirmed and finalized based on the results of the offshore geotechnical investigation.

The GLO TxSed Geospatial and Geotechnical Data, Offshore Surficial Sediment Sampling Analysis, Offshore Geophysical Survey Report, and Existing Offshore Platforms Photographs were compiled and provided to Mr. John T. Juenger, P.E. of Terracon Consultants, Inc. for review, comment, and conceptual recommendations for the design and installation of the offshore components associated with the proposed Project. Based on this review, Mr. Juenger anticipates approximately 20 feet of soft to loose recent soils consisting of clays and silty sands will be encountered immediately below the mudline followed by Pleistocene deposits consisting of firm to stiff clays and medium dense sands. Based on this information and the presence of existing structures, Mr. Juenger states it is possible to support the PLEM and SPM buoy by pneumatically installed steel pipe piles. Refer to Appendix P for the Terracon Geotechnical Comments and Conceptual Design Recommendations. Appendix P consists of a statement prepared by Mr. Juenger's detailing the review of data provided and conceptual recommendations for the design and installation of the offshore components associated with the proposed Project.

15.2 §148.105(n)(2) Seabed Stability

Mott McDonald conducted a seabed stability analysis to quantify the erosional impacts that would occur to the proposed Project at the North Padre Island and Gulf of Mexico shoreline and along the pipeline alignment extending to the DWP. This analysis addresses the stability of the seabed and how it relates to the proposed Project when exposed to environmental forces.

The report identifies the accretion and erosion of the shoreline and subsea surface to provide general guidance for the burial depth of the offshore pipelines. The portions of the offshore pipelines located at the shoreline of North Padre Island and the Gulf of Mexico would be installed using horizontal directional drilling (HDD) techniques. The use of this installation method minimizes potential disturbances to the shoreline and allows for adequate depths of cover to accommodate for potential future erosion events as a result of environmental forces. Refer to Appendix G for a copy of the Shoreline Stability Analysis conducted for the proposed Project.

16.0 §148.105(o) Archaeological Information

Marine archaeological assessments of all geophysical data acquired for the proposed Project was conducted to determine the presence of areas consisting of potential historic significance or other significant potential cultural resources within the proposed Project area. Terrestrial archaeological surveys were conducted across North Padre Island to determine the presence of any potentially significant historic and/or prehistoric sites that might be affected as a result of construction activities. The Marine Archaeology Assessment and Inshore Archaeological Survey reports prepared for the proposed Project are provided in Volume III, as Appendix B and D (Confidential).

Archaeological assessments were completed in compliance with Section 106 of the National Historic Preservation Act (Public Law 89-665; 16 U.S.C. 470), requiring that the lead agency consider the effects of projects upon historic resources, if those projects receive either permits or funding from the federal government. This study complies also with the Antiquities Code of Texas (Texas Natural Resource Code, Title 9, Chapter 191), which provides for the protection of cultural resources on state lands. Submerged portions of the area of potential effect (APE) are publicly owned by the state of Texas out to 9 nautical miles beyond the beach; therefore, Texas Antiquities Permit 8302 was obtained prior to beginning fieldwork. Title 13, Part 2, Chapters 26 and 28 of The Texas Administrative Code mandates the minimum reporting and survey requirements, respectively, for marine archaeological studies conducted under Texas Antiquities Permits. The petroleum industry is regulated in federal waters, beyond 9 nautical miles offshore, by the Bureau of Ocean Energy Management (BOEM), an agency of the U.S. Department of the Interior. The marine archaeological assessments conducted for the proposed Project complies with archaeological requirements published by BOEM in Notice to Lessees 2005-G07.

Marine archaeological assessments were conducted for both offshore Project components located within the Gulf of Mexico and inshore Project components located within the Laguna Madre. A summary of archaeological findings and recommendations as a result of assessments within the Gulf of Mexico and Laguna Madre are presented in the following sections.

16.1 Offshore Marine Archaeological Assessments (Gulf of Mexico)

The offshore marine archaeological assessment survey area within the Gulf of Mexico spans portions of 3 federal lease blocks (Block 816, 822, and block 823) in the Mustang Island Area, and 7 State Mineral Lease Tracts (927, 928, 929, 933, 796, 817, and 818). Water depth ranges from 0 to 96 feet within the offshore marine archaeological assessment survey area.

A total of 38 contacts were interpreted from the offshore sonar data. None of the offshore sonar contacts correlate with magnetic anomalies greater than +/- 5 nT. As such, none of the offshore sonar contacts were considered culturally significant.

A total of 359 magnetic anomalies greater than 3 nT were interpreted in the offshore survey area in the offshore geophysical survey report. All Offshore magnetometer data was subsequently contoured at a 5 nT interval and analyzed as part of the offshore marine archaeological assessment. No culturally significant magnetic anomalies were interpreted within the marine archaeological assessment survey area.

A buried Pleistocene land surface has been interpreted from sub-bottom profiles beneath portion of the offshore survey area. This surface has potential for the preservation of intact Paleo-Indian sites. Paleo-channels incise the Pleistocene surface across an area stretching from 2.8-5.3 miles offshore. Pleistocene channel margins range from 10-15 feet below the seafloor. Thalwegs range in depth, from 14-32 feet below the seafloor. No paleo-channels are visible seaward of 5.3 miles offshore. The Pleistocene unconformity gradually slopes downward to an elevation of -160 feet at the seaward end of the alignment, where it is buried by 65 feet of Holocene sediment. There is no evidence in the Offshore survey area for less than 10 feet of Holocene cover above the Pleistocene unconformity; therefore, Paleo-Indian sites, if present, would not be affected by the proposed Project.

There is a low potential for intact prehistoric sites, dating from the Archaic Period, to be affected by construction activities occurring from 0.7-3.8 miles offshore of North Padre Island. Remnants of Holocene distributary channels, associated with an earlier Nueces River Delta, occur in the upper 10 feet of sediments, in relatively shallow water (20-45 feet). The energy of waves and wave-induced currents in this area is high during the winter season and is particularly severe during tropical storms. The shallow hazard report suggests that these deltaic sediments likely are under-consolidated muds, thus channel margins and any associated archaeological sites are presumed to have eroded. No archaeological investigation of these deposits is recommended. Refer to Appendix B for the Marine Archaeology Assessment detailing the results of the offshore marine archaeological assessment survey conducted for the proposed Project.

16.2 Inshore Marine Archaeological Assessments (Laguna Madre)

The inshore marine archaeological assessment includes portions of 8 State Mineral Lease Tracts (145A, 146A, 146, 147, 155, 170, 178, and 179) located in the Laguna Madre. Water depth ranges from 0-16 feet within the inshore marine archaeological assessment survey area.

A total of 13 contacts were interpreted from the inshore sonar data. Two inshore sonar contacts correlate with magnetic anomalies, but those anomalies are not historically significant. None of the inshore sonar targets are considered culturally significant.

Magnetic anomalies from Inshore were not individually enumerated, as this is not required in Texas state waters. All inshore magnetometer data was contoured at a 5-nT interval and analyzed as part of the inshore marine archaeological assessment. One magnetic anomaly, Anomaly 1, was interpreted as a potential shipwreck. Anomaly 1 is recommended for avoidance out to a distance of 50 meters beyond its +/- 5-nT contours as mandated by the Texas Historical Commission. Anomaly 1 will be avoided, instead, by directionally drilling beneath the anomaly avoidance zone. The Texas Historical Commission did not require acquisition of sub-bottom data in the Laguna Madre, so areas having potential for submerged prehistoric sites were not mapped inshore. Refer to Appendix B for the Marine Archaeology Assessment detailing the results of the inshore marine archaeological assessment conducted for the proposed Project.

17.0 §148.105(p) Vessel Operational Information

This section provides an overview of the vessel operations, characteristics, and weather forecasting. A Draft Operations Manual is provided in Volume III, as Appendix A (Confidential).

The proposed DWP will consist of one (1) single point mooring (SPM) buoy system which will be the principle component used for the loading of vessels with crude oil at the DWP. The crude oil loaded onto moored vessels at the DWP will be supplied from the onshore storage terminal facility (OSTF), through the proposed pipeline infrastructure, and to the SPM buoy system. Vessels will be moored to the proposed SPM buoy system via mooring hawsers. Two floating hoses will extend from the SPM buoy system to the moored vessel to allow for the transfer of crude oil.

17.1 §148.105(p)(1) Trading Carrier Registry and Nationality of Crew

The vessels that would receive crude oil at the DWP will be chartered commercial crude oil tankers. A dedicated fleet of vessels will not be built to service the proposed DWP. Market conditions at the time of shipment will determine which crude carrier vessels will be chartered for receiving crude oil. These crude carrier vessels would be chartered by the owner of the crude oil to transport the oil to its destination. The nation of registry for and the nationality of citizenship of officers and crew serving on board these vessels will vary and will likely be foreign nationals.

The Q88-INTERTANKO Standard Tanker Questionnaire for 3 sample vessels (Seaways Raphael, Apolytares, and Fontana) are included in Appendix Q. Sections 1 and 3 of the documents provided as Appendix Q detail the nation of registry and information of the crew, respectively. The Applicant would conform to the Safety of Life at Sea (SOLAS) convention, which includes specific requirements for vessels. Even though the Applicant does not own or even charter the vessels, their vetting policy for vessels calling the proposed DWP ensures the use of only modern and reliable vessels.

The Applicant's Ship Vetting policy requires a minimum the following:

- Q88-INTERTANKO Standard Tanker Questionnaire of no more than 30 days old
- USCG Certificate of Compliance (COC)
- Vessel General Permit (VGP)
- Valid International Ship Security Certificate (ISSC)
- Valid Civil Liability Convention Certificate
- Valid member or associate member of the International Association of Classification Societies (IACS)
- Current International Group P&I club certificate
- Vessel no older than 20 years
- Vessels shall have at minimum one approved SIRE report within the last 6 months
- All vessels must be double hulled
- All vessels must have P&I insurance cover
- All vessels must have no groundings, pollution, causalities, or collisions within the last 12 months
- Vessel must be in compliance with ISM Code
- Vessel must not have been detained by Port State Control within the last 24 months
- Vessel must be owned by a member of the International Tanker Owners Pollution Federation Ltd
- Prior 3 cargoes screened prior to acceptance
- Vessel must use submerged fill for loading
- In according with Marpol Annex VI, Regulation 15, Vessel must have a volatile organic compounds (VOC) Management Plan and present to the DWP, if requested

17.2 §148.105(p)(2) Operations Manual Contents Regarding Vessel Operations, Characteristics, and Weather Forecasting

An Operations Manual would include the information required to safely operate and maintain the DWP, including the information required as outlined in 33 CFR §150.15. Refer to the Draft Operations Manual provided in Volume III, as Appendix A (Confidential). Industry guidance will be followed, including Oil Companies International Marine Forum (OCIMF) SPM Maintenance and Operations Guide and the International Safety Guide for Oil Tankers and Terminals. The Draft Operations Manual includes characteristics regarding the vessels calling to the proposed DWP and the weather forecasting services that are available.

Minimum requirements for the vessels calling at the proposed DWP are also detailed in the Draft Operations Manual. Details are provided within including vessel size, certifications, mooring equipment, hose handling equipment, notification, and watch procedures. A final operations manual will detail the navigation and connection requirements including speeds and communication plans/procedures during approaches into the proposed DWP and associated safety zone, and minimum under keel clearance and maximum draft at the proposed DWP.

The Draft Operations Manual includes procedures for the tanker master, or designated person in charge, to notify the DWP and appropriate regulators. Additionally, the Draft Operations Manual details situations requiring the disconnection of the vessel as a result of different types of emergencies such as an oil spill, harsh environmental conditions, maximum hawser tensions, security issues, pressure surges, or fire.

The Draft Operations Manual details operational limits for connection, loading, and disconnection of vessels at the DWP during inclement weather and low visibility conditions. Marine weather forecasts are broadcast regularly by the National Weather Service by telephone at (805) 988-6610 or by very high frequency (VHF) weather channels. The weather channel for Corpus Christi, as listed on the nautical chart is KHB-41 162.55 megahertz (MHz). There are also commercial sources of forecasting such as Wilkens Weather Technologies (becoming DTN) that provide weather forecasts to vessels on a continuous basis.

The general range of vessel sizes utilizing the DWP will be from 155,000 deadweight tonnage (DWT) to 320,000 DWT. These vessels will be in the generally described class of very large crude carriers (VLCC) and Suezmax carriers. The current configuration of floating hoses at the SPM buoy system requires vessels be equipped with a 20-metric ton (Mt) ship crane to hoist the SPM buoy system floating hoses to the vessel manifold. Based on the Q88 database, all VLCC class vessels and multiple Suezmax class vessels are equipped with a 20 Mt ship crane and therefore would be capable of mooring to the proposed DWP. Some of these acceptable carriers may be less than 155,000 DWT. All vessels must meet the recommendations in the latest edition of OCIMF Recommendations for Equipment Employed in the Bow Mooring of Conventional Tankers at Single Point Moorings. The Applicant never has title to the crude oil; however, the responsibility for the transportation of the crude oil transfers from the proposed DWP owner (the Applicant) to the vessel at the intersection of the vessels manifold and the floating hoses.

Initial loading of vessels at the DWP will occur at a reduced rate until all product lines are filled and the liquid level is above the discharge point within the vessel. The cargo loading officer on board the vessel will advise the DWP when full flow can begin. Full flow will occur after the submerged fill condition has been verified by the cargo loading officer.

All vessels that would moor to the SPM buoy would maintain a classification by an acceptable classification society such as the Bureau Veritas, American Bureau of Shipping, or Lloyds Register. All that would moor to the proposed DWP would be double hulled tankers. Additionally, all vessels are required to have an official letter from the USCG indicating a vessel spill response plan has been submitted and approved. The vessels will be allowed to operate in the sea state conditions as described in SPM Feasibility Mooring Analysis provided as Appendix H. A final mooring analysis will be completed, and the operational parameters will be refined in the final stages of design.

18.0 §148.105(q) Floating Components

The single point mooring (SPM) buoy system is the principle floating component associated with the proposed DPW to allow for the loading of crude oil to vessels. Sections 18.1 through 18.6 (§148.105(q)) provide details of these floating components and their association with the proposed DWP. Refer to the Engineering Drawings submitted as part of this DWPL application for a depiction of the floating components discussed in this section.

18.1 §148.105(q)(1) Floating and Offshore Components Descriptions and Drawings

The proposed Project includes the installation and operation of one (1) SPM buoy system which would be the principle DWP component used for the loading of crude carrier vessels at the DWP. The proposed SPM buoy system would be located in BOEM block 832, approximately 14.62 miles off the coast of North Padre Island in Kleberg County, Texas, at Latitude N27° 28’ 42.60” and Longitude W97° 00’ 48.43”.

The proposed SPM buoy system will be anchored in approximately 93 feet of water. The proposed SPM buoy system consist of multiple components including a catenary anchor leg mooring (CALM) system, pipeline end manifold (PLEM), mooring hawsers, floating hoses, and sub-marine hoses, which have been included as part of the description of the SPM buoy system. The proposed SPM buoy system will be capable of loading very large crude carrier (VLCC) class vessel capacities in less than 48 hours including vessel approach, mooring, cargo transfer, unmooring, and vessel departure.

The feasibility of operating a proposed SPM buoy system at the proposed location was determined based on the Gulf of Mexico Oceanographic Study conducted by Oceanweather Inc. and the SPM Feasibility Mooring Analysis conducted by Alan C. McClure and Associates, Inc. Refer to Appendix I and H for the Gulf of Mexico Oceanographic Study and the SPM Feasibility Mooring Analysis, respectively.

Based on the results of the Gulf of Mexico Oceanographic Study and the SPM Feasibility Mooring Analysis, it was determined that the proposed SPM buoy system, as detailed herein, is feasible for the purposes of the proposed Project. All final designs of the proposed SPM buoy system will be in accordance with the requirements outlined in this section, as well as any other applicable laws and regulations. Details of the proposed SPM buoy system have been categorized and described in Sections 18.1.1 through 18.1.5 as detailed below.

- Section 18.1.1 §148.105 (q)(1)(i) SPM Buoy Hull Design
- Section 18.1.2 §148.105 (q)(1)(ii) SPM Buoy Mooring System Design
- Section 18.1.3 §148.105 (q)(1)(iii) SPM Buoy Rotating Table
- Section 18.1.4 §148.105 (q)(1)(iv) SPM Buoy Swivel
- Section 18.1.5 §148.105 (q)(1)(v) SPM Buoy Navigation and Location Identification
- Section 18.1.6 §148.105 (q)(1)(vi) SPM Buoy Machinery and Electrical
- Section 18.1.7 §148.105 (q)(1)(vii) Pipeline End Manifold

18.1.1 §148.105 (q)(1)(i) SPM Buoy Hull Design

The SPM buoy shall have adequate buoyancy to support all loads from hoses, chains and equipment and maintain a minimum of 6 feet of freeboard with all equipment, anchor chains and hoses in place. The SPM buoy hull will be of cylindrical shape with watertight compartments and fendering protection from work boats, tugs or collision with vessels.

The SPM buoy consists of inner and outer cylindrical shells with a bottom and top deck forming a welded toroid shaped plate structure divided into 12 equal sized radial watertight compartments. The proposed SPM buoy would remain operational with up to two (2) adjacent compartments flooded. The SPM buoy hull plate will consist of stiffeners and brackets, designed to hold all mooring loads and will be capable of being submerged in 21.5 feet of water above the top deck. The bottom of the proposed SPM buoy would

be fitted with a skirt to attach the mooring chains through chain stoppers accessible from above for adjustment. The side and bottom skirt will be protected by heavy steel fendering.

The top deck of the SPM buoy will carry the main slewing bearing for the mooring system. Cleats and mooring bollards will be mounted on the deck of the SPM buoy for mooring launches, workboats and tugs. The watertight compartments will be accessible through sealed manholes in the deck. The inner shell of the SPM buoy would house and allow for access to sub-marine hoses, valves, and the SPM buoy swivel which serves as the connection between sub-marine hoses to the above deck piping and floating hoses extending to the moored vessel for loading. The inner shell of the SPM buoy is also equipped with an access ladder for maintenance and repairs. Sub-marine hoses will extend from the SPM buoy to the PLEM, the non-floating part of the SPM buoy system. Refer to Section 18.1.7, §148.105(q)(1)(vii) for further details related to the PLEM and association with the proposed SPM buoy system.

Refer to Sheet 8 of the Engineering Drawings for a detailed depiction of the proposed SPM buoy system.

18.1.2 §148.105 (q)(1)(ii) SPM Buoy Mooring System Design

The proposed SPM buoy system will be of the CALM type consisting of six anchor legs permanently moored with a symmetrically arranged six-leg anchor chain system extending to 60-inch-diameter pile anchor piles fixed on the seafloor. The SPM buoy and anchor system will be designed to survive a 100-year storm and remain operational with a moored vessel in 5-foot seas and 35 miles per hour winds.

18.1.3 §148.105 (q)(1)(iii) SPM Buoy Rotating Table

The rotating table is mounted above the deck on a protected grease lubricated roller bearing designed to withstand weather and water. The rotating table turns around the SPM buoy hull as the vessel weather vanes during loading operations. The vessel is moored to the rotating table via two (2) 14-inch nylon hawsers with chaffing chains fixed on both ends. Mooring hawsers will be connected to mooring wenches located on the bow deck of vessel and to the SPM buoy via a tie plate mechanism. The tie plate mechanism would contain load cells that continuously monitor loads on the mooring system. The rotating table also carries the launch platform allowing personnel to board the SPM buoy from a launch or workboat and an access ladder positioned 180 degrees away to the diving platform.

Two floating hoses equipped with marine break-away couplings will be utilized for the transfer of crude oil from the SPM buoy system to the moored vessel. The floating hoses are connected to the SPM buoy launch platform and are offset 90 degrees from the mooring hawsers to avoid entanglement and interference during operations. All navigation warning equipment would be mounted to the SPM buoy launch platform. As a safety measure, the rotating table would have the ability to be locked in place with the SPM buoy hull for routine maintenance work.

18.1.4 §148.105 (q)(1)(iv) SPM Buoy Swivel

The SPM buoy swivel is mounted over the central well of the SPM buoy and houses the connections between sub-marine hoses extending to the PLEM to the above deck piping. Such connections would be achieved via 24-inch-diameter piping extending from the lower fixed portion of the swivel to topside of the SPM buoy swivel which rotates along with the SPM rotating table. This connection allows for the transfer of crude oil from sub-marine hoses extending from the PLEM, to the SPM buoy, and to the floating hoses extending from the SPM buoy to for the loading of moored vessel. A leakage detection and control system would be mounted to the SPM buoy swivel for monitoring purposes during operations.

18.1.5 §148.105 (q)(1)(v) SPM Buoy Navigation and Location Identification

The proposed SPM buoy system would be equipped with navigation and location identifiers including a radar reflector mounted above the rotating table, an omnidirectional 1-mile fog horn at 112 decibel sounding Morse code letter “U” at 30 second intervals, and a 360-degree white light visible for 5 nautical miles flashing the Morse code letter “U” at 15 second intervals.

18.1.6 §148.105 (q)(1)(vi) SPM Buoy Machinery and Electrical

Machinery and electrical equipment mounted on the SPM buoy rotating table includes:

- Solar panels and associated electrical equipment
- Wench and jib crane for tensioning anchor chains and lifting heavy parts on board
- Audible alarm
- Radar reflector
- Navigation lighting

Machinery and Equipment mounted in the SPM buoy hull compartment includes:

- Hydraulic pump, accumulators, reservoirs, and controls for remotely operating the PLEM valves
- Telemetering and communications equipment

18.1.7 §148.105 (q)(1)(vii) Pipeline End Manifold

The proposed SPM buoy system includes a PLEM system that will serve as the connection point between subsea pipelines and the SPM buoy. The PLEM system would be a 47-foot by 68-foot steel frame structure positioned directly beneath the proposed SPM buoy system and would be anchored directly to the seafloor with piles. The PLEM system would serve as the manifold for the two (2) 30-inch-diameter crude oil pipelines extending to the Onshore Storage Terminal Facility (OSTF). The PLEM will consist of a series of hydraulically operated ball valves which can be closed to stop pipeline flow if determined necessary. The PLEM will connect subsea pipelines to the 24-inch-diameter sub-marine hoses which will extend to the SPM buoy. The sub-marine hoses extending from the PLEM to the SPM buoy would be of the API 17K specification. Refer to Sheet 9 of the Engineering Drawings for the general arrangement of the PLEM.

18.2 §148.105(q)(2) Floating Offshore Components Design Criteria

The design of the SPM buoy system shall be suitable for loading various petroleum crude grades at approximately 60,000 barrels per hour (bph) to vessels moored to the SPM buoy. The SPM buoy shall be designed to provide a safe mooring for vessels within the sea states specified and to survive a 100-year storm event. The SPM buoy and PLEM system shall be designed and installed for 25 years of service (subject to periodic inspection) in accordance with standards set by the American Bureau of Shipping for a Class + A1 single point mooring suitable for tankers up to 320,000 DWT. The various design criteria are listed in further detail below:

- American Bureau of Shipping (ABS)
    - Rules for Building and Classing Single Point Moorings, 1996
    - Offshore Installation Rules
- American Petroleum Institute (API)
    - Standard 1104 Welding of Pipelines and Related Facilities
    - Bulletin 1111 Design, Construction, Operation, and Maintenance of Offshore Hydrocarbon Pipelines
    - 17K Standards for Sub-marine Hoses
- National Electric Code
- National Electrical Manufactures Association Requirements
- OCIMF Single Point Mooring Maintenance and Operations Guide (Third Edition 2015)

18.3 §148.105(q)(3) Floating Offshore Components Design Standards and Codes

The design standards and codes referenced for the floating components associated with the proposed SPM buoy system are as follows:

- 2005 American Institute of Steel Construction (AISC)
  - Manual of Steel Construction, Allowable Stress Design

- American Petroleum Institute (API)
  - Spec. 5L, Specification for Line Pipe Spec.
  - 6D, Specification for Pipeline Valves, End Closures and Swivels
  - Bulletin 520 Part 1: Sizing, Selection and Installation of Pressure-relieving Devices
  - Bulletin 521 Pressure-relieving and De-pressuring Systems
  - Specification for Handling, Transporting and Storing Line Pipe and related Equipment
  - Spec. 2F, Specification for Mooring Chain

- American National Standards Institute (ANSI)
  - B16.1 Dimensions for Pipe, Flanges and Valve Packages

- American Society of Mechanical Engineers (ASME)
  - B31.3 Chemical Plant and Petroleum Refinery Piping
  - B36.10 Welded Seamless Wrought Steel Pipe
  - ASME V, Non-Destructive Examination
  - ASME VIII, Boiler and Pressure Vessel Code, Division I
  - ASME IX, Welding Code
  - B16.5, Steel Pipe Flanges and Flanged Fittings
  - B16.9, Factory Made Wrought Steel Butt-Weld Fittings
  - B16.10, Face-to-Face and End-to-End Dimensions of Valves
  - B16.11, Forged Fittings, Socket Welding and Threaded
  - B16.20, Ring Joint Gaskets and Grooves for Steel Pipe Flanges
  - B16.34, Valves Flanged, Threaded and Welding End
  - B16.47, Large Diameter Steel Flanges NPS 26 through NPS 60

- Oil Companies International Marine Forum (OCIMF)
  - Standards for Equipment Employed in the Mooring of Ships and SPMs.
  - Procedures for Quality Control and Inspection During Production of Hawsers

- Det Norske Veritas (DNV) RP-B401,
  - Cathodic Protection Design

- National Society of Corrosion Engineers
  - RP 0169-02 Control of External Corrosion on Underground or Submerged Metallic Piping Systems and subsequent related RPs
  - RP 0176-94 Corrosion control of Submerged Area of permanently Installed Steel Offshore Structures Associated with Petroleum Production and subsequent related RPs

- Society for Protective Coatings
  - PA 2 Determining Compliance to Required DFT
  - SP 1 Solvent Cleaning
  - SP 3 Power Tool Cleaning
  - SP 10/NACE No. 2 Near white Blast Cleaning
  - VIS 1 Visual Standards for Dry Abrasive Blast Cleaning

18.4 §148.105(q)(4) Floating Offshore Components Engineering Practices

The engineering practices referenced for the floating components associated with the proposed SPM buoy system are as follows:

- Oil Companies International Marine Forum
  - Guide to the Maintenance and Operation of Single Point Mooring
  - Guide to Manufacturing and Purchasing Hoses for Offshore Moorings (GMPHOM 2009)
  - Buoy Mooring Forum Hose Guide for the Handling, Storage, Inspection and Testing of Hoses in the Field
  - Guide to Purchasing Hawsers

- National Society of Corrosion Engineers
  - SP 0177-2014 Standard Recommended Practice- Mitigation of Alternating Current and Lighting Effects on steel Structures and Corrosion Control Systems
  - SP 0394-2013 Standard Recommended Practice- Application, Performance and Quality Control of Plant Applied Fusion Bonded Epoxy External Pipe Coating.
  - SP 0490 Holiday Detection of Fusion-bonded Epoxy External Pipeline Coating of 250 to 760 µm (10 to 30mils)
  - Sp0169-2013 Control of External Corrosion on Underground or Submerged Piping Systems

- NFPA Bulletins
  - 77 Recommended Practice on Static Electricity

18.5 §148.105(q)(5) Safety, Firefighting, and Pollution Prevention Equipment

18.5.1 §148.105(q)(5)(i) Safety

- OSHA
  - Handrails and ladders are provided to protect personnel on routine operating and maintenance duties.
  - Ring type life preservers will be provided.
  - Standby launches will be available when anyone is working on the buoy
  - No one will be allowed to work alone on the buoy

18.5.2 §148.105(q)(5)(ii) Fire Fighting

- NFPA Bulletins
  - 30 Flammable and Combustible Liquids Code
  - 307 Standards for the Construction and Fire Protection of Marine Terminals, Piers and Wharfs

- Terminal management Hot Work permits will be required
  - Stand by maintenance personnel will be on duty for all “hot” work on the buoy with fire extinguishers.
  - Major fires will be fought from the deck of the ship and/or by harbor fire boats and tugs outfitted with the proper equipment.

18.5.3 §148.105(q)(5)(iii) Pollution Control and Prevention Equipment

- Leak detection and retention equipment is built into the product swivel
- Floating hoses have a double carcass to contain leaks from the inner carcass.
- Sub-marine hoses have either a double carcass or a dual carcass that contains leaks
- A break-away-dry-coupling is provided in each floating hose if the ship should break free of the buoy with floating hoses attached.

- Multiple personnel on the deck of the tanker and onshore will be on watch during a loading operations.
- Data will be available via the telemetering equipment to the tanker and to shore personnel. This data will consist of multiple pressure readings and flow rates along the pipeline. Unusual movements in pressure will automatically shut down pumps.
- Required pre and post-loading inspections of the equipment.

18.6 §148.105(q)(6) Lighting on Floating Hoses for Night Detection

Floating hoses will be identified at night with strobe lights (Winker Lights) at 15-foot intervals along the full length of the floating hoses**.**

19.0 §148.105(r) Fixed Offshore Components

Section §148.105(r) is not applicable to the proposed Project as it does not include the construction or operation of any dedicated fixed offshore components.

20.0 §148.105(s) Refurbished OSC Facilities and Co-located Fixed Offshore Components

Section §148.105(s) is not applicable to the proposed Project. There will be no refurbished OCS facilities and/or co-located fixed offshore components utilized as part of the proposed Project. The Applicant investigated the feasibility of utilizing existing infrastructure. Based on this review, it was determined that there is currently no existing infrastructure located within the area meeting the necessary criteria to fulfill the Project purpose and need. As such, the utilization and/or refurbishing of existing infrastructure was not determined feasible for the proposed Project.

Refer to Volume II of this DWPL application for a detailed alternatives analysis conducted for the proposed Project which discusses the feasibility of utilizing existing infrastructure.

21.0 §148.105(t) Offshore Pipelines

The proposed Project requires the installation and operation of onshore, inshore, and offshore pipeline infrastructure totaling approximately 26.81 miles of two (2) new 30-inch-diameter crude oil pipelines. The proposed onshore pipeline infrastructure consists of approximately 6.36 miles and is defined as the pipeline infrastructure extending from the landward side of the western Laguna Madre mean high tide (MHT) line to the onshore storage terminal facility (OSTF) within Nueces and Kleberg Counties, Texas. The inshore pipeline infrastructure consists of approximately 5.74 miles and is defined as the pipeline infrastructure between the western Laguna Madre MHT line to the MHT line located at the interface of North Padre Island and the Gulf of Mexico. The proposed offshore pipeline infrastructure consists of approximately 14.71 miles and is defined as the pipeline infrastructure located seaward of the MHT line located at the interface of North Padre Island and the Gulf of Mexico to the proposed DWP.

The information provided in Sections 21.1 through 21.7 (§148.105(t)) provide details as to the approximate 14.71 miles of offshore pipeline infrastructure associated with the proposed Project. Refer to Sheet 6 of the Engineering Drawings for an overview of the proposed offshore pipeline infrastructure. Sheets 28 through Sheet 43 depict profile views of the proposed pipeline extending from North Padre Island to the proposed SPM buoy system.

21.1 §148.105(t)(1) Offshore Pipelines Descriptions and Drawings

21.1.1 §148.105(t)(1)(i) Offshore Pipeline Description

Offshore pipeline infrastructure associated with the proposed Project consist of approximately 14.71 miles of two (2) new 30-inch-diameter pipelines extending from the MHT line at the interface of North Padre Island and the Gulf of Mexico to the pipeline end manifold (PLEM) associated with the SPM buoy system.

The proposed Project requires the ability to export multiple grades of crude oil. As such, the proposed offshore pipeline infrastructure is of a dual pipeline system to allow for the flushing of lines of one crude grade back to the OSTF. Additionally, the proposed dual offshore pipeline system allows for the pipelines to be flushed and filled with water prior to a severe storm in the effort of minimizing the potential for an oil spill as a result of damages associated with passing storms. Valves located at the PLEM can be remotely set to allow for incoming pipeline flow to be directed into the other pipeline. All pipelines can be flushed through the use of the OSTF fire pumps to pump water into one line and back through the other. Under normal operations the OSTF will pump crude oil through both of the proposed offshore pipelines to the PLEM and SPM buoy system for the loading of vessels moored at the DWP.

The offshore pipeline infrastructure will be designed to allow for the use of pigging systems including intelligent pigs, foam pigs, articulated squeegee product separation pigs, and steel brush cleaning pigs.

During normal pigging operations, a pig will be introduced at the OSTF and continue to the PLEM down one pipeline followed by its return to the OSTF through the other pipeline. Refer to Sheet 6 of the Engineering Drawings for depiction of the proposed location and route of the offshore pipeline infrastructure associated with the proposed Project.

21.1.2 §148.105(t)(1)(ii) Offshore Pipeline Throughput Capacity

Each of the two (2) 30-inch-diameter pipelines will be capable of flow rates of approximately 30,000 barrels per hour (bph), allowing an overall system crude oil delivery capacity of approximately 60,000 bph to vessels moored at the proposed DWP.

21.1.3 §148.105(t)(1)(iii) Offshore Pipeline Length

Offshore pipeline infrastructure will consist of two (2) 30-inch-diameter pipelines extending 14.71 miles from the MHT line at the interface of North Padre Island and the Gulf of Mexico to the PLEM located at the proposed DWP.

21.1.4 §148.105(t)(1)(iv) Offshore Pipeline Depth of Cover

Offshore pipelines will be buried a minimum depth of 5-feet below the seabed for its entire length. Refer to Sheet 28 through Sheet 43 of the Engineering Drawings for a depiction of the profile of the proposed offshore pipeline infrastructure.

21.1.5 §148.105(t)(1)(v) Offshore Pipeline Protection

The proposed offshore pipelines would be protected by a 3-inch-thick high density concrete coatings and zinc sacrificial anodes to protect the exterior surface of the offshore pipelines. Additionally, the depth of cover will provide additional protection for the offshore pipeline. The design criteria and requirements created by the societies listed in Section 21.3 (§148.105(t)(3)) will insure that the pipeline wall thickness meets the necessary standards including safety factors for operating pressure, installation stresses, and corrosion allowances.

21.2 §148.105(t)(2) Marine Pipelines Design Criteria

The offshore pipelines would be designed to meet all the requirements of the American Bureau of Shipping for the design and installation of Sub-marine Pipelines and Offshore structures and Pipeline and Hazardous Materials Safety Administration (PHMSA). The criteria of these societies are detailed and precise and refers to criteria developed or regulated by the design standards, codes, and engineering societies listed in the following sections.

21.3 §148.105(t)(3) Marine Pipelines Design Standards and Codes

- ASME B 36.10M Welded and Seamless Wrought Steel Pipe
- ASME B31.4 Design specifics for this pipeline referenced by API and ABS
- ASME V Non-destructive Examination
- ASME IX Welding Code
- ASME B16.5 Steel Pipe Flanges and Flanged Fittings
- ASME B16.9 Factory Made Wrought Steel Butt-Weld Fittings
- ASME B16.10 Face to Face and End to End Dimensions of Valves
- ASME B16.11 Forged Fittings, Socket Welding and Threaded
- ASME B16.20, Ring Joint Gaskets and Grooves for Steel Pipe Flanges
- ASTM B16.34, Valves Flanged, Threaded and Welding End
- ASTM B16.47, Large Diameter Steel Flanges NPS 26 through NPS 60
- API Spec 5L Specification for Line Pipe
- API Bulletin 1104 Welding of Pipelines and Related Facilities
- API Bulletin 1111 Design and installation of offshore pipelines
- API RP 5L1 Recommended Practice for Railroad Transportation of Line Pipe
- API RP 5LT Recommended Practice for Truck Transportation of Line Pipe
- API RP 5LW Recommended Practice for Transportation of Line Pipe on Barges and Marine Vessels
- API Bulletin 6D Specification for Pipeline Valves, End Closures and Swivels
- API Bulletin 520 Part 1 Sizing, Selection and Installation of Pressure-relieving Devices
- API Bulletin 521 Pressure Relieving and De-Pressuring Systems
- ANSI B16.1 Dimensions for Pipe, Valves and Valve Packages
- PHMSA Pipeline and Hazardous Materials Safety Administration
- NACE MR-01-75 Valve trim specification
- NACE SP0394 Application, Performance, and Quality Control of Plant-Applied Single Layer Fusion-Bonded Epoxy External Pipe Coating
- NACE SP0490 Holiday Detection of Fusion-Bonded Epoxy External Pipeline Coating of 250 to 760 µm (10 to 30 mil)

- NACE RP 0169-02 Control of External Corrosion on Underground or Submerged Metallic Piping Systems and subsequent related RPs
- NACE SP 0177-2014 Standard Recommended Practice- Mitigation of Alternating Current and Lighting Effects on steel Structures and Corrosion Control Systems
- SSPC-PA 2 Determining Compliance to Required DFT
- SSPC-SP 1 Solvent Cleaning
- SSPC-SP 3 Power Tool Cleaning
- SSPC-SP 10/NACE No. 2 Near White Blast Cleaning
- SSPC VIS-1 Visual Standards for Dry Abrasive Blast Cleaning
- NEC National Electric Code (for Instrument connections to the pipeline)
- NEMA National Electrical Manufactures Association
- DNV RP-F 105 Free Spanning Pipelines
- DNV RP-F 109 On-Bottom Stability Design of Submarine Pipelines
- DNV RP-B401 Cathodic Protection Design
- NFPA Bulletins
    - 30: Flammable and Combustible Liquids Code
    - 307: Standards for the Construction and Fire Protection of Marine Terminals, Piers and Wharfs
    - 77: Recommended Practice on Static Electricity

21.4 §148.105(t)(4) Marine Pipelines Engineering Practices

The offshore pipeline infrastructure would be engineered and built in accordance with the engineering practices listed below:

- ABS American Bureau of Shipping Bulletins and Recommendations for design, specifications, and installation of subsea pipelines, other marine structures, and vessels.
- ANSI American National Standards Institute for the detail criteria of pipe, pipe components, and other components used in the design
- API American Petroleum Institute for the specifications, handling, design, and installation of subsea piping and structures
- ASME American Society of Mechanical Engineers for specifics of design called for by ABS and API
- ASTM ASTM International: A World-Wide Materials Testing Society
- NACE National Associations of Corrosion Engineers for coating specifications and valve trim specification
- SSPC Society for Protective Coatings
- DNV Det Norske Veritas
- NFPA National Fire Protection Association

21.5 §148.105(t)(5) Marine Pipelines Metering System

The delivery flow monitoring system associated with the offshore pipeline infrastructure would be located at the OSTF. The delivery flow monitoring system would be a full feature custody transfer system with mutipass ultrasonic (as approved by API MPMS 5.11 or Coriolis API MPMS 5.6, or Turbine API MPMS 5.3) flow meters, flow rate checking loops, and mass flow capability including critically placed alarms with 100% redundancy of critical components. The delivery data will include total volume, temperature, and API gravity (Note: The system will use an ultrasonic meter with 99.975% probability since it has no pressure drop and no moving parts which results in minimum maintenance).

21.6 §148.105(t)(6) Submerged or Buried Pipelines Crossed by Marine Pipelines

The proposed offshore pipeline infrastructure would cross one existing offshore pipeline as identified based on marine surveys. Based on a review of records, the existing pipeline to be crossed is not currently operational. As such, the Applicant will contact, and permission will be requested of the owner to allow for the existing pipeline to be plugged and a section be cut to allow for the proposed offshore pipeline to be installed below the seafloor.

If the current owner cannot be contacted for permission to plug and cut the existing line, it will be treated as a currently operational line. As such, the existing pipeline would be covered with grout bags to provide a spacing of 1.5 feet between the existing pipeline and the proposed offshore pipelines to be installed. The proposed offshore pipelines will be ramped up, over, and down to maintain the necessary bend radiuses within stress and strain allowable limits. After making the crossing, if any portion of any line remains above the ocean floor, it will be covered by concrete mats to ensure the protection of any portions of the offshore pipeline located above the seabed.

21.7 §148.105(t)(7) Pipelines Transporting Product and Connected to the Port

The proposed offshore pipeline infrastructure extending to the DWP will be connected to inshore and onshore pipeline infrastructure extending to the OSTF. The OSTF will serve as the primary collection and storage terminal of crude oil which will be pumped through onshore pipeline infrastructure, inshore pipeline infrastructure, and offshore pipeline infrastructure to the DWP as described in the previous sections. Crude oil will be received at the OSTF through one or more incoming crude oil pipeline(s). The number, precise routing, ownership, extent to which destinations other than the OSTF will be served and other details relating to the incoming pipeline(s) are currently unknown. Accordingly, the Applicant currently has no basis upon which to describe the pipeline infrastructure that will feed the OSTF. Once more information is available about this pipeline infrastructure, the Applicant may supplement this application. Refer to Section 22, §148.105(u), for information related to the onshore project components including details related to the onshore pipelines and Project components.

22.0 §148.105(u) Onshore Components

For the purposes of this DWPL application, the proposed Project is described in three distinguishable segments by locality including “offshore”, “inshore”, and “onshore”. The proposed Project as described in this DWPL application requires the installation and operation of offshore, inshore, and onshore Project components to allow for the loading of vessels at the proposed DWP. Onshore components associated with the proposed Project are defined as those components landward side of the western Laguna Madre mean high tide (MHT) line, in Nueces and Kleberg Counties, Texas. Inshore components associated with the proposed Project are defined as those components located between the western Laguna Madre MHT line and the MHT line located at the interface of North Padre Island and the Gulf of Mexico.

The Applicant is requesting authorization from MARAD under this application for offshore Project components for which it has jurisdiction (i.e. Project components extending seaward of the MHT line located at the interface of North Padre Island and the Gulf of Mexico). Additionally, the Applicant has also prepared and submitted a separate permit application to the U.S. Army Corps of Engineers (USACE) for the authorization under Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act (RHA) for the proposed Project components, as necessary, for full authorization for the construction and operation of the proposed Project (a connected action). For the purposes of this section, the project components detailed herein are classified as “onshore components” which consist of previously classified “onshore” and “inshore” components as described above. The proposed Project consists of the onshore components:

- Onshore Storage Terminal Facility
- Onshore and Inshore Pipeline Infrastructure
- Booster Station
- Onshore Valve Station

The information provided in the following sections provide details as to the onshore associated with the proposed Project. Refer to the Engineering Drawings provided as part of this DWPL application for depictions of the proposed onshore components.

22.1 §148.105(u)(1) Description of Onshore Project Components

In connection with the proposed Project, the Applicant is seeking authorization from the USACE under Section 404 of the CWA and Section 10 of the RHA to construct and operate onshore components, as necessary, for full authorization for the construction and operation of the proposed Project (a connected action). The onshore components are located landward of the MHT line located at the interface of North Padre Island and the Gulf of Mexico in Nueces and Kleberg Counties, Texas.

22.1.1 Onshore Storage Terminal Facility

The onshore storage terminal facility (OSTF) consists of an approximate 150-acre facility located in Nueces County, Texas which will serve as the primary collection and storage terminal of crude oil to be directly pumped through the proposed pipeline infrastructure to the DWP. The proposed OSTF consist of twelve (12) 500,000 barrel (bbl) American Petroleum Institute (API) 650 carbon steel, cone roof crude oil storage tanks with internal carbon steel floating roofs, and one 250,000 bbl API slop tank. The proposed slop tank and crude oil storage tanks located at the OSTF would be surrounded by secondary confinement levees. The primary administration and operations building to support operations at the DWP would be located at the OSTF. The proposed OSTF would consist of a pipeline metering skids, pipeline manifolds, vapor control unit, and a firewater tank and pump.

The OSTF will consist of four electrically powered motors (approximately 6,000 horse power each) in a series, locked into operation as two pumping systems delivering approximately 12,000 horse power to each pipeline. The pumping systems at the OSTF would be located within noise abatement housings to minimize noise during operations to the maximum extent practicable. The OSTF pumping systems would

pump crude oil from the OSTF, to the booster station, to continue to the proposed DWP via the proposed pipeline infrastructure. Outbound flow rates from the OSTF are anticipated to be approximately 60,000 barrels per hour (bph).

The proposed OSTF would be connected to external inbound and outbound pipeline infrastructure and would be capable of receiving approximately 600,000 bbls of crude oil per day. The number, precise routing, ownership, extent to which destinations other than the OSTF will be served and other details relating to the incoming pipeline(s) are currently unknown. Accordingly, the Applicant currently has no basis upon which to describe the pipeline infrastructure that will feed the OSTF. Once more information is available about this pipeline infrastructure, the Applicant may supplement this application. Refer to Sheet 10 of the Engineering Drawings for a depiction of the general arrangement of the proposed OSTF.

22.1.2 Onshore and Inshore Pipeline Infrastructure

The onshore and inshore pipeline infrastructure consist of approximately 12.1 miles (6.36 miles onshore and 5.74 miles inshore) of two (2) new 30-inch-diameter crude oil pipelines extending from the OSTF to the MHT line located at the interface of North Padre Island and the Gulf of Mexico. The proposed Project requires the ability to export multiple grades of crude oil. As such, the proposed pipeline infrastructure is a dual pipeline system to allow for the flushing of lines of one crude grade back to the OSTF. The proposed onshore and inshore pipeline infrastructure would connect directly to the proposed offshore pipeline infrastructure to allow for the loading of vessels berthed at the DWP. Each of the two (2) 30-inch-diameter pipelines will be capable of flow rates of approximately 30,000 bph allowing an overall system crude oil delivery capacity of approximately 60,000 bph to the proposed offshore pipeline infrastructure and DWP. Refer to Sheet 5 of the Engineering Drawings for a depiction of the general arrangement of the proposed onshore and inshore pipeline infrastructure.

22.1.3 Booster Station

The proposed booster station consists of an approximate 8.25-acre area located in Kleberg County, Texas, positioned approximately 0.35 miles from the western Laguna Madre MHT line. The proposed booster station would house the pumping infrastructure to support the transport of crude oil from the OSTF to the DWP through the proposed pipeline infrastructure.

The proposed booster station will consist of two pumping systems to service the two 30-inch-diameter pipelines. The booster station will consist of four electrically powered motors (approximately 5,000 horse power each) in a series electronically locked into operation as two booster pumping systems delivering approximately 10,000 horse power to each pipeline. The booster station pumping systems would be located within noise abatement housings to minimize noise during operations to the maximum extent practicable. The booster station pump manifold will be equipped with by-pass lines for pigging operations.

The booster station will also consist of a 300 bbl API tank for the purposes of clearing the pump manifold during maintenance and pigging operations, a 5,000 bbl water tank for firefighting, and a tank truck loading pump. Refer to Sheet 11 of the Engineering Drawings for a depiction of the general arrangement of the proposed booster station.

22.1.4 Onshore Valve Station

The onshore valve station would be located on North Padre Island approximately 2,300 feet from the MHT line located at the interface of North Padre Island and the Gulf of Mexico. The proposed onshore valve station would measure approximately 12-feet by 18-feet and consist of shut off valves to allow for the isolation of offshore and onshore sections of the proposed pipeline infrastructure during emergencies and routine maintenance and inspection operations.

The onshore valve station would be housed by 12-inch-thick rebar reinforced concrete walls. The onshore valve station would house two 30-inch-diameter full bore 300 series motor operated valves designed to close upon sudden rise or fall of pipeline pressure. The onshore valve station would consist of switch

gear, digital communication equipment, and ventilation fans. In the situation of a pressure drop or increase within the pipelines, communications equipment would be utilized for the emergency shut down of pumps located at the booster station and OSTF. The onshore valve station allows for the isolation of offshore and onshore sections of the proposed pipeline infrastructure during emergencies and routine maintenance and inspection operations. Refer to Sheet 13 of the Engineering Drawings for a depiction of the general arrangement of the proposed onshore valve station.

22.2 §148.105(u)(2) Chart of Planned and Existing Facilities to be Served by the Port

The primary purpose of the proposed Project is to provide a safe, efficient, and cost-effective logistical solution for the export of crude oil to support the continued economic growth of the U.S. Therefore, at this time it is not intended that any planned or existing U.S. onshore facilities or refineries would be served by the proposed Project.

22.3 §148.105(u)(3) Proposals and Agreements

At the time of the submission of this DWPL application, the Applicant does not have any proposals or agreements for the export of crude oil via the proposed Project. It is the intention of the Applicant to completely finance the construction, operation, and decommissioning of the proposed Project.

The purpose of the proposed project is to provide a safe, efficient and cost-effective logistical solution for the export of crude oil to support the continued economic growth of the U.S. The proposed Project would fulfill the need for a safe, efficient, reliable, and cost-effective logistical outlet for abundant supplies of U.S. crude oil from existing and future oil fields. Seventy-five percent of the crude production growth projected over the next 5 years is within the Eagle Ford and Permian Shale formations located in Texas. The ability to export the crude from a port located as close as possible to the production optimizes transport efficiencies, minimizes environmental impacts, reduces costs, and risk. The proposed DWP will allow the direct and full loading of a very large crude carrier (VLCC), the most economical form of waterborne crude oil transportation used globally. Currently, U.S. inland ports cannot fully and directly load VLCCs because of limited depths within existing navigation channels, and limited berthing capabilities associated with existing inland port infrastructures. The proposed Project would allow for the safe, efficient and cost-effective export of crude oil from to support the continued economic growth of the U.S. Refer to Volume II, Section 1 for additional information regarding the purpose and need of the proposed Project.

23.0 §148.105(v) Miscellaneous Components

Section 23, §148.105(v), provides information on miscellaneous components and their association with the proposed DWP.

23.1 §148.105(v)(1) Radio Station and Communications Systems

Voice and data communication systems would be utilized to allow for communications between onshore facilities and incoming, outgoing, and berthed vessels at the DWP. Vessel equipment would be certified, and the radio stations onboard would be licensed by the respective government of the vessel's flag state.

A control room located at the onshore storage terminal facility (OSTF) will communicate with the mooring masters onboard the tanker and tug masters located offshore at the DWP. Location, type, and channels for the radios or other modes of communications have not been determined at this time. The DWP will provide the means of communication to the support vessels and tankers.

23.2 §148.105(v)(2) Radar Navigation System

Vessels berthed at the DWP and the associated support vessels will have the Safety of Life at Sea (SOLAS) 2009 required radar navigation system on board as specified in regulation 19 of that code. The SPM buoy system would be equipped with a radar deflector so that it can be seen by transiting vessel radars. The radar reflector is described in the communication plan in the Draft Operations Manual provided as Appendix A, in Volume III (Confidential).

23.3 §148.105(v)(3) Vessel Bunkering Methods

The Applicant does not intend to provide stores, provisions, bunkering or bunkering vessels. Bunkering will not be allowed at the proposed DWP. Bunkering must be arranged by the vessels through their agent or other commercial channels.

23.4 §148.105(v)(4) Vessels for Bunkering, Mooring, and Servicing Vessels Using the Deepwater Port

The proposed DWP is anticipated to have a minimum of two ocean-going tugs, of a minimum of 50,000 to 80,000 horse power range, on location at the DWP during berthing and unberthing operations. During detailed design, operational requirements will be defined based on the operation philosophy and site-specific conditions, which would validate if two standard tugs will be adequate. A marine operations risk assessment would be conducted to identify risks and mitigation factors that would contribute to developing the support vessel operational requirements. Functional requirements may include vessel escorts, firefighting, line and hose handling, inspection, dive support, re-manning, oil spill response, vessel station keeping and hold back, etc. As stated in Section 23.3, §148.105 (v)(5), the Applicant does not intend to provide stores, provisions, bunkering or bunkering vessels. Bunkering will not be allowed at the proposed DWP. Bunkering must be arranged by the vessels through their agent or other commercial channels.

23.5 §148.105(v)(5) Shore-Based Support Facilities Operations Management

A marine operations office would be located at the OSTF management office building and would have direct two-way voice communication with the DWP. All DWP personnel will reside onshore during periods between operations at the DWP. During operations at the DWP, personnel will be located at or nearby the DWP to assist the vessel to be loaded. At this time, all services specific to vessel management operations would be handled through the vessel's agent.

The DWP would provide assistance to vessels as it relates to the mooring, unmooring, and vessel loading. Scheduling of pilots, bunkering, crewing, stores replacement, provisions, etc. shall all be scheduled by the vessel's management and personnel. Any vessels entering the safety zone would be

required, by law, to request access to the proposed DWP and provide proper notification to the USCG. Refer to the Draft Operations Manual provided as Appendix A, in Volume III (Confidential).

23.6 §148.105(v)(6) Radio Station License

Applications for a Federal Communications Commission (FCC) radio station license will be prepared after the details of the onshore radio station are specified. A radio license application (FCC Forms 159 and 605) will promptly be filed with the FCC upon approval of the DWP license application. A copy of the FCC radio station license application and issued radio station license will be provided to the USCG.

24.0 §148.105(w) Construction Procedures

This section describes the proposed methods and procedures to be used in constructing each component of the proposed Project. The execution of the construction of the proposed Project is divided into 5 basic stages consisting of:

- Stage 1 – Engineering and Management
- Stage 2 – Solicitation and Procurement
- Stage 3 – Fabrication and Pre-Assemblies
- Stage 4 – Installations
- Stage 5 – Testing and Commissioning

Stage 1 – Engineering and Management, for the proposed Project is to begin in July 2018 and continue throughout the duration of the construction, installation, and testing and commissioning of the proposed Project. Construction activities including the installation of the OSTF, booster station, pipeline infrastructure, and SPM buoy system is planned to begin July 2019 and continue through September 2021, pending permit approvals. Testing and commissioning of the proposed Project will be completed in stages as the installation of the various project components occur. The completion of all testing and the commissioning of the proposed Project is anticipated to occur in September of 2021. A proposed construction schedule can be referenced in Appendix C. The following sections describe in detail the five stages of construction.

24.1 Codes and Standards

Throughout the entire process of designing, fabricating, and installing the proposed Project, the following internationally recognized codes and standards may be utilized and referenced:

OSHA Safety and Health Standards

Applicable OSHA Safety and Health Standards of the U.S. Department of Labor.

Code of Federal Regulations

- Title 49 - Parts 190, 192, 195, and 199
- Title 30 - Part 250, J

National Fire Protection Association

- NFPA 30 Flammable and Combustible Liquids Code

American National Standards Institute

- ANSI B31.3 Petroleum Refinery Piping
- ANSI B31.4 Liquid Petroleum Transportation Systems
- ANSI B31.8 Gas Transmission and Distribution Piping Systems
- ANSI C1 National Electric Code (NEC)
- ANSI C2 National Electric Safety Code (NESC)

American Petroleum Institute

- API STD 1104 Standard for Welding Pipelines and Related Facilities
- API STD 1105 Construction Practices for Oil and Products Pipelines
- API RP 1107 Recommended Pipeline Maintenance Welding Practices
- API RP 1110 Recommended Practice for the Pressure Testing of Liquid Petroleum Pipelines
- API RP 1111 Design, Construction, Operation and Maintenance of Offshore Hydrocarbon Pipeline
- API 5LW Recommended Practice for Transportation of Line pipe on Barges and Marine Vessels
- API RP2A WSD Planning, Designing and Constructing Fixed Offshore Platforms Working Stress Design

- API RP2B Fabrication of Structural Steel Pipe

American Welding Society

- AWS D1.1 Structural Welding Code

Steel Structures Painting Council

- SSPC-PAZ Measurement of Dry Paint Thickness with Magnetic Gases
- SSPC-SP3 Power Tool Cleaning
- SSPC-SP5 Blast Cleaning to White
- SSPC-SP10 Blast Cleaning to Near White

U.S. Coast Guard

All of the diving operations shall be conducted in strict compliance with the U.S. Coast Guard (USCG) regulations CFR 49, Part 197.200 Subpart B, Commercial Diving Operations.

Association of Diving Contractors

In addition to the USCG regulations cited above all diving operations including, but not limited to, supervision, personnel, equipment, procedures and the like shall comply with the latest edition of the Association of Diving Contractor's "Consensus Standards for Commercial Diving Operations".

24.2 Stages of Project Execution

As previously stated above, the execution of the project has been separated into five (5) stages consisting of:

- Stage 1 – Engineering and Management
- Stage 2 – Solicitation and Procurement
- Stage 3 – Fabrication and Pre-Assemblies
- Stage 4 – Installations
- Stage 5 – Testing and Commissioning

Each of these stages and any associated phases are further discussed in the following sections.

24.2.1 Stage 1 – Engineering & Management

The engineering aspect of the Project will involve participation from the owner of the facilities while utilizing available qualified outside resources. The deliverables for this portion of the Project will include at a minimum the following: front end engineering and design, detail design, various analysis, construction drawings, material specifications, definition of applicable codes and standards, and other normal and customary documents and procedures relevant to this type of work.

A management team will be organized consisting of an integration of highly qualified individuals who are experts in their relative field. These individuals will consist of internal and/or external resources available to the owner of the facility. Executive oversight of the Project team will be implemented using the Applicant's existing policies and procedural methods utilized on prior successful projects. The management team during the entire project life cycle will be responsible for vendor management, schedule, costs, health, safety, environmental and overall successful completion of the project along with other normal and customary management functions.

24.2.2 Stage 2 – Solicitation and Procurement

The procurement process will commence upon completion of sufficient engineering data to allow for the process of sourcing materials to begin. The first major task for the procurement group will be the identification of long lead time items. The long lead time items can be identified as any item in which the

time to manufacture or deliver could affect the overall planned completion date of the Project. The procurement group will be responsible for implementing existing standards (or developing new standards) as required to facilitate the successful procurement of the required products for the Project. Vendor selection will be performed by utilizing past procurement experiences, vendor capacities, vendor quality evaluations, track records, economic evaluations and any other industry mandated norms that may be required. The procurement group will have oversight of vendor management to ensure timely delivery and expediting of all materials.

Major procurement items currently identified include the 30-inch-diameter pipeline pipe, Single Point Mooring (SPM) buoy system and appurtenances.

The manufacturer of the pipeline materials will be chosen based on the criteria stated above. The materials will be manufactured, transported and stored in accordance with API 5L and API 5LW (latest editions) and/or other internationally recognized standards deemed appropriate by the Applicant.

24.2.3 Stage 3 – Fabrication and Pre-Assemblies

The major fabrication and pre-assembly items defined at this time consist of the SPM buoy system.

The SPM buoy and appurtenances includes the design and fabrication of the mooring buoy, anchors, anchor chains, pipeline end manifold (PLEM), mooring hawsers, subsea hoses, floating hoses, and navigational aids. The SPM buoy will be a Catenary Anchor Leg Mooring (CALM) buoy. The hull of the SPM buoy will be of all welded steel construction and divided into watertight compartments. The hull of the SPM buoy will be entirely coated in a high quality marine paint system and the submerged portion will be further protected with the use of sacrificial zinc anodes to prevent electrolysis depletion of the hull. Handrails and ladders will be installed, as required, to provide safety and mobility to any personnel. The topsides of the SPM buoy will have navigation lights and radar reflector, as required. The SPM buoy will be equipped with a telemetry unit for monitoring. The SPM buoy will be moored to the seabed with a symmetrically arranged six-leg anchor chain system extending to pile anchors fixed on the seafloor. The floating hoses will be the interface between the ship's manifold and the SPM buoy. The floating hoses will remain floating on the surface and will be retrieved by the vessel and connected to the vessel's manifold. The two sub-marine hoses will be the interface between the SPM buoy and the PLEM that is installed on the sea floor. The PLEM is to be installed using a piled foundation with four anchor piles as required to enhance the stability of the PLEM on the seafloor. The PLEM also has piping and valving as required to control product flow.

The SPM buoy system will be fabricated and constructed offsite in a controlled setting to minimize impacts of onsite construction activities. The SPM buoy will be transported to the installation site via an ocean transport vessel designed for such purposes or it may be towed to location. The transportation method will be determined when the assembly or fabrication location is determined as the Project develops.

24.2.4 Stage 4 – Installations

The following sections for the installation of the proposed Project have been divided by Project component to include the following:

- Onshore Storage Terminal Facility and Booster Station Installation
- Pipelines and SPM Buoy System Installation

24.2.4.1 Onshore Storage Terminal Facility and Booster Station Installation

Construction of the OSTF and booster station would start with the grubbing and grading of the sites to establish the conditions necessary for the construction and installation of the proposed infrastructure. Once completed, security fences will be installed. The design and installation of the tank foundations, product storage tanks, pumps, piping, and miscellaneous components will be in accordance with the applicable standards and design codes required by law and established industry standards. Construction materials will be delivered to the construction site via existing access roads. The construction and installation of the OSTF and booster station will be completed using current industry practices. The OSTF will be constructed

on an approximate 150-acre site located in Nueces County, Texas. The booster station will be constructed within an 8.25-acre site located in Kleberg County, Texas, 5.88 miles from the OSTF.

24.2.4.2 Pipelines and SPM Buoy System Installation

The major contractors that will be utilized for the provision of services during the pipeline and SPM buoy installation stage will include the horizontal directional drill (HDD) contractor, SPM contractor, offshore pipelay barge contractor and onshore pipeline contractor.

The pipeline installation consists of the following defined segments:

- Onshore Storage Terminal to HDD 1 – 33,116 feet of two 30-inch-diameter pipelines
- HDD 1 – 4,304 feet of two 30-inch-diameter pipelines
- Laguna Madre Section 1 - Trenched/Open Lay – 8,828 feet of two 30-inch-diameter pipelines
- HDD 2– 5,500 feet of two 30-inch-diameter pipelines
- Laguna Madre Section 2 – Trenched/Open Lay – 2,000 feet of two 30-inch-diameter pipelines
- HDD 3 – 4,000 feet of two 30-inch-diameter pipelines
- North Padre Island Onshore Section - 4,900 feet of two 30-inch-diameter pipelines
- HDD 4 – 5,000 feet of two 30-inch-diameter pipelines
- Offshore Pipeline – 73,925 feet of two 30-inch-diameter pipelines
  (lengths indicated above are for one pipeline, total footage required is times (x) two)

For the sake of clarity and to properly define the work involved, the pipeline and SPM buoy system installation is divided into nine (9) major phases including:

- Phase 1 – HDD 4 Setup and Installation
- Phase 2 – HDD 2 Setup and Laguna Madre Section 1 and 2 Setup and Installation
- Phase 3 – HDD 2 Installation
- Phase 4 – HDD 3 Setup and North Padre Island Inshore Section Setup and Installation
- Phase 5 – Offshore Pipeline Setup and Installation
- Phase 6 – HDD 3 Installation
- Phase 7 – HDD 1 Setup and Onshore Pipeline Setup and Installation
- Phase 8 – HDD 1 Installation
- Phase 9 – Installation of SPM Buoy System and Associated Components

During the execution of these phases, there are simultaneous operations occurring within the various phases to facilitate anticipated contractor scheduling and completing the overall installations in an expeditious manner. Refer to the Project Installation Overview Map provided as Figure 15 in Appendix A, for a visual indication of the various phases and associated work locations. Also, a set of detailed engineering drawings have been prepared and submitted as part of this DWPL application for the proposed Project. This set of Engineering Drawings includes 47 sheets depicting the overall Project plan, detailed arrangements of the proposed Project components, proposed pipeline profiles, and plan and profile views of the proposed horizontal directional drills (HDD).

The sequence of the phases may be altered when the execution of the work commences due to contractor availability, material supply constraints, and/or further definition or clarification of the work scope resulting from design and detailed engineering.

Phase 1: HDD 4 Setup and Installation

Phase 1 consists of the setup and installation of HDD 4. To begin the process for installing the offshore sections for the pullback of HDD 4, a holdback anchor will be installed on the onshore in the center of the proposed ROW. The pipelay barge will initially be positioned approximately 300 feet east of the proposed HDD 4 exit point. The pipelay barge bow will be facing towards the east. The pipelay barge will then set 4 (four) anchors total. Two anchors will be dropped in the shallower waters from the stern (port stern and

starboard stern). Both stern anchors will be placed a sufficient distance away from the vessel to provide for proper tensioning. The remaining two anchors will be deployed from the bow (port bow and starboard bow) and will be set further out to sea along the vicinity of the pipeline ROW. The anchors set from the bow will be set and tensioned approximately 5,000 feet in front of the pipelay barge (this may vary due to the cable size and lengths onboard the vessel). The pipelay barge will initiate a messenger cable to the shore utilizing a small water craft suitable for a beach landing. The messenger cable will be used to pull a larger diameter cable that can ultimately be used for connection to the "holdback anchor" during the pipelaying process. Once the anchors are set, a material transport barge loaded with at least 12,000 feet of line pipe will be towed from the nearby port and brought alongside the pipelay barge. The material transport barge will be secured with ropes to either the port or starboard side of the pipelay barge. The large diameter cable (that was installed with the messenger cable) will be connected to a pre-fabricated pulling head that is installed on the first joint of pipe. With this cable connected on one end to the holdback anchor on the beach and the other end connected to the pulling head on the first joint of pipe, the pipelay barge will commence to assemble the pipeline. Refer to Section 24.5 – Offshore and Laguna Madre Pipeline Installation for details of offshore pipe assembly and installation. During the assembly of each new joint of pipe, the pipelay barge will move forward by tightening the bow anchor cables and slacking the stern anchor cables. Given that the pipe is connected to the holdback anchor onshore, the pipe will begin to leave the stern of the pipelay barge and settle on the ocean floor. This process will repeat over and over until the total length of HDD 4 is resting on the seafloor. When the last joint of pipe has been welded and inspected, it will be lowered to the seafloor using the A&R (Abandon and Recovery) winch located on the pipelay barge. This process indicated above will be performed once for each of the two proposed pipelines to be installed at HDD 4.

During this time, the HDD contractor will begin to set up and prepare for the HDD work. The HDD contractor will prepare a work site pad on the shore side/entry point approximately 150 x 150 feet, referred to as an HDD Box. An entry pit measuring approximately 50 feet x 50 feet will be excavated within the HDD Box. The HDD rig will be positioned, orientated, and anchored in place at the edge of the entry pit. The contractor will install a casing and initiate the pilot hole. On the offshore side of HDD 4 (HDD Box 4B), the HDD contractor will provide an offshore support platform via a barge or a jack-up work boat. This vessel will, utilizing an excavator, create an exit pit approximately 50 feet x 50 feet. The exit pit will be designed considering the natural slope of the sea bottom and the trajectory of the HDD 4 exit angle. This support vessel will also serve to receive the pilot bit when the pilot bore hole is completed. The vessel will continue to support the HDD operations by installing additional tooling for back reaming and additional drill pipe as required. Once the final swab pass has been completed the vessel will dispatch divers to connect the drill pipe string to the pulling head that was installed on the pipe end by the pipelay barge. When the drill string is connected to the pipeline (including a swivel connection to avoid any stress induced by rotation) the drilling rig will apply tension and begin the pullback of the HDD pipe string through the drilled hole. During the final design phase of the HDD engineering processes, it will be determined if the use of flotation aids will be required during pullback. The pullback will continue until the preassembled pipeline section has been successfully pulled through the drilled hole. This will be repeated once for each of the proposed pipelines to be installed at HDD 4. Refer to Section 24.3 – Horizontal Directional Drill Pipeline Installation for more specific details on the exact processes that are involved in the installation of the proposed pipeline via HDD. Refer to Appendix A, Figures 12 and 13 for a general depiction of the designated construction workspaces proposed at HDD 4 (HDD Boxes 4A and 4B).

Phase 2: HDD 2 Setup and Laguna Madre Section 1 and 2 Setup and Installation

Phase 2 begins with the excavation of the pipeline trench for Laguna Madre Section 1 beginning at the planned exit point of HDD 1 (HDD Box 1B). The pipeline trench within the Laguna Madre will be excavated to a depth of approximately 8 feet to allow for 60 inches (5 feet) of cover over top of the pipeline. The trench width is anticipated to be 12-14 feet wide, however; this will be confirmed in the final engineering design, a trenching workspace of 15 ft is designated for the Laguna Madre pipeline installation. The excavation for the trench will extend from the exit point of HDD 1 (HDD Box 1B) to terminate at the exit point for HDD 2 (HDD Box 2A). The spoils from trench excavation will be temporarily placed in hopper barges or other type

of similar vessel to avoid the side cast of material within the Laguna Madre. The hopper barges will be floated into position within a 45-ft workspace on the northern side of the trench workspace, and rest on the sea bed when loaded with sediment. To facilitate the installation of the pipelines within the Laguna Madre, the pipelay barge will need to have access to the vicinity just west of the proposed exit point of HDD 2 (HDD Box 2A). There are two existing channels that may be suitable for transiting the pipelay barge to the required location; however, it is still anticipated that some widening/deepening may need to occur to ensure safe passage of the pipelay barge to this location. This will be confirmed once the pipelay barge is selected and dimensions are known.

The pipelay barge will set up on location at the exit point of HDD 2 (HDD Box 2A) (with the stern facing west) and will either anchor or install temporary pilings to secure the vessel in place. A messenger cable will be run from the barge to a land-based winch located onshore. The messenger cable will be utilized to connect the main cable from the winch to the pulling head that will be installed on the first joint of each pipeline section that will be assembled in this phase. The land-based winch will serve to pull the pipe from the pipelay barge as the pipe joints are assembled. The exact sizing and capacity of the winch will be confirmed in the detail engineering phase of the Project.

The pipelay barge will begin by assembling the two HDD pipe sections for HDD 2. These sections will be placed in the trench that was excavated in the beginning of Phase 2. The beginning of each new section will require the “running” of a new messenger line and connecting the land-based winch to the pulling head on the first joint of the new pipeline section.

Upon completion of the HDD 2 (Phase 3), the next two pipeline sections installed are those that will remain in the trench and buried with 60 inches of cover. These sections will terminate when the pulling head reaches the entry point for HDD 1. All sections will be lowered to the ground using the A&R winch when the final joint on the respective section has been completed.

Next, excavation for the Laguna Madre Section 2 trench located between HDD 2 and HDD 3 will be performed and the pipelay barge will relocate to the entry point of HDD 2 (HDD Box 2B). The pipeline trench within the Laguna Madre will be excavated to a depth of approximately 8-ft. to allow for 60 inches (5 feet) of cover over top of the pipeline. The trench width is anticipated to be 12-14 feet wide, however; this will be confirmed in the final engineering design. A construction workspace of 15 ft. is designated to include the trench in the Laguna Madre sections. Spoils from trench excavation will be temporarily placed in hopper barges or other type of similar vessel to avoid the side cast of material within the Laguna Madre. The hopper barges will be floated into position within a 45-ft workspace on the southern side of the trench workspace (which is the more accessible side in this section), and rest on the sea bed when loaded with sediment.

A messenger cable will be run from the barge to a land-based winch located onshore. The messenger cable will be utilized to connect the main cable from the winch to the pulling head that will be installed on the first joint of each pipeline section that will be assembled in this phase. The land-based winch will serve to pull the pipe from the pipelay barge as the pipe joints are assembled. The exact sizing and capacity of the winch will be confirmed in the detail engineering phase of the project.

Refer to Section 24.5 – Offshore and Laguna Madre Pipeline Installation for additional information regarding the Laguna Madre pipe assembly and installation.

Phase 3: HDD 2 Installation

During Phase 2, the HDD contractor will set up and prepare a work site for the drilling rig on entry point of HDD 2 (HDD Box 2B). The work site for the HDD rig and associated equipment will consist of several very shallow draft barges, equipped with either spuds or proper anchoring mechanisms to securely place the rig in position for the work. The HDD rig will be positioned, orientated and anchored in place at the edge of the entry pit. The contractor will install a casing and initiate the pilot hole. On the west side of the proposed HDD, the HDD contractor will provide an adequate support barge (HDD Box 2A). This support barge will be a very shallow draft barge that is securely anchored in place. The HDD contractor will create an exit pit

approximately 50 feet x 50 feet for the exit of HDD 2. The exit pit will be designed considering the natural slope of bay floor (Laguna Madre) and the trajectory of the HDD exit angle. The support barge located at the exit point will also serve to receive the pilot bit when the pilot bore hole is completed. The support barge will continue to support the HDD operations by installing additional tooling for back reaming and additional drill pipe as required. Once the final swab pass has been completed the drill pipe string will be connected to the pulling head that was installed on the pipe end by the pipelay barge in Phase 2. When the drill string is connected to the pipeline (including a swivel connection to avoid any stress induced by rotation) the drilling rig will apply tension and begin the pullback of the HDD pipe string through the drilled hole. During the final design phase of the HDD engineering processes, it will be determined if the use of any buoyancy or water weight will be required during pullback. The pullback will continue until the preassembled pipeline section has been successfully pulled through the drilled hole. This will be repeated once for each of the two proposed pipelines to be installed at HDD 2. Refer to Section 24.3 – Horizontal Directional Drill Pipeline Installation for more specific details on the exact processes that are involved in the installation of the proposed pipeline via HDD. Refer to Appendix A, Figure 11 for a general depiction of the designated construction workspaces proposed for HDD 2.

Phase 4: HDD 3 Setup and North Padre Island Onshore Section Setup and Installation

Phase 4 includes the setup on North Padre Island for HDD 3 and the setup and installation of inshore pipeline sections on North Padre Island in between HDD 3 and HDD 4. Phase 4 begins with the mobilization of the onshore pipeline contractor to North Padre Island and set up for the trenching, assembly, and installation of the North Padre Island onshore pipeline sections. The onshore pipeline contractor will assemble a total of four pipeline sections within the ROW. Of these, two sections will be for HDD 3 which will be pulled through the HDD's once they are drilled (Phase 6). The remaining two sections are those for the North Padre Island onshore pipeline and will be assembled, inspected, and installed within the ROW located on North Padre Island. The designated construction workspace for the North Padre Island inshore pipelines is a 75-ft workspace corridor. Refer to Appendix A, Figure 12 for a general depiction of the designated construction workspaces proposed for North Padre Island.

The two sections that are to be utilized for HDD 3 will be completely assembled, Non-Destructive Testing (NDT) inspected, coating inspected, and hydrotested prior to the pullback occurring in Phase 6. The sections to be used for HDD 3 will be set on a series of rollers or may be lifted by combination of side booms and rollers to transit the pipe during the pullback process of the HDD. Refer to Appendix A, Figure 11 and 12 for a general depiction of the designated construction workspaces proposed for HDD 3.

Phase 5: Offshore Pipeline Setup and Installation

Phase 5 includes the installation of the proposed offshore pipeline infrastructure consisting of two 30-inch-diameter concrete coated pipelines extending from HDD 4 (HDD Box 4B) to the proposed SPM buoy. Additionally, Phase 5 includes the installation of the PLEM on the seafloor at the SPM location.

Phase 5 begins with the positioning of the pipelay barge at the eastern end of HDD 4. The pipelay barge will then set four anchors along the pipeline ROW, two of which anchors will be from the stern (port stern and starboard stern) and two from the bow (port bow and starboard bow). The anchors set from the bow will be set and tensioned approximately 5,000 feet in front of the pipelay barge. When the anchors are set, a material transport barge loaded with line pipe will be towed from the nearby port and brought alongside the pipelay barge. The material transport barge will be secured with ropes to either the port or starboard side of the pipelay barge. Once positioning is confirmed, the pipelay barge will use the A&R winch to retrieve the tail sections of HDD 4 from the sea floor and will then guide the pipeline through the pipe alley and onboard the vessel. The pipelay barge bow will be facing eastward. A stinger will not be required for this portion of pipelaying due to the shallow water and proximity to shore. The laydown head that was installed on the HDD 4 tail section will be removed, and the pipelay barge will commence to assemble the pipeline.

During the assembly of each new joint of pipe, the pipelay barge will move forward by tightening the bow anchor cables and slacking the stern anchor cables. Given that the pipe is connected to the end of HDD 4, the pipe will begin to leave the stern of the pipelay barge and settle on the ocean floor. This process will repeat over and over until the total length of pipeline has been installed on the seafloor. When the last joint of pipe has been welded and inspected, it will be lowered to the seafloor using the A&R winch on the pipelay barge. This process will be performed once for each of the proposed offshore pipelines.

Upon completion of the assembly of the offshore pipelines, the pipelay vessel will return to the starting point (HDD 4) and will attach a jet sled (or similar pipe burial sled) to an A-Frame located at the stern of the vessel. The vessel will position the sled over one of the pipelines on the seafloor and begin the process of moving along the pipeline. The jet sled will utilize high pressure water jets to remove and discharge the earthen materials underneath the pipeline until the desired depth is reached. The hardness (or softness) of the soils will determine and influence the rate of travel along the route. This process will be repeated for the second pipeline. The pipelines will be covered by earthen subsea materials by natural currents and movements at the sea floor in addition to the jetted materials settling on top of the pipeline until a minimum depth of 5-feet below the seabed is reached. A 36-ft workspace corridor is proposed for the installation of the offshore pipelines. Refer to Appendix A, Figure 13 and 14 for a general depiction of the designated construction workspaces proposed for the offshore pipelines.

Once the offshore pipelines are installed, the pipelay barge will be positioned over the designated termination point of the pipelines and PLEM installation area. The PLEM will be transported on a material transport barge and brought alongside the vessel. The PLEM will be lifted and lowered to the sea floor and fixed at the designated location on the sea floor via 24-inch-diameter anchor piles. Once the PLEM has been placed and is leveled, the offshore pipelay vessel will mobilize the diving crew to take dimensions for the required spool pieces needed to connect the pipeline end to the PLEM. Once the dimensions have been confirmed, the two spool pieces will be fabricated, tested, coated and prepped for installation. Flanged connections with swivel flanges will be used for installation, as required to facilitate the connection of the offshore pipelines to the fixed orientation of the PLEM. Once the two spool pieces are installed the vessel will be complete with this phase.

Refer to Section 24.5 – Offshore and Laguna Madre Pipeline Installation for more specific details on the exact processes that are involved in the installation of the proposed offshore pipeline.

Phase 6: HDD 3 Installation

Phase 6 consists of the installation of HDD 3 using the pipeline sections previously assembled during Phase 4. Phase 6 begins with the setup of the HDD drilling rig work site on the west side of HDD 3, which will serve as the entry point (HDD Box 3B). An equipment access workspace that is 30 ft wide will need to be dredged or excavated for the equipment to reach the HDD Box at the entry point. The equipment access workspace will begin at an existing channel perpendicular to the GIWW and terminate at the HDD Box. The HDD rig will be positioned, orientated, and anchored in place at the edge of the entry point of HDD 3 (HDD Box 3A). The contractor will install a casing and initiate the pilot hole. On the east side of HDD 3 (HDD Box 3B), the HDD contractor will establish a support work pad located on North Padre Island. At this location, the HDD contractor will create an exit pit approximately 50 feet x 50 feet for the exit of HDD 3. The exit pit will be designed considering the natural slope of the terrain on North Padre Island and the trajectory of the HDD 3 exit angle. The work pad located at the exit point will also serve to receive the pilot bit when the pilot bore hole is completed and support the HDD operations by installing additional tooling for back reaming and additional drill pipe, as required. Once the final swab pass has been completed the drill pipe string will be connected to the pulling head that was installed on the pipeline segment located on North Padre Island, previously assembled during Phase 4. When the drill string is connected to this pipeline segment, the drilling rig will apply tension and begin the pullback of the HDD pipe string through the drilled hole. The pullback will continue until the preassembled pipeline section has been successfully pulled through the drilled hole. This will occur once for each of the two 30-inch-diameter pipelines to be installed. Refer to Section 24.3 – Horizontal Directional Drill Pipeline Installation for more specific details on the exact processes that are

involved in the installation of the proposed pipeline via HDD. Refer to Appendix A, Figure 11 and 12 for a general depiction of designated construction workspaces at HDD Box 3A and 3B.

Phase 7: HDD 1 Setup and Onshore Pipeline Setup and Installation

Phase 7 consists of the onshore setup and assemblage of pipeline sections for HDD 1 and installation of the onshore pipelines extending from western extent of HDD 1 to the proposed OSTF. Phase 7 begins with the mobilization of the onshore pipeline contractor to the designated pipeline ROW located west of the Laguna Madre. During this phase, the setup of HDD 1 includes the preparation of a worksite located at the western extent of HDD 1 (HDD Box 1A) exit point. The onshore pipeline contractor will assemble a total of four pipeline sections within a designated workspace corridor measuring approximately 75 feet x 2,000 feet extending along the pipeline ROW, west of the HDD 1 exit point (HDD Box 1A). The four sections that are to be utilized for HDD 1 will be completely assembled, NDT inspected, coating inspected, and hydrotested prior to pullback occurring during Phase 8. The pipeline sections located onshore to be used for HDD 1 will be set on a series of rollers or may be lifted by a combination of side booms and rollers to transit the pipe during the pullback process of the HDD. Refer to Appendix A, Figure 9 for a general depiction of designated construction workspaces at HDD 1.

Phase 7 includes the installation of the onshore pipeline section which extends from the HDD 1 to the OSTF, located in Nueces County, Texas. The proposed onshore pipeline will be installed using the spread technique which consist of the assemblage and installation of the pipeline within an approximate 75-foot wide construction corridor roughly centered on the proposed pipeline alignment. An approximate 13-foot-wide trench will be excavated within the construction corridor. Line pipe will be laid out along the excavated trench and welded above ground in the maximum possible continuous lengths. The welded pipeline is then installed into the trenches gradually in one continuous motion using multiple side-booms. Following the placement of the onshore pipeline within the trench, backfilling operations and reinstatement of landscape will be completed.

Refer to Section 24.4 – Onshore and North Padre Island Pipeline Installation for more specific details as to the processes involved with the installation of the onshore pipeline.

Phase 8: HDD 1 Installation

Phase 8 consist of the installation of HDD 1 using the four HDD pipeline sections assembled onshore during Phase 7. Phase 7 begins with the setup of the HDD drilling rig work site on the east side of HDD 1 which will serve as the entry point. The HDD rig will be positioned, orientated, and anchored in place at the edge of the entry point of HDD 1. The contractor will install a casing and initiate the pilot hole. On the west side of HDD 1 (HDD Box 1A), the HDD contractor will establish a support work pad located on onshore. At this location, the HDD contractor will create an exit pit approximately 50 feet x 50 feet for the exit of HDD 1. The exit pit will be designed considering the natural slope of the terrain onshore and the trajectory of the HDD 1 exit angle. The work pad located at the exit point will also serve to receive the pilot bit when the pilot bore hole is completed and support the HDD operations by installing additional tooling for back reaming and additional drill pipe as required. Once the final swab pass has been completed the drill pipe string will be connected to the pulling head that was installed on the pipeline segments previously assembled onshore during Phase 7. When the drill string is connected to the first pipeline segment, the drilling rig will apply tension and begin the pullback of the HDD pipe string through the drilled hole. The pullback will continue until the first preassembled pipeline section reaches a designated location. At this time, the first pipeline section will be welded to a second pipeline section. Prior to resuming pullback operations, the connected pipeline sections will be NDT inspected and coating inspected. Once completed, the pullback will continue until the assembled pipeline sections are successfully pulled through the drilled hole. This will occur once for each of the two 30-inch-diameter pipelines to be installed at HDD 1. Refer to Section 24.3 – Horizontal Directional Drill Pipeline Installation for more specific details on the exact processes that are involved in the installation of the proposed pipeline via HDD. Refer to Appendix A, Figure 9 for a general depiction of designated construction workspaces at HDD 1.

Phase 9: Installation of SPM Buoy System and Associated Components

Phase 9 consist of the installation of the SPM buoy system and its associated components. Phase 9 begins with the arrival of the SPM buoy installation vessel and initial survey of the sea bottom at the designated location which the SPM buoy is to be installed. Once surveys are complete, the proposed six 60-inch-diameter CALM pile anchors will be installed at their designated coordinates, followed by the connection of the anchor chains to the pile anchors. Once the pile anchors and anchor chains are installed and inspected, the SPM buoy will be towed into the designated location and followed by the attachment of the anchor chains. Once the mooring of the SPM buoy is inspected and complete, the subsea and floating hoses will be transported to the installation site and installed. Once the SPM buoy installation is complete, including the installation of the subsea hoses to the PLEM, the SPM buoy system will be fully inspected.

Refer to Section 24.6 – Single Point Mooring Buoy System Installation for more specific details on the exact processes that are involved in the installation of the proposed SPM buoy system.

24.2.5 Stage 5 – Testing and Commissioning

Stage 5 consist of the testing and commissioning of all installed pipeline segments and the SPM buoy system. Once all pipeline segments and the SPM buoy system are installed and inspected, contractors will mobilize to commence testing of each component.

For the pipeline segments, a gauging pig (caliper plate) run will be performed (at 93% of smallest nominal bore or 0.5-inch smaller than the smallest nominal bore). This will be performed in conjunction with a cleaning pig run to remove any debris and clean the internals of the installed pipelines. Specific procedures will be developed for each segment of the pipelines, including specific procedures for each of the tie-in points. The cleaning and gauging pig runs will be followed by flooding, hydrotesting, and dewatering. The flooding process includes filling the pipeline with hydrotest water. The pipeline pressure will be raised to the predetermined testing pressure, the pressure will be held as required for the time specified in the testing documents (testing procedures will be developed during the engineering phase of the Project). Adjustments for pressure changes will be realized based on monitoring the ambient temperatures throughout the process. Upon acceptance of the pressure testing by all parties, the pipeline will be dewatered in accordance with existing regulations.

For the SPM buoy system, the testing and pre-commissioning activities will be performed following the completion of the installation and Project documentation, as required. The individual suppliers for each of the SPM buoy system component are responsible for the development, testing, and pre-commissioning procedures. These procedures will be reviewed prior to implementation to confirm compliance with industry standards and meet or exceed the requirement of the owner/operator of the facility.

The mechanical completion consists of validating and recording the proper assembly of all mechanical equipment including:

- Tensioning/torqueing records
- Leak test of the piping elements and flange connections
- Rotation test of the weather-vaning equipment
- Load tests of the lifting and rigging equipment
- Electrical continuity checks of the cathodic protection
- Visual inspection records
- Trimming & ballasting

Several items regarding the SPM buoy system are covered during the pre-commissioning activities during fabrication. This includes the start-up and functional testing of specific equipment to demonstrate proper integration and performance into the overall system. For these specific functions, some specific pre-commissioning and testing procedures will be required during fabrication and pre-assembly.

24.3 Horizontal Directional Drill Pipeline Installation

Installation of the proposed pipeline via horizontal directional drill (HDD) crossing techniques was the trenchless installation method selected at four designated crossings. This section provides an overview of the steps involved in the execution of the described HDD crossings. The HDD sections have been reviewed, designed, analyzed, and evaluated for frac-out analysis based on the results of the Inshore Geotechnical Investigation Study (Appendix J). Additionally, provided as Appendix R is an Inadvertent Returns Contingency Plan prepared for the Project which establishes operational procedures and responsibilities for the prevention, containment, and cleanup of IRs.

This section also outlines the mitigation measures that will be implemented to ensure the effective installation of the proposed HDD crossings. These measures will be in conjunction with the measures outlined in the project specific Environmental Protection Plan developed for this Project.

Notifications and Permits

Prior to access or construction activities associated with HDD crossings, all necessary approvals, permits, and/or notifications will be received, or issued, respectively. All conditions specified in approvals or permits will be discussed, understood, and adhered to during the HDD installation process. Any notification requirements detailed in the permits/approvals will be provided within the timing specified. All notifications will be completed, documented and maintained.

Identification of Buffer Zones

All buffer zones or restricted areas will be identified and flagged prior to mobilization and site preparation. In addition, any restricted areas identified by permits/approvals will be flagged off. Access to these restricted areas will be prohibited unless authorized by the appropriate regulatory authority in the case of permits/approvals.

Pre-Construction Survey

A pre-construction survey will be conducted to confirm the HDD entry and exit points (within HDD Boxes) for the pilot bore as shown on the construction drawings. All HDD entry and exit points will be clearly staked or marked in the field. A survey examination of entry and exit points will be done prior to casing and equipment installation to verify distances, field stations, and elevations along the proposed pipeline centerlines. Points will be plotted for the monitoring and recording of the three-dimensional coordinates generated by the magnetic guidance tracking software. This exercise ensures the pre-alignment and radius restrictions are maintainable during the execution of the HDD. Following receipt of the survey results a comparison against the engineering design profile will be conducted and verified prior to starting drilling operations.

Equipment Summary

It is anticipated that the HDD rig to be used would be capable of 1,000,000 pounds of pullback; however, capability will be confirmed during final HDD design of the proposed Project. The equipment will include at a minimum: drilling unit, mud tanks, mud lab, water storage tanks, mixing tanks, storage areas, and control room. The work platform for the drilling operations will be further defined by the selected contractor and based on the equipment proposed for use by the contractor.

Entry/Exit Points

The HDD rig layout and site setup may vary based on the provided work space. During site preparations the size, slope grade, berm walls, and ingress and egress will be defined. The HDD equipment preferred footprint is of a level grade to ensure safe and efficient drilling operation. HDD rig matting will be placed on entry to ensure a safe and effective working environment. All matting used during HDD installation would be removed upon completion.

Staging areas will be used to string, weld, coat, and pre-test pipeline sections prior to pullback operations. The primary staging area will be located near the exit side of the crossing and will be contained within the existing ROW limits and/or designated temporary workspaces.

Surface and Guide Casing

An experienced contractor will be used to install entry or exit casings in the event it is required at an HDD crossing. Casing will be installed according to the geo-technical information and profile design. Casing will be cleaned by the casing contractor prior to use. Casing final design will be based on actual geo-technical information.

Tracking System

A magnetic guidance system, Tru-tracker or Paratrack, will be used to track and to monitor the drill path during the HDD pilot bore (determination of tracking system will be based on availability at time of drill execution and as specified in the specifications of the contract document). This system is important to insure the proper installation in accordance with the HDD design. This system allows the drilling assembly to control the path the drill takes and calculate the horizontal and vertical coordinates relative to the initial entry point on the surface. A coil grid will be laid out accordingly on exit/entry points using surveyed stations to ensure the accuracy of the drill path. This system will be used to generate an as-built profile of the drilled bore.

In the event of a deviation of the drill path, the drilling assembly will be pulled back to an appropriate location in the bore path and a steering correction initiated. An annular pressure tool will be run in conjunction with the downhole assembly directly behind the mud motor to ensure the proper monitoring of annular and downhole pressures. An annular pressure graph will be for available for reference.

Pilot Hole

To initiate the pilot bore, the HDD is set-up in alignment with the inclination & azimuth according to the engineered design. The down hole assembly (DHA) is assembled and consists of the steering tool and drill tooling. The steering tool is then calibrated, and a 4-point roll check completed. Measurements will be taken of the DHA and from the bit to the steering probe. The distance from the HDD vices to the entry point will be recorded and each additional drill pipe measured and recorded in successive order. A nonmagnetic collar will be placed behind the downhole assembly to create a non-magnetic buffer between the steering tool and possible magnetized drill string. The path of the pilot bore will be recorded by taking periodic readings of the inclination and azimuth using the tracking system to calculate the vertical and horizontal coordinates relative to the initial entry point. These readings will be taken in intervals not to exceed 10 meters to ensure deviation and design parameters are maintained. Drilling fluid will be pumped through the downhole assembly no greater than 1.9 cubic meters/min. and no greater than 1,200 psi. Drilling fluid returns will accumulate in a contained tank, then pumped using a 6-inch Gorman Rupp or Godwin centrifugal pump to the mud reclaimer for reuse. Solids control will consist of 2 rough cut 146 Tri-flo shakers. A shale tank will be used to contain drilling cuttings.

A jetting assembly along with an annular pressure tool will be used on this pilot bore. Real time pressures will be recorded by the drilling instrumentation system.

Reaming and Hole Opening

Once the pilot bore is exited per the specified tolerances, the bore is then enlarged using hole openers in a series of sizing.

The anticipated phases for the bore are as follow but not limited to the following:

- Casing Installation
- 12” pilot
- 18” - 24” fly cutter
- 24” - 36” fly cutter
- 36” - 42” fly cutter
- 42” - 48” fly cutter and packer

Reaming, swabbing, and cleaning passes will be performed as required to ensure the bore is free of obstructions for the next required opening. At least one reaming pass will be performed after the final opening to ensure a clean bore for the pull section.

Pullback Procedure

After the swabbing ream is completed, the pull section is then attached to the hole opener using a swivel minimizing torsion forces transmitted to the pull section. Product pipe handling equipment will be required to assist and align the pull section in such a manner as to reduce axial tension loads imposed on the pull section. It is recommended not to exceed a 14-degree exit angle to prevent excessive tensional forces. Pullback forces will be recorded during and after the pullback is complete. If required, buoyancy control could be used during pullback operations. As the pull section is advanced to the lowest elevation of the bore, water will be inserted into the pipeline to achieve neutral buoyancy, reducing the tensional force required to advance the pull section. Water used for buoyancy control will be disposed of according the guidelines established for proper disposal.

Cleanup & Restoration

Following the completion of the HDD, the pipeline ROW and associated temporary workspaces will be cleaned up and restored to original contours and vegetated conditions.

24.4 Onshore and North Padre Island Pipeline Installation

This section describes the main activities and processes involved in constructing and installing the onshore and North Padre Island 30-inch-diameter pipeline segments. This section also applies to the HDD 1 pipeline section that will pre-assembled onshore. The designated construction workspace of onshore and inshore North Padre Island pipelines is a 75-ft corridor centered on the pipeline centerline.

The basic method of constructing steel, welded onshore pipelines in open cross-country areas is generally known as the spread technique. The spread technique utilizes the principles of the production line system; however, the pipeline is static as the individual workforce crews move along the pipeline ROW. The implementation of the spread technique is conditional on the pipeline being welded above ground in maximum possible continuous lengths between obstructions/crossings. These welded pipe lengths are then immediately installed into unsupported/unobstructed trenches, gradually in one continuous length utilizing multiple mobile side-booms in unison.

Pre-Construction Activities

Pre-construction activities will be performed by the installation contractor prior to the start of onshore and North Padre Island pipeline installation activities. These activities include detailed design, finalization, mobilization, preparation of workspaces and geographic positioning stations, pre-environmental mitigation work, and landowner property entry requirements and notification. The installation contractor will carry out pre-entry surveys, where required, to record the condition of the land prior to initiating any work.

Main Pipeline Construction Activities

Once the pre-construction activities have been completed, the main construction work can commence. Generally, operations are carried out in five main activities, as described in the following sections:

- Preparing Work Area
- Layout Pipe and Weld above Ground
- Trench Excavation and Lowering of Pipeline into Trench
- Pipeline Crossings, Special Sections and Tie-Ins
- Final Backfill and Reinstatement Works

Preparing Work Area

Site Survey & Centerline Marking

The site survey and centerline marking personnel are the first group from the construction contractor's workforce to enter the site to commence the main construction activities. The site survey and centerline marking of the works should be scheduled to commence sufficiently prior to the commencement of the other construction activities to allow for proper planning. This work will be carried out with a small crew using a global positioning system (GPS) and surveying instruments. Setting-out pegs will be placed at all boundaries, changes in direction and intermediate sightings on the proposed center line and the extremities of the working easement. Duties of the site survey and centerline marking personnel will include confirming that all crossings, utilities or other hinderances have been properly identified and addressed.

Right of Way/Easement Boundary Demarcation

ROW marking will commence after the site survey and centerline marking. A crew of personnel and equipment comprising of mainly large, heavy tracked equipment will form the ROW access onto the land. The operations will include the removal of all hedging for disposal off site, bridge or flume pipe access across field ditches, protection of existing services by protection mattresses, re-grading of existing ground contours to assist access, the erection of goalpost and safety signs at overhead electric power lines and telecommunication cables. Operations will also include the placement of hard standings as required for vehicle parking and the re-grading of areas to provide a level and a safe excavation line/running track along the entire pipeline route. Additional crews will be provided to install offsite ROW accesses along the pipeline route to enable the ROW crew to gain access to the working areas, where access from the public road is not available or would cause a safety risk, or because of locked out locations or environmental concerns. Where temporary ROW fencing is required, additional, crews will be required to erect this fencing to delineate the working area

Project Mechanical Procedures/Testing of Welders

Prior to the start of any mechanical work the contractor will issue for approval a full set of mechanical procedures for bending, welding, x-ray and coating. These contractor procedures will address work methods in accordance with the project specifications detailing equipment and specific mandatory requirements. The procedures, particularly regarding welding and x-ray, will sufficiently address the full ranges of the various parameters which are characteristic of the project in terms of diameter, wall thickness and technique. Once the documented procedures are approved then full trials for each element of the work will be carried out, fully inspected, and witnessed. The welding will include non-and full destructive testing to ensure the procedure welds are undertaken in strict compliance with the current industry standards and codes.

Layout Pipe and Weld above Ground

Pipe Stringing

The pipes and pre-formed bends will be delivered to the proposed ROW. The pipe supply should ensure the various grades, wall thicknesses and coatings are supplied in sufficient and correct quantities to meet the requirements of the Project. Pipe stringing involves laying the pipe lengths along the easement length using pipe trailers. A typical crew will consist of two cranes, one loading the pipe trailers and the other on the ROW off-loading the pipe trailers. If ground conditions do not permit travel down the easement with standard or special heavy-duty pipe trailers, the pipes will be loaded on tracked pipe carriers at a point where the change in ground conditions occurs and permits the turning of the wheeled pipe trailers.

Bends – Hot Pre-Formed and Cold Field Bending

Once the pipe has been strung, engineers will follow to determine the location of all bends required to ensure the pipeline can follow the contours of the land and the required line and level as detailed on the

drawings. There are two types of bends normally used. Hot pre-formed or forged bends which are manufactured off site in a factory to a radius of 5 or 3 times the pipe diameter and secondly, cold bends which are manufactured to a radius of 40 times the pipe diameter and are formed in the field.

Welding of the Line pipe

The welding crew will weld the pipeline in continuous lengths between features such as roads, services, and other underground obstacles that prevent the line pipe being continuously installed in the trench. There are primarily two methods of welding, manual welding or automatic welding. As the names imply, manual welding involves the welding of the pipe by welders and automatic involves a semi-automatic system.

NDT Inspection

All welds on the pipeline are generally subjected to inspection by radiography. This will be achieved on the main pipeline by an x-ray (source) placed in the internals of the pipe, film on the outside, exposed, developed and evaluated. Welds, which do not meet the required acceptance criteria, are either repaired or cut out and re-welded. Experienced and qualified x-ray specialists undertake the radiography under controlled conditions. Before the operation is started, the section of pipeline is cordoned off by marker tape to stop entry by non-x-ray personnel. The x-ray personnel are to be on constant surveillance to ensure that the workforce and members of the public are aware of the x-ray activities and only authorized access is permitted. In some instances, phased array ultrasonic testing is sometimes acceptable as an alternative to conventional x-ray.

Weld Rectification

Rectification will commence immediately after the NDT inspection activities to make repairs to any defective weld. On completion of any repair, another NDT inspection is performed on the weld to ensure that the finished weld conforms to the standard required.

Field joint coating

The coating of the pipeline field joints intended to prevent corrosion will commence after acceptable results are obtained from the NDT inspections.

Trench Excavation and Lowering of Pipeline into Trench

Trench Excavation

Trench excavation consists of tracked excavators working in a line. This operation only excavates the length of open cut trench sufficient to install the main line welded pipe. It does not excavate any roads, ditches, services or obstacles. The number of excavators employed will be such that the amount of trench excavated in a single day matches the rate of progress of the welding crew. The spoil from the trench will be stored adjacent to the trench on the opposite side of the ROW from the topsoil stack. The finished trench will be to the correct depth and width to suit the pipe diameter, plus any bedding and pipe cover. As far as possible, the trench should also be in a straight line so that the pipe can lay central in the trench without touching the trench sides. All loose and jagged outcrops, which could encounter the pipe during laying operations, will be removed.

Pipe Installation (lower and lay)

The pipe will be positioned approximately 5 yards from the trench centerline and will be installed in the open unobstructed trench utilizing side-booms. This operation will usually occur immediately following the excavation crew. As the line pipe is being installed a coating crew will be present who will holiday detect the pipe to detect any damage to the pipe coating just prior to the pipe entering the trench. Any holidays (damage) detected will be repaired by a fast setting repair coating. If there are any above ground breaks in the mainline due to access openings across the ROW, expansion breaks or bend breaks, then these will

be welded above ground, x-rayed and coated during the excavation and lowered-in as part of the mainline lower & lay operation. This will reduce the number of below ground tie-ins.

Installation of Permanent Cathodic Protection System Test Posts

As the pipe is being installed cathodic protection lugs are welded to the pipe. These lugs which can be a 2-inch square plate are welded on the pipeline using low hydrogen welding rods where test posts will be installed to check the ground/pipe to soil potential. The test posts are placed at about 2,200-yard intervals along the pipeline and located at fixed boundaries such as road crossings or other locations, which have relatively easy access. Cables are attached to the lugs, the whole area coated, checked for holidays and the cables brought to ground level during backfilling and are left clearly marked and tagged. During the reinstatement activities the cathodic protection (CP) test posts are installed with the cable running up through a duct in the test post and tied off. The test post is then concreted into the ground directly above the pipeline.

Temporary Cathodic Protection System

As the pipeline may be buried for the full construction period before the permanent impressed current CP system is activated, then some form of temporary system should be installed prior to the backfilling of the pipe. The temporary system, typically, comprises several zinc anodes attached to the pipeline at regular intervals. These are buried parallel to the pipeline approximately 3 yards from the centerline of the pipeline.

Final Backfill and Reinstatement Works

Backfill of the Pipeline Trench

Trench backfill starts immediately following the placement of the pipeline in the trench and the undertaking of a survey of the pipe levels to confirm the required pipe cover has been achieved. It is recommended that the initial backfill around the pipe as well as 12 inches above the crown be of loose and relatively fine particles, which can be readily compacted and does not damage the pipe coating. The pipe is backfilled over the entire length except for 30 yards at each end of the pipeline work section, which is left exposed to facilitate the tie-in to the next section.

Final Backfill and Reinstatement

On completion of the tie-in work activities on the mainline, a final backfills and grade crew will progress along the pipeline. All temporary materials, trench supports including piles, surplus excavations, rubbish, or other construction aids will be removed from the construction easement area and the sub soil levelled to its original contour.

Post-construction lateral drains

Removal will commence of any temporary header drains that have been installed to facilitate drainage during construction.

Topsoil replacement and final reinstatement

The topsoil replacement and final reinstatement of the pipeline easement area follows the backfilling operations. Any requirement for topsoil to be reinstated shall be performed during the final reinstatement. Additionally, requirements could include erection of new permanent or replacement boundary fencing, erection of pipeline markers and cathodic protection posts, and reseeding of vegetation.

24.5 Offshore and Laguna Madre Pipeline Installation

This section addresses the general requirements and methods that will be used during all of the pipelaying barge activities. This includes the pre-assembled pipe sections for HDD 2 and 4. There are basically two types of vessels that may be utilized for a conventional pipe laying activity, anchored and differential global positioning system (DGPS) equipped vessels.

Mobilization

Mobilization shall include the assembly and transportation to the offshore job site of all necessary construction personnel, equipment, machinery, tools, supplies and materials.

Pipelay Stress Limitations

Procedures shall be thoroughly developed that describe all aspects of the laying operation of barge and stinger configurations (barge trim, stinger length and radius, roller positions, and tension range) for each phase of the installation. Calculations shall be performed for required pipe holdback tension and stinger or support ramp configurations for each combination of pipe material grade, wall thickness and coating, and for the range of water depths at which each combination is to be installed on the seabed. Total combined stresses induced in the pipe shall not exceed 85% of specified minimal yield strength (SMYS) in the overbend region or 70% of SMYS in the sag bend region.

Pipelaying Equipment

The pipelines may be installed by any suitable and industry accepted means of laying/lowering the pipe to the seabed that can support/demonstrate the adequacy of the proposed methods/equipment with appropriate pipelay stress analysis. Wherever possible, redundant tensioning devices shall be used so that failure of a single tensioner will not affect laying operations. Stinger cameras are required on the aft end of the stinger. These cameras shall be positioned so the pipe and the aft most roller on the stinger are clearly in the field of view. Control tower personnel shall monitor pipe, position of vessel and all systems throughout the pipelaying process. There shall always be a qualified abandon and recovery (A&R) winch operator on board, who is designated to operate the A&R winch and is thoroughly trained on the operation of the winch.

Pipeline Routing

The permitted offshore pipeline ROW will be shown in the final engineering pipeline routing drawing. The pipeline shall be placed on the seabed entirely within the bounds of the authorized ROW. If any portion of the installed pipeline is outside of these boundaries, it shall be relocated until it rests entirely within the bounds of the authorized ROW. The designated construction workspace for laying of the offshore pipelines is a 36-ft corridor centered on the proposed pipeline alignment.

In some cases, expendable buoys are set at 500-foot intervals along the routes of foreign pipelines and foreign cables. Crossing of existing pipeline infrastructure will be crossed as defined by the final engineering drawings.

Trenching

Trenching of offshore pipeline infrastructure is required in water depths of 200 feet or less. The top of the pipeline shall be lowered to a minimum of five feet below the sea bed for the entire length of the pipeline. If additional depth is required, it will be indicated on the final engineering drawings. The trenching equipment shall be configured in such a manner as not to cause damage to the pipeline, anodes, and pipeline coating. Trenching operations shall be conducted prior to any hydrostatic testing of the pipeline. When encountering any crossing of an existing pipeline, hand jetting shall be used to lower pipelines at these crossings.

Survey

All necessary charts, nautical aids, navigational warnings, and signs required to properly conduct the installation of the pipelines will be identified and made available prior to the commencement of construction activities. There shall be onboard, the required survey personnel and remotely operated vehicle (ROV), for continuous 24-hour per day positioning of each installation vessel. The positioning system shall utilize a satellite-based system that maintains a plus-or-minus five (5) meter accuracy.

Pipeline Start up and Laydown Target Positions

Where pipeline location is critical, ancillary survey/positioning capability will be used to ensure accurate installation positioning. Additionally, as-built location surveying is required. The pipeline start-up and lay down target positions shall be in accordance with the permitted offshore pipeline route. The installation contractor will insure the pipeline ends are positioned on the seabed within a dedicated target box of 10 feet wide and 15 feet long and placed on the designated pipeline heading to an accuracy of +/- two (2) degrees.

Allowable Anchor Line and Anchor Placement

The installation contractor shall endeavor to maintain a 50-foot vertical clearance between all anchor cables and any existing pipelines or facilities. No anchors shall be placed within 500-feet of the near side of any existing pipeline. If any anchor cable is run across a pipeline, its location shall be no closer than 1,000-feet from the existing pipeline. Anchors shall be recovered vertically to prevent potential damage to existing pipelines and/or the seabed.

Dynamic Positioning Operations

The selected installation offshore pipeline installation contractor may utilize a vessel that has dynamic positioning (DP) capability and an anchoring system during installation. In this case, the installation contractor shall be prepared to make available records from his most recent DP audit and a list of DP operators and their qualifications. Further, the DP system utilized by the pipelay vessel for the offshore pipeline installation shall be an American Bureau of Shipping (ABS) Class DSP 2 or equivalent. Prior to mobilization the installation contractor will conduct a minimum three (3) hour long DP trial, or provide equivalent supporting documentation.

Anode Bracelet Installation

If anodes are not pre-installed on the line pipe, then the anode bracelets shall be installed during offshore pipelay operations. Anode bracelet assemblies shall be inspected prior to installation. Any sharp burrs or defects that could damage the pipeline coating shall be removed or repaired. The pipe area for anode installation shall be double wrap with heat shrinkable wrap or another approved fire-retardant wrap. The line pipe corrosion coating shall be inspected immediately prior to the installation of the anode assembly using an electronic holiday detector set at the proper voltage for the pipe coating material and thickness. The anode halves shall be matched, placed over the pipe, and drawn together using a non-metallic strap system or attached by means of a mechanical bolt-on style clamp assembly. Rubber mallets may be used to assist in fitting the anodes. Care shall be taken not to damage the corrosion coating.

When welding the anode bracelet segments to attach the anode to the coated line pipe, a fire-retardant heat shield shall be placed between the coating and the bracelet straps to protect the coating from any damage that may occur during the welding process. After the weld has sufficiently cooled, the shield must be removed.

When utilizing a bolt-on style anode clamp assembly, ensure the clamps are securely fastened to the pipeline and that no slippage can occur. Fasteners shall be xylon or teflon coated with locking type nuts.

All anode assembly bonding wires (two bonding wires per anode) shall be attached to the pipeline by a pin brazing or thermite welding process. When a thermite process is used, a 15-gram powder charge (i.e. Cadweld F-33 CA-15) will be used. The corrosion coating shall be removed from an area 2-inches square for attachment of the bonding wire. The pipe shall be filed to a bright, clean surface and shall be completely dry prior to thermite welding. After completion of the thermite weld, the weld slag shall be removed, and the weld connection shall be rapped sharply on the side with a hammer to test for a sound connection. The continuity of the connection shall be verified by using a suitable ohmmeter instrument.

The thermite weld connection and the exposed portions of the anode assembly steel core shall be coated with fusion-bonded epoxy melt sticks. Once securely attached to the pipeline, excess anode leads shall be protected with shrink-wrap to ensure they are not damaged during installation.

Anode Spacing During Pipelay Operations

The spacing of the anode bracelets will be determined during the engineering phase. The installation contractor will be responsible to confirm the exact location in which the anodes are installed.

Production Welding

All welding shall comply with the requirements of American Petroleum Institute (API) Standard 1104, latest edition, “Standard for Welding Pipelines and Related Facilities”, and/or the latest edition of American National Standards Institute / American Society of Mechanical Engineers (ANSI/ASME) B31.3 “Chemical Plant and Petroleum Refinery Piping”. The latest edition shall be that listed in the Rules and Regulations as specified in the U.S. Department of Transportation’s Minimum Standards for Transportation of Natural Gas by Pipelines, Part 192. Production welding shall not commence until qualified procedures and welders have been approved. Welding procedures used must be separately qualified for each grade of pipe, each mainline pipe wall thickness, and each diameter group.

Immediately prior to line-up, the installation contractor shall visually inspect the uncoated pipe ends internally and externally for nicks, dents, general damage, laminations or other surface defects. Should laminations or split ends be discovered in the pipe, the defective end shall be cut off and re-beveled, and the new end ultrasonically inspected for laminations for a minimum of eight inches from the bevel prior to installation.

All foreign materials such as mud, oil, grease, shop paint, etc., except internal or external coating applied for permanent protection of the pipeline, shall be removed from both internal and external surfaces to 6 inches from each side of the proposed weld. The offshore pipelay barge contractor shall clean rust, mill, scale, and other debris from the outside and/or inside of pipe joints before welding by means of compressed air or other approved procedure.

Pipe Alignment and Root Bead

Each pipe joint element shall be properly aligned to the preceding pipe joint prior to being welded. Longitudinal welded pipe seams shall be in the top quarter of the pipeline. Seams in adjacent sections of pipe shall be on opposite sides of the top center, when practical, and shall be staggered by not less than 20 degrees. The use of internal line-up clamps is strongly recommended for the 30-inch-diameter pipeline materials. Internal clamps shall not be removed until the root pass has been 100% completed. Internal lineup clamps shall be pneumatic and shall be equipped with fiber or rubber rollers so that the internal coating on pipe, if so furnished, will not be scratched or marred in any way. The alignment of abutting ends shall minimize the offset between surfaces. For pipe ends of the same nominal wall thickness, the offset shall not exceed 1/16 of an inch. Where the welding procedure requires a root gap for a full penetration weld, spacing tools shall be used in conjunction with line-up clamps to assure proper joint spacing. Grinding shall be required for all starts, stops and convex surfaces when the root bead is made using carbon dioxide (CO_2) gas metal arc process.

Hot and Fill Passes

After the root bead has been completed, the second bead (or hot pass) shall be immediately applied in the same station as the root bead. Succeeding beads may be applied in other welding stations. Before applying the next bead, all scale, slag, and coatings shall be completely removed from each pass with the use of a powered steel brush, except the root pass where grinding is acceptable. Power wire brushing shall be used to clean the hot pass immediately after completion.

Welding Consumables

All electrodes for the welding method selected shall conform to American Society of Testing Methods – American Welding Society (ASTM-AWS) classifications. The welding consumables used shall deposit weld metal that is compatible in chemical analysis and as a minimum equal in mechanical properties to the parent metal. Facilities must be available for the storage, handling, drying, and baking of electrodes. Cellulosic welding electrodes shall be stored in hermetically sealed canisters to minimize absorption of moisture prior to use. Electrodes removed from storage shall be disposed of if not used within two hours after removal from the canister.

Weld Cleaning

Weld spatter shields shall be placed on top of pipe to protect pipe coating from weld spatter damage. The weld shall be cleaned following completion of each weld pass, before the succeeding pass is initiated. Hand chisels, power chisels, grinders, brushes, and slag hammers may be used to clean the surface for welding. The weld shall receive a final cleaning after the cap pass is complete in order to provide a suitable surface for coating.

Weather Protection

Welding shall not be done when the quality of the completed weld could be impaired by the prevailing weather conditions. These conditions include, but are not limited to, airborne moisture and/or dirt particles and high winds. Weather protection devices shall be used where necessary.

Welding Procedure Qualification

The installation contractor will prepare a detailed Welding Procedure Specification, including a Weld Repair Procedure Specification prior to commencing procedure qualification testing. The Welding Procedure Specification and qualification of the proposed procedure(s) shall comply, at a minimum, with Section 5 of API Standard 1104. Welding procedures to be used for mainline welding shall be separately qualified for each mainline pipe wall thickness range to be welded.

Welder Qualification

Prior to commencement of production welding, each welder or machine operator shall pass the welder qualification test(s), as prescribed in either ANSI/ASME B31.3, Part 327.5.1 and/or Section 6.0 of API Standard 1104.

Weld Acceptance and Non-Destructive Testing

One hundred percent (100%) of production welds shall be non-destructively tested in accordance with Section 9 (Acceptance Standards for Nondestructive Testing) of API Standard 1104, latest edition.

NDT Required

All Non-Destructive Testing (NDT) work necessary to inspect pipeline welds will be performed by radiography or other approved NDT methods.

Acceptance of Welds

The standard of weld acceptability for radiographic, magnetic particle, liquid penetrant, and ultrasonic testing (UT) shall be as defined in Section 9 of API Standard 1104 or modified API Standard 1104 in the case of automatic UT examination for automatic welding or American Society of Mechanical Engineers – Boiler and Pressure Vessel (ASME – BPV) code Section V, Article 2.

Holiday Inspection

The installation contractor will provide a high voltage holiday detector rated at 2,000 volts and the necessary labor and equipment to operate and move the detector along the line prior to installation.

Spans and Burial Near SPM PLEM or Other Locations

Prior to any flooding of pipeline for hydrotesting, the installation contractor shall place span support and protective materials to properly support the pipeline in any locations where a span has occurred or been previously identified. This will be accomplished using sand/cement bags. Sand/cement bag support pads shall be installed at a spacing as determined by the final engineering analysis of the pipeline design. Concrete mats and sand/cement bags shall be placed, if deemed required, to prevent scouring.

Foreign Pipeline Crossings

One (1) existing pipeline has been identified in the current ROW as requiring a crossing; therefore, steps must be taken to protect the existing pipeline. Prior to laying the pipeline across any pre-existing pipeline, the installation contractor will locate and mark the pre-existing line with a minimum of three buoys. No jetting or other excavation to lower a pre-existing pipeline will be permitted without prior approval. The minimum crossing angle should be 35 degrees. There must be placement of protective materials to ensure the new pipeline is adequately supported prior to flooding the pipeline. At locations where crossing of foreign pipeline will not allow the pipe to be buried to the designated minimum depth of cover, utilization of a concrete mat or other methods may be used to protect the pipeline in these areas.

24.6 Single Point Mooring Buoy System Installation

This section addresses the general process for installing the SPM buoy system. The SPM buoy system utilizes the CALM technology that has been successfully utilized for decades throughout the world. The SPM buoy is a predesigned system that is fabricated entirely offsite. It consists of the buoy hull, turntable, swivels, hoses, chains, anchoring, navigation aids, solar panels and other ancillary equipment as required for the specific use and size of the vessels that will be utilizing the SPM buoy. The installation process involves the assembly of each of the components onsite at the designated location of the SPM buoy.

Survey

The initial task for the installation process to commence, requires the analysis of the met ocean data that will be collected during the design process. This data will be analyzed to determine whether the use of conventional anchors or driven piles will be required to secure the buoy in position. The current assessment for this Project indicates that six anchor piles will be utilized, and that method is described below. The exact position of the anchors will be determined in the engineering and design portion of the Project. The installation vessel will launch an ROV with video capability to perform a visual sweep (or check) of the installation site. Any obstructions will be removed prior to commencement.

Positioning

The installation contractor will utilize a vessel that has DP capability and will not use an anchoring system during the installation of the SPM buoy system located offshore.

Anchor and Chain Installations

The installation vessel will begin by installing the anchor pilings. The anchor piles will be prefabricated and have the connections preinstalled on the upper portion of the anchor piles. It is anticipated that six anchor piles will be required; however, this quantity could be modified based on final soils analysis and met ocean data. The piles will be driven in the locations as specified in the final construction drawings. The pile driving and refusal limits (if achieved) will be based on industry accepted standards. Each pile shall be orientated so that the anchor chain connection point is facing the correct direction. The piles will all be driven, and the chains will be connected and placed in a “Lazy S” on the seafloor. Please note that the anchor chains may consist of a combination of chain and wire rope and are referred to as “anchor chains” in this description.

SPM Buoy Installation

The SPM buoy will be towed from the nearest port or facility in which it was stored while awaiting installation. The SPM buoy will be positioned and held in place by the installation vessel and the first of the anchor chains will be retrieved from the ocean floor using a 30-ton winch fixed on the SPM buoy. The first anchor chain leg will be attached to the SPM buoy. The process will repeat for the anchor leg chain on the opposite side of the SPM buoy. This will continue until all proposed anchor leg chains are connected through the hawsers to the SPM buoy. Once all the anchor leg chains are secured then the process of tensioning and/or attaining the proper anchor chain leg angle of inclination may begin.

Hoses and Connections

The subsea hoses will be removed from the installation vessel or from a material transport barge and be lowered into the ocean. This usually requires a special overboard chute that keeps the hoses from being kinked or over bent and allows for better control of the lowering process. The subsea hoses will be lowered to the correct depth and positioned over the connection point of the PLEM. The installation vessel will dispatch divers to make the connection between the subsea hoses and the PLEM. When the PLEM connection is complete the 30-ton winch located on the SPM buoy will be utilized to connect the upper end of the subsea hoses to the swivel connection on the bottom side of the SPM buoy.

Floating Hoses

The floating hoses will be removed from the transport vessel or from a material transport barge and placed in the water. The hoses will be connected to the SPM buoy on the topsides at the hose connection flange. The floating hoses will simply float on the surface of the water and will weather vane dependent on the current.

Telemetry

The SPM buoy will have a telemetry system that allows for monitoring the key aspects that are determined to be of significance to the VLCC and the operator at the OSTF. This system will be installed and tested to satisfaction and in accordance to all relevant industry standards.

Commissioning and Testing

The commissioning will consist of confirming all signals, relays, and all other functions of the mechanical and electrical systems are functioning properly. The testing will consist of a basic leak test since the products and components have been completely tested at the original manufacturing point. The leak test parameters will be further defined in the engineering process.

24.7 General Items Applicable to all Installations

Tie-Ins (For all Pipeline Segments)

Tie-ins in between described pipeline segments will be performed by the contractor who is working in the area of the tie-in and/or has the proper equipment to access the area and perform the work. For example,

the onshore tie-ins will be performed by the onshore contractor, the offshore tie-ins will be performed by the offshore contractor.

The contractor performing the tie-in will remove any temporary protective materials that have been placed over and around any existing connection assembly as necessary for the operation of valves and completion of the tie-in. When raising and lowering the free end of the pipeline in the vicinity of the tie-in, tension on the lift cable must be maintained.

The contractor performing the tie-in shall fabricate a tie-in spool piece (considered a prefabricated assembly), including all necessary valves and fittings as defined in the engineering phase. The tie-in spool piece shall be fabricated in sections, with adequate "random" lengths for field fit-up, and shall be coated, non-destructively tested, and hydrostatically tested prior to being installed. The contractor shall perform field measurements and complete tie-in spool piece "random" cuts and welds prior to installation. Following fabrication of all field-determined lengths for random pipe lengths, the contractor will record all as-built dimensions.

Insulated Flanges (For all Pipeline Segments)

Insulating flanges shall be installed at each point in which the cathodic protection system may change from sacrificial anodes to impressed current system. This will occur in various locations onshore and offshore and will be further defined in the final engineering phase. The insulating flanges shall be designed to prevent electrical current flow by using nonmetallic, non-conducting gaskets, sleeves, and washers. Insulating flanges shall be suitable for oil and gas service at the pipeline design pressure and temperature, and the hydrostatic test pressure.

Pigging, Hydrotesting and Dewatering (For all Pipeline Segments)

The proposed pipelines will be pigged and cleaned either upon completion or in various segments according to the installation sequences. The pigging operations will involve the passage of a cleaning pig run(s) and gauging pig run(s). Also, a dewatering pig run(s) will be required after the hydrotesting is completed to remove the hydrotesting water. The final procedure for the pigging operations will be developed by the individual contractors performing the various installation segments of the pipeline.

Hydrotesting will be performed in segments as the installation phases are completed. The testing will be conducted after the pipelines have been installed, covered, and no longer subject to repositioning or lifting/lowering. Hydrotesting will commence with flooding the pipelines with water (freshwater is preferred). All excess air will be removed from the line by utilizing a vent valve which is usually installed at the highest elevation point on the pipeline segments. The pressure pump will be connected to a previously installed testing manifold and pressure will be applied to the pipelines. The pressures will be recorded along with ambient temperature and internal pipeline temperature. Adjustments will be made to the results based on ambient external temperatures. This is due to the fluctuations induced on the internal pipeline pressure from changes in the ambient temperature throughout the day. The test pressure will be set according to industry standards. The hold time for the pressure test will also be set according to the same criteria.

Upon successful completion of the hydrotest, the pressure will be gradually reduced through a bleed valve at a predetermined rate. When the pipeline has returned to 0 psi, the dewatering process will begin. The dewatering process involves launching a dewatering pig to push the water out of the line. This process may be repeated several times to achieve sufficient water removal. In some cases, a corrosion inhibitor, oxygen scavenger and biocide may be injected into the hydrotest waters to facilitate the longevity of the pipeline system. Upon removal of the test waters, the drying process will begin with forcing air through the pipeline and measuring the humidity at the discharge point. The humidity levels that must be achieved will provide relative certainty that there is not any remaining water in the pipeline.

25.0 §148.105(x) Operations Manual

A Draft Operations Manual for the proposed DWP has been prepared and is provided as Appendix A, in Volume III (Confidential). The Draft Operations Manual will be further developed in design phases once marine operations personnel positions are assigned and further studies, analysis, and risk assessments with regards to navigation, mooring, DWP design, flow assurance, and DWP availability have been completed. The Draft Operations Manual provided at the time of submittal of this DWPL application would be expanded, revised, and completed during further design of the proposed DWP. Development of the Final Operations Manual for the proposed DWP would be completed in collaboration between the Applicant, USCG, and MARAD.

26.0 §148.105(y) Risk and Consequence Assessment

A formal risk assessment and consequence analysis would be conducted based on the final design of the proposed Project. The risk assessment and consequence analysis can then be done in conjunction with a hazard and operability study (HAZOP) and hazard identification (HAZID) study for the proposed Project.

The design and operations of very large crude carrier (VLCC) vessels is a very repetitive operation and over years of revising designs, the risks are fairly well known and are mitigated through the training of crew and officers and designing, building, and classing according to Classification Society Rules. Vessels are required to have management processes for recording, tracking and taking action on the risk identification and assessment, management of change procedures, corrective action requests, permit to work, stop work policies, toolbox talks, job safety analysis, etc. As such, DWP personnel will be trained to use these tools to define risks, take action, and reduce the likelihood or consequence of the risk.

The design and operation of the proposed single point mooring (SPM) buoy system is a common practice and has been studied and refined with each additional Project delivered. The proposed SPM buoy system, and catenary anchor leg mooring (CALM) mooring system, are classed by an IACS approved classification society (likely ABS) and the engineering is reviewed by a certifying entity (CE) (which may also be ABS). Classification and CE review provides a level of assurance to the operator that the design, construction, and maintenance of the equipment is performed and meets a defined standard of quality. Classification of the SPM buoy and its CALM system will be revaluated through special survey and inspection throughout the operating life (25 years) of the equipment.

Vessels moored at the DWP will be limited to only loading operations. Other operations, such as hotwork or other maintenance on deck or in hazardous areas will be prohibited during loading at the DWP unless written approval is obtained. No other simultaneous offshore operations will be permitted on the vessel during loading such as bunkering, transfer of provisions or crew, aerial, or waste removal. The Applicant does not intend to provide bunkering or bunkering vessels, stores, or previsions at the proposed DWP. Bunkering will not be allowed at the proposed DWP. Bunkering must be arranged by the vessels through their agent or other commercial channels.

The likelihood of a collision or allision is very low based on the following reasons. The location of the proposed DWP, relative to other analogous projects, is in a lower traffic area, south of the main shipping lanes into Aransas Pass and approximately 2 miles from the already established safety fairway that runs North/South. Calls at the proposed DWP are expected to be fewer than analogous projects at approximately 8 per month for a VLCC size vessel. This number is significantly fewer than analogous projects with multiple SPM buoy systems. Areas to be avoided (ATBA) and safety zones are defined around the DWP and would be added to the nautical charts to inform surrounding vessel traffic of the obstruction and to eliminate the risks associated with other types of vessels from entering the area while a vessel is moored at the DWP. The SPM buoy system and associated floating hoses will have lights for visibility in the dark. The SPM buoy system would have a radar reflector so that it can be detected by nearby and approaching vessels.

Risks offshore during mooring and hose connection are mitigated through the use of highly trained personnel. Two mooring masters and a pilot will be utilized during the operation (refer to Section 14.0, §148.105(m)). The mooring masters are trained and meet experience requirements as set out in the Oil Companies International Marine Forum (OCIMF) Competence Assurance Guidelines for Mooring, Loading, and Lightering Masters. Personnel would be trained specifically for and by the proposed DWP. At least two 50,000 to 80,000 horse power ocean-going tugs (size and functional requirements to be verified during detail design) will be at the DWP during mooring and unmooring operations to assist vessels as needed and respond to emergencies.

Local pilots would be hired by the vessels to ensure safe navigation and knowledge of local traffic, hazards, and any other potential risks. Both the pilots and the mooring masters will be trained to respond

to any emergencies with specific knowledge of the regional laws and resources and the U.S. Coast Guard (USCG) Area Contingency Plan – Corpus Christi.

The risk of vessel grounding is mitigated through a 5 to 10 percent under keel clearance margin that is set by the vessel operator in addition to the maximum draft of the vessel. Information such as this and other essential vessel operational information is detailed in the DWP defined series of notifications that the vessel must follow as part of its contract with the DWP. A draft notification schedule for the proposed DWP is detailed in the Draft Operations Manual provided as Appendix A in Volume III (Confidential). Inspection of equipment is required prior to each mooring and loading operation and notice of readiness is communicated. The vessel and DWP would have a pre-loading meeting to discuss the plan for operation and address any issues or concerns as defined during inspections. These defined communication points provide an opportunity to identify and mitigate any observed risks in the field that would not be identified during a formal risk assessment.

In the case of an incident on the vessel, very specific disconnect scenarios and actions will be defined for those personnel operating offshore through a formal risk assessment. This would include weather and hawser load disconnect scenarios, fire, spill, and cargo tank alarms. The SPM buoy system would be fitted with a telemetry system that communicates hawser tension values in real time to the mooring masters on board the vessel and onshore operations facility. A formal procedure for the vessel to disconnect will be defined if hawser tension alarms are triggered. The procedure will be activated if the hawser tension exceeds limits within certain time durations, also to be defined. These procedures mitigate the risk of hawser failure and vessel drift off. A procedure for loss of hawser tension will also be defined.

The likelihood and consequence of potential pollution scenarios will be evaluated during a formal risk assessment. A Trajectory Model has been prepared for the proposed Project and is provided as Appendix S. The intent of the Trajectory Model is to assess the potential consequence of an oil spill, the worst-case discharge (WCD), and associated spill trajectories for different seasonal weather conditions. A Worst-Case Discharge Calculation is provided as Appendix T and includes references of the applicable regulations. A HAZID/HAZOP will be completed once the design concept is finalized and detail design begins. At this time, the WCD is used to identify the high consequence and associated tactical response requirements. Comprehensive Emergency Response, Safety, Security, and Fire Plans will be developed during the detail design.

The Trajectory Model (Appendix S) simulates two releases at two different discharge rates during various seasonal conditions. The two releases add up to the calculated volume for the WCD. The WCD volume was calculated based on a highly unlikely event that the proposed offshore pipeline infrastructure suffers a complete rupture and all contents of the offshore pipeline infrastructure is evacuated.

The Trajectory Model discharge is based on two-time frames:

1) the product (240 barrels) discharged based on the pressure difference between the operating pressure and the hydrostatic pressure at the pipeline depth and is assumed to be instantaneous.

2) the slow leakage of the cargo (63,600 barrels) due to the difference in density of the lighter oil and the water and is very slow over 10 days.

Each deterministic seasonal model presented in the Trajectory Model was analyzed to determine any potential environmental and/or socioeconomic impact as a result of an oil spill. Impacts to aquatic resources were evaluated and are discussed in Section 27.0, §148.105(z) of this DWPL application. The Trajectory Model details those impacts that would occur as a result of the WCD. In order to determine potential impacts, an expansive data search was conducted to identify the sensitive areas in and around the proposed Project. These areas are presented in the Trajectory Model report provided as Appendix S. The Trajectory Model report includes maps that illustrate the shoreline impacts relative to these areas.

The results of the Trajectory Models presented in Appendix S assumes no response efforts were employed and therefore no oil was contained, recovered, or diverted. However, in the actual situation of an unanticipated discharge, highly-trained tactical response teams would be mobilized immediately to initiate mitigation efforts. The WCD volume used in the trajectory models is based on the entire content of the offshore pipelines, irrespective of system design measures to reduce volumes released as a result of a failure on the system including shutoff valves, seabed bathymetry, and pipeline depth and routing. The proposed pipeline infrastructure would be designed to close shut-off valves and shutdown pumps within 30 seconds of detection of pipeline pressure drops. A full HAZOP of the system will be completed during detail design to ensure that the consequences of different credible scenarios and actions is mitigated to the lowest practical spill volume.

The results of the Trajectory Models were evaluated to develop the Tactical Response Plan provided as Appendix U. The intent of the Tactical Response Plan is to provide the necessary information to quickly and effectively respond to an incident and provide a toolbox of information to aid response efforts. The Tactical Response Plan also identifies the resources available in the region to aid in response efforts. The Tactical Response Plan provides mitigation measures that should be deployed to protect and limit impacts to sensitive environmental and socioeconomic areas when responding to a release. Included within Tactical Response Plan are maps detailing the location and type of equipment to be deployed in response to a release.

All regulatory requirements for safety, security and oil spill response plan will be developed and submitted to the USCG and/or the Bureau of Safety and Environmental Enforcement (BSEE), as applicable. The air quality requirements of the proposed Project including the onshore storage terminal facility (OSTF) have been addressed pursuant to all applicable requirements of the National Environmental Policy Act (NEPA) as well as the Clean Air Act (CAA), ultimately leading to the conclusion that the proposed Project will result in minimal risks and consequences to the air quality of the surrounding environment. In compliance with 33 USC 1504(f) and 33 CFR 148.710(b), the Applicant's DWPL application will need to be processed in accordance with the NEPA (44 USC 4332). 33 USC 1504(f) states that "such compliance shall fulfill the requirement of all Federal agencies in carrying out their responsibilities under the National Environmental Policy Act of 1969 pursuant to [the Deepwater Port Act of 1974]". The process by which the licensing will comply with NEPA is further set in 33 USC 1504(f) and 33 CFR Part 148. These requirements have been addressed under Appendix V - Air Quality Supporting Information for (NEPA) Environmental Impact Statement (EIS) analysis of the DWP license application.

Additionally, in accordance with 33 CFR 148.5, the proposed Port will be considered a "new source" for purposes of the CAA (42 USC 7401 et seq., as amended). The Deepwater Port Act of 1974, as amended (DWPA) dictates that the EPA has jurisdiction to enforce the CAA for Deepwater Ports. Because the DWP will result in potential emissions of regulated pollutants, a CAA preconstruction permit is required. The CAA specifies requirements for National Ambient Air Quality Standards (NAAQS), Air Quality Control Regions (AQCRs), New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants (NESHAP). Texas Commission on Environmental Quality (TCEQ) Emissions Standards and Regulatory requirements also apply. A copy of the Applicant's CAA preconstruction/federal New Source Review (NSR) permit application to EPA Region 6 and TCEQ is included in this application as Appendix V – New Source Review (NSR) Air Permit Application. In addition to components required for a state air permit application in Title 30 of the Texas Administrative Code (30 TAC) §116.111, since emissions of volatile organic compounds (VOC) will be greater than the major source threshold in 40 CFR 52.21, 250 tpy; the application includes components required for a Prevention of Significant Deterioration (PSD) permit for emissions of VOC provided in 40 CFR 52.21. This includes a Best Available Control Technology (BACT) review which is included in the New Source Review (NSR) Permit Application. An air quality analysis that has been performed in support of both the NEPA EIS as well as the CAA requirements (including state requirements) is presented in Appendix V – Air Quality Analysis. A Case-by-Case MACT analysis is provided in Appendix V – Case-by-Case MACT Permit Application. A Title V federal operating permit application is provided in Appendix V – Title V Permit Application. Appendix V – TCEQ Authorizations for Onshore Facilities contains the Non-Rule Standard

Permit (NRSP) applications for the OSTF and Booster Station and documentation demonstrating TCEQ de minimis facilities authorization for the onshore Valve Station. As certified by this application, this proposed Project will be constructed, operated, and decommissioned in compliance with the CAA. The following sections detail Air Quality Environmental Documents provided in Appendix V.

Air Quality Supporting Information for (NEPA) Environmental Impact Statement (EIS) analysis

The Air Quality Supporting Information for (NEPA) EIS analysis in Appendix V provides environmental information pursuant to the DWPA, and in accordance with the USCG's and the Maritime Administration's (MARAD) need to comply with NEPA. The DWPA Environmental Report accompanying this DWP application is presented to aid in facilitating this required NEPA Environmental Impact Analysis. This document addresses air quality, as may be affected by proposed construction (offshore and onshore air quality impacts of construction as well as emission from onshore and offshore construction), operation (offshore existing ambient air quality, offshore greenhouse gases, offshore and onshore operational emissions), and impacts of decommissioning of the Project. Emissions from onshore and offshore were evaluated for the DWPL application. A combination of short- and long-term predominantly minor adverse impacts on air quality that would be expected during construction, operation, and decommissioning of the proposed Project are addressed. Short-term, negligible, adverse impacts on air quality that would result from the operation of construction of the proposed OSTF and from the construction of the proposed DWP are addressed as well.

New Source Review (NSR) Permit Application

Per 33 CFR §148.3(d), The Environmental Protection Agency (EPA) is designated as a cooperating agency to support the Coast Guard and MARAD in the review and evaluation of DWP license applications. The TCEQ regulates air quality in the state of Texas through the Texas Clean Air Act (TCAA), located in Chapter 382 of the Texas Health and Safety Code; develops rules, including those in Title 30 Texas Administrative Code (TAC) Chapter 116; and implements provisions of the Federal Clean Air Act (FCAA). Title I of the FCAA requires states to develop State Implementation Plans (SIPs) to address attainment and maintenance of the National Ambient Air Quality Standards (NAAQS). Title I also requires a preconstruction permitting program for both major and minor sources (New Source Review or NSR). The PSD permitting program is applicable for criteria pollutants, in areas that are in compliance with the NAAQS for that pollutant. The PSD permitting program is also applicable for certain non-criteria pollutants. Non-criteria pollutants are pollutants that are regulated by the EPA; however, they do not have a NAAQS. Since the proposed Project results in emissions of regulated pollutants, the New Source Review (NSR) Permit Application includes the PSD permit application for emissions of VOC and addresses TCEQ minor source, state preconstruction air quality requirements. With this submittal, TGTI is proposing to authorize the VOC and Hazardous Air Pollutants (HAP) emissions resulting from the loading of crude oil from the DWP Terminal onto Very Large Crude Carriers (VLCCs). Based on potential air emissions from the facility, the Project will be subject to preconstruction review under the federal PSD regulations since potential emissions of VOC will be greater than the 250 ton per year PSD major source threshold. All the necessary requirements of the permit application, including air emissions quantification, BACT, and air quality impacts are addressed in this application and the separate Air Quality Analysis.

Air Quality Analysis

The TCEQ manages air quality in the state of Texas by regulating the release of air contaminants through the TCAA, located in Chapter 382 of the THSC, develops rules, including those in Title 30 of the Texas Administrative Code (TAC), and implements provisions of the FCAA and Code of Federal Regulations (CFR). Applications for projects subject to air quality impacts analyses are those with new and/or modified facilities or sources of emissions of air contaminants. The Applicant must fully document the basis for air quality impact analysis determinations as it is the applicant's responsibility to demonstrate that the permit should be issued. Consistent with past US EPA guidance for similar licensing applications, TGTI has included air quality dispersion modeling in support of the overall NEPA analysis to demonstrate that the

proposed operations associated with this DWP will not result in a violation of the National Ambient Air Quality Standards (NAAQS). This modeling report details the air dispersion modeling analysis performed for the DWP to demonstrate compliance of the air quality standards at the Class II receptors. This report details the air dispersion modeling that has been conducted for PM10, PM2.5, NO2, CO, and SO2 to demonstrate compliance with the NAAQS. In addition, a State Health Effects evaluation for emissions to demonstrate compliance with the TCEQ toxicology division's Effects Screening Levels (ESL) guidelines has been conducted. Since the Project's VOC emission increase is greater than 100 tpy, a qualitative assessment of the potential ozone impacts from the DWP source post-Project total VOC emissions was performed.

NAAQS

The NAAQS were designed by the Environmental Protection Agency (EPA) to protect public health (Primary NAAQS) and welfare (Secondary NAAQS) from the effects of criteria pollutants. Criteria pollutants include carbon monoxide, lead, nitrogen dioxide, particulate matter equal to or less than ten micrometers in diameter (PM10), particulate matter equal to or less than 2.5 micrometers in diameter (PM2.5), ozone, and sulfur dioxide. The FCAA requires states to determine which areas are in compliance with the NAAQS (attainment areas), and which areas are out of compliance with the NAAQS (nonattainment areas). The air dispersion modeling results for NO2 exceed the respective Significant Impact Levels (SILs), triggering NAAQS modeling analysis. Based on the representative background monitoring concentrations, the overall impacts due to the Project are below the NAAQS levels for NO2.

Ozone Impacts Analysis

For a Prevention of Significant Deterioration (PSD) application, if a Project will emit 100 tons per year (tpy) or more of VOCs or nitrogen oxides (NOx) emissions, an ozone impact analysis to demonstrate predicted compliance with the 8-hour ozone standard is required, including the gathering of ambient air quality data. As listed in Section 3.3 of the Air Quality Analysis, using the concept of the maximum ozone impact predicted for the NuStar Project (representative Project) would result in a maximum impact for the SPM operations of 1.77 ppb ozone. The three-year average (2014-2016) of the 4th highest 8-hour ozone concentrations from the representative background monitor (Corpus Christi West Monitor) is 64 ppb. The estimated increase of less than 2 ppb from the Single Point Mooring (SPM) operations using this conservative qualitative assessment based on representative Comprehensive Air Quality Model with extensions (CAMx) modeling results would not result in an exceedance of the 8-hour ozone NAAQS of 70 ppb.

Health Effects Analysis

The purpose of the Health Effects analysis is to demonstrate that emissions of non-criteria pollutants from a new facility or from a modification of an existing facility will be protective of the public's health and welfare. Agency toxicologists use the results from the Health Effects analysis to evaluate the effects of emissions on a contaminant-by-contaminant basis. The objectives of the analysis are to: (i) establish off-property ground-level concentrations (GLCs) of contaminants resulting from proposed and/or existing emissions, and (ii) evaluate these GLCs for their potential to cause adverse health or welfare effects. Toxicology Division (TD) staff compare the GLC to an effects screening level (ESL). An ESL is a guideline, and not a standard. The non-criteria pollutant emissions (crude/condensate) were evaluated according to the TCEQ MERA analysis approach. The crude/condensate emissions emitted from the proposed SPM operation's emission sources are evaluated using the ESL for crude/condensate. Speciation of crude/condensate is not required as ESLs have been published for crude/condensate. For this Health Effects Evaluation, all ESLs are obtained from the TCEQ's Toxicity Factor Database. Both crude and condensate have a short-term ESL of 3,500 µg/m3 and a long-term ESL of 350 µg/m3. Therefore, the worst-case emissions between crude and condensate on an hourly basis and annual basis have been evaluated. Acceptable ambient impacts are predicted since the maximum predicted hourly and annual impacts for condensate/crude are below the corresponding ESLs.

Case-by-Case Maximum Available Control Technology (MACT) Permit Application

A Case-By-Case MACT analysis was conducted for the proposed SPM buoy system because the proposed SPM buoy system will represent a major source of HAP emissions and it is not an affected source under an existing MACT standard. TGTI conducted a case-by-case MACT analysis pursuant to section 112(g) of the CAA (and incorporated into TAC Chapter 116, Subchapter E). 40 CFR §63.43(d) stipulates that the case-by-case MACT limit proposed shall not be less stringent than the emission control that is achieved in practice by the best controlled similar source and shall represent the maximum degree of reduction in emissions of HAP that can be achieved by utilizing available control technologies with consideration of the costs of achieving such emission reductions, the technical feasibility of such emission reductions, and any non-air quality and environmental impacts and energy requirements associated with the emission reduction.

Title V Operating Permit Application

Per 40 CFR §71.3(a)(1) a major source of air emissions is subject to the permitting requirements under 40 CFR Part 71. Since potential emissions of VOC from the proposed SPM buoy system will exceed the Title V major source threshold of 100 tpy, a Title V operating permit will be required under Part 71. TGTI has included a Title V Federal Operating Permit Application that includes the forms provided by EPA for 40 CFR Part 71. TGTI is submitting the Title V application along with the MARAD license application to allow of consistency of review within the NEPA process.

TCEQ Authorizations for Onshore Facilities

The TCEQ Authorizations for Onshore Facilities document provides the TCEQ air quality authorizations for the proposed onshore facilities (emission sources). The OSTF and Booster Station are authorized using TCEQ's non-rule standard permit (NRSP) in accordance with 30 TAC 116.610, 116.611, 116.614, 615, and the specific standard permit requirements for a NRSP (a type of Minor NSR permit). An emergency generator at the OSTF is authorized under TCEQ Permit by Rule (30 TAC 116.511) and the Valve Station is authorized under TCEQ de minimis facilities or sources requirements (30 TAC 116.119). The OSTF, Booster Station, and Valve Station will comply with all applicable state and federal requirements.

27.0 §148.105(z) Environmental Evaluation

Texas Gulf Terminals Inc. (TGTI; Applicant) has prepared an Environmental Evaluation of the proposed DWP in support of this application. The complete Environmental Evaluation is located in Volume II of this application. The role of this Environmental Evaluation is to provide the primary information to determine whether the proposed DWP meets the elements of the Secretary of Transportation's purpose and need. Where applicable, this document also considers safety but does not function as the final safety screening.

Texas Gulf Terminals Inc. (TGTI), has reviewed the following federal laws and statues to comply with 33 CFR 148.737 of the Deepwater Port Act (DWPA) of 1974 during preparation of the Deepwater Port License (DWPL) application. All the laws were reviewed, and the applicable regulations are discussed in Sections 3.0 through 14.0 of 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, 42U.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

The Environmental Evaluation assesses the potential environmental effects associated with installation/commissioning (“construction”), routine operations, potential upsets/accidents, and decommissioning of the proposed Project. This document has been prepared in anticipation of compliance with NEPA requirements, the Council on Environmental Quality regulations for implementing

NEPA (40 CFR §§1500-1508), U.S. Department of Transportation Order 5610.1C Procedures for Considering Environmental Impacts), and 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 MARAD's compliance with NEPA; and
- Facilitate public involvement in the decision-making process.

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. In addition, the Environmental Evaluation proposes measures to mitigate potentially adverse environmental consequences of different Project activities.

27.1 Report Organization

The Environmental Evaluation provided as part of this DWPL application is included as Volume II (under separate cover) and Volume II Appendices (under separate cover). The Environmental Evaluation includes an introduction, Project description and purpose and need discussion, and an alternatives analysis, followed by evaluations of twelve 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 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, Evaluation Framework, and Summary of Impacts
1.0 Project Description, Purpose, and Need
2.0 Alternatives Analysis
3.0 Water Quality
4.0 Wetlands and Waters of the US
5.0 Inshore and Offshore Aquatic Environment
6.0 Commercial and Recreational Fisheries
7.0 Wildlife and Protected Species
8.0 Cultural Resources
9.0 Socioeconomics
10.0 Geological Resources
11.0 Coastal Zone Use, Recreation, And Aesthetics
12.0 Meteorology, Air Quality, And Noise
13.0 Navigation and Navigation Safety
14.0 Safety and Security
15.0 List of Preparers

Volume II - Appendices

Appendix A – Construction, Operation, and Decommissioning Procedures
Appendix B – Agency Coordination and Governing Laws and Regulations
Appendix C – Wetland Delineation Report - Inshore
Appendix D – Wetland Delineation Report - Onshore
Appendix E – Benthic Survey Report
Appendix F – Submerged Aquatic Vegetation Impact Analysis
Appendix G – Essential Fish Habitat Assessment
Appendix H – Threatened and Endangered Species Report
Appendix I – Threatened and Endangered Species Report – Onshore
Appendix J – Piping Plover and Red Knot Survey Report
Appendix K – Air Quality Supporting Information
Appendix L – Air Quality Analysis

27.2 Summary of Environmental Evaluation

The Environmental Evaluation assesses the potential environmental effects associated with installation/commissioning ("construction"), routine operations, potential upsets/accidents, and decommissioning of 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.

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. A complete list of governing laws and regulations that were considered in the Environmental Evaluation of the Project can be found in Volume II, Appendix B.

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

27.2.1 Project Description, Purpose, and Need

Section 1 provides a detailed overview of the Project's purpose and need, Project objectives, and Project description.

The Applicant proposes to construct the proposed Texas Gulf Terminals Project to allow for the loading of VLCCs at the proposed DWP via a single point mooring (SPM) buoy system. The construction and operation of the proposed Project would fulfill the need for a safe, efficient, and cost-effective logistical solution for the export of crude oil from the U.S. to support the continued economic growth of the U.S. The proposed Project allows for the fulfillment of the purpose and need while meeting the environmental and Project objectives which serve as the basis for considerations throughout the alternatives analysis process detailed in Section 2.0. The proposed Project fulfills the required Project objectives including:

- The need for a safe, efficient, and cost-effective export of U.S. crude oil to support U.S. economic growth.
- The Environmental objectives and any additional HSSE impacts identified.
- The need to safely, fully and directly load a VLCC; and,
- The need to support loading rates of approximately 60,000 barrels per hour (bph) for the loading of approximately 8 VLCC's per month.

27.2.2 Alternatives Analysis

An analysis of Project alternatives was undertaken in compliance with the National Environmental Policy Act (NEPA). This section of the NEPA report summarizes the process and outcome of the alternatives analysis. The alternatives analysis is one of nine criteria used to determine a final decision under the DWPA (33 Code of Federal Regulations [CFR] subchapter NN parts 148, 149, 150 AND/OR 33 U.S.C. 1503c). Pursuant to NEPA, governmental decision-makers must consider reasonable 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's purpose and need as defined in Section 1 – Project Purpose and Need;
- Satisfy environmental and Project objectives discussed as defined in Section 1 (Purpose and Need and stated below);

- 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 Description, Purpose, 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 overall Project objectives are defined as follows:

Project Objectives

- Provides a logistical solution for the safe, efficient, and cost-effective export of crude oil to support U.S. economic growth;
- Minimizes any additional Health, Safety, Security, and Environmental (HSSE) impacts not listed in the Environmental Objectives
- Ability to safely, fully, and directly load a VLCC; and,
- Ability of infrastructure to support loading rates of approximately 60,000 barrels per hour (bph) for the loading of approximately 8 VLCC's per month.

Environmental Objectives

- Minimizes impacts to waters of the U.S. (WOUS), including wetlands, and special aquatic resources;
- Minimizes impacts to threatened and endangered (T&E) species and their associated habitats;
- Minimizes impacts to cultural resources;
- Minimizes impacts to navigation and navigation safety;
- Minimizes impacts to commercial and recreational fisheries and essential fish habitat (EFH);
- Existing land use compatibility, availability, and suitable for the proposed Project;
- Project location within proximity of existing and planned crude oil infrastructure, thereby reducing Project footprint and environmental impacts;
- Project design that allows for the maximization of offsite fabrication in a controlled setting thereby minimizing offshore impact as a result of onsite construction activities.

This alternatives analysis evaluates the reasonable, feasible, and practical alternatives to the proposed action in accordance with NEPA. A variety of practicable and reasonable alternatives were considered by the Applicant. Impractical alternatives are defined as alternatives that are technically or economically unfeasible; therefore, were not considered as part of this alternatives 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 alternatives analysis process, the Applicant identified five tiers which were used to determine the least environmentally damaging practicable alternative which fulfilled the purpose and need of the proposed Project.

27.2.3 Water Quality

Section 3 includes information on the current status and potential impacts to water and sediment quality near the Project site. Water Quality includes biological, chemical, and physical characteristics of waterbodies across a diverse set of habitats that occur within and adjacent to the Project area.

During construction and operation of the proposed Project, all operating vessels would be required to comply with the International Convention for the Prevention of Pollution from Ships, adopted in 1973 and modified by the Protocol of 1978 (MARPOL). The Convention includes regulations aimed at preventing and minimizing pollution from ships, both accidental pollution and that resulting from routine operations.

The Federal Water Pollution Control Act Amendments of 1972, known as the Clean Water Act (CWA) authorizes the U.S. Environmental Protection Agency (USEPA) to issue National Pollutant Discharge Elimination System (NPDES) permits. The Railroad Commission of Texas (RRC) has jurisdictional authority over the transportation and storage of crude oil in the State of Texas; however, the RRC has not been delegated authority by USEPA to administer the NPDES program for non-exempt oil and gas operations.

Based on input from USEPA Region 6, the onshore portion of the facility would not be exempt from the Clean Water Act 402(l)(2) for uncontaminated stormwater discharges from oil and gas exploration, production, processing, or treatment operations or transmission facilities. Hence, the onshore storage terminal facility (OSTF) will be required to obtain authorization to discharge stormwater during construction activities and normal operation. While a NPDES permit would be required for operation of the proposed onshore components of the proposed Project; the offshore SPM buoy system would operate in federal waters, outside state of Texas waters. The SPM buoy system would not result in any discharges during operations and the vessels be connected to the SPM buoy system would be operating in the capacity as a means of transportation. Therefore, it is the Applicants understanding that neither the SPM nor the vessels loading crude oil will come under the jurisdiction of the EPA's NPDES Permit Program.

Short-term, minor, adverse impacts on the water quality would result from bottom sediment disturbance activities during construction. An increase in turbidity would be associated with disturbance of soft bottom sediments. These impacts would be localized, reversible, and limited to the time of construction. After construction is complete, turbidity is expected to return to pre-trenching levels. Duration for this post-excavation recovery may extend for days or weeks, depending on the amount of disturbance and the size of disturbed particles. Turbidity increases would be localized and temporary in nature during the construction phase of the proposed Project. The proposed offshore and inshore pipelines would be hydrostatically tested to ensure their integrity before being placed into service. The hydrotest fill water would not be treated with a biocide. Negative effects on water quality are not expected in connection with hydrostatic testing of the proposed inshore and offshore pipelines. Adverse direct impacts on water quality would be expected from accidental releases of fuel, oil, and other chemicals. The degree of impact is directly proportional to the amount of spill and how long it continues. Impacts could be short-term if the spill is minor, or adverse and significant and not mitigatable if the spill is major. All oil in the water must be recorded and/or reported, based on the quantity. Tankers, under International Maritime Organization (IMO) regulations are required to keep an oily water discharge record book and any oily water quantities accounted for that are discharged overboard. There are audit requirements for the book to hold operators accountable. Any oil greater than 15 ppm must remain onboard and cannot be discharged. Any amount of oil over 15ppm in water or any oil that goes into the water must be reported to the appropriate authorities. Both the DWP and the tankers will have Emergency Response Plans that follow specific steps in reporting and initiating the response to an oil spill. Tanker and port operators are required by law to have a contract with an Oil Spill Response Operator that owns and operates recourses to respond to a spill and mitigate the potential impacts. All measures necessary will be taken to mitigate the likelihood of a spill into design and through competency and training of operations personnel.

During vetting process, it is the applicant's intent to restrict the vessels discharges types when they have entered the DWP safety zone or designated approach fairway. Discharges from vessels transiting to the DWP can impact water quality in the surrounding waters, even though discharges are not permitted to occur while at the DWP. Treated discharged would meet all USEPA and USCG requirements and thus would not significantly affect water quality. Crude oil transfer carriers would operate under MARPOL Convention standards. Impacts to water quality associated with ballast water intake and discharge in the offshore environment would not be significant. Overall, potential impacts to water quality as a result of engine cooling water/bilge discharge during Project operation are anticipated to be long-term but negligible. The SPM does not have any exposed process areas and will not be discharging any contaminants. Vessel process areas, where there is a potential for oil contamination, would be curbed. Vessel equipment that has the potential to release hydrocarbons would be designed to include drain pans to capture hydrocarbons and rainwater. The open drain system would collect rainwater, wash water, and other fluids, which would be gravity drained to slop tanks/oil water separators. Slop tanks and/or oil/water separators would treat oily water by gravity separation. Based on the first- flush principle, the first half inch of rainfall would be diverted to the vessel slop tank for treatment. All Project-related activities during construction, operation and decommission would comply with federal regulations to control the discharge of operational wastes such as bilge and ballast waters, trash and debris, and sanitary and domestic waste that would be generated from vessels associated with the Project. In addition, as per USCG and USEPA regulations, an Emergency Response Plan will be developed for the Project. Because impacts to water quality in the Gulf of Mexico are considered negligible, no mitigation measures, other than those noted above, are proposed.

Overall, the cumulative impacts of the proposed Project when considered with other Projects will be short-term (during construction) to permanent (within the footprint of the SPM buoy system), and minor. Temporary, minor impacts on water quality in nearshore locations of North Padre Island could occur if construction of the proposed Project and the Projects discussed above are concurrent. The proposed Project and other Projects will be required to comply with the CWA to minimize impacts on surface water quality. Therefore, while the proposed Project will contribute to cumulative impacts on water quality along with other Projects in the geographic range, this impact will be negligible.

27.2.4 Wetlands and Waters of the US

Section 4 describes the wetlands and other waters of the US that are affected by the proposed Project. The Clean Water Act (CWA), as amended in 1977, establishes the basic structure for regulating discharges of dredged or fill material into WOUS, including wetlands and other "special aquatic sites." Wetland delineations were completed for both inshore and onshore Project areas and can be referenced as Volume II, Appendix C and D, respectively. A total of 16 wetland areas were delineated within the inshore Project survey area, and 3 wetland areas were delineated within the onshore Project survey area. Additionally, surveys identified two waterbodies in the survey areas as well as one estuarine unconsolidated shore and one mudflat area. There are no above ground structures or fill proposed within floodplain areas.

The environmental consequences identified in the environmental evaluation of wetlands and waters of the US include temporary impacts to approximately 3.792 acres of palustrine emergent wetlands. Short term, minor adverse impacts will be caused by the construction of the pipeline components of the Project, which will occur in a 75-foot construction corridor on onshore and inshore lands. No impacts are anticipated for the special flood hazard area, Zone VE, present along the shorelines of the action area, as horizontal directional drilling (HDD) will be utilized; however, construction of the proposed onshore pipelines would result in temporary impacts to 7.986 acres of Zone X floodplains. Operational impacts could be caused by monitoring of the pipeline right of way or in the case of an accidental spill or pipeline leak. Decommissioning would result in short term, minor adverse impacts with the removal of above ground Project components located near or within delineated wetlands and waters of the US. All impacts will be temporary as the Project site will be returned to pre-construction elevations and grade and

vegetation restored after construction is completed. An Emergency Response Plan will be implemented throughout the Project to mitigate accidental oil spill or pipeline leaks.

Cumulative impacts to wetland and waters of the US were assessed based on the Framework for Cumulative Impact Analysis. Overall, the cumulative impacts of the proposed Project when considered with other Projects will be short-term (during construction) to permanent (within the footprint of the SPM system), and minor. Temporary, minor impacts on water quality in nearshore locations of Padre Island could occur if construction of the proposed Project and the Projects discussed above are concurrent. The proposed Project and other Projects will be required to comply with the CWA to minimize impacts on wetlands and surface water quality of WOUS. Therefore, while the proposed Project will contribute to cumulative impacts on wetlands and water quality along with other Projects in the geographic range, this impact is anticipated to be insignificant.

27.2.5 Inshore and Offshore Aquatic Environment

Section 5 describes the existing marine environment, including the physical and oceanographic attributes and existing unique habitats resulting from these factors, within the Gulf of Mexico and Laguna Madres. The aquatic environment includes a diverse set of habitats that occur within and adjacent to the Project area. Due to the location of the various Project components, the aquatic environment is discussed in terms of inshore and offshore habitat. Inshore habitat refers to aquatic environments located landward from the Mean High Tide line of North Padre Island. Offshore habitat refers to the aquatic environment located seaward into the Gulf of Mexico (GOM) from the MHT line of North Padre Island. This section describes the various aquatic habitats and the potential Project impacts on these resources. A Benthic Survey Report and Submerged Aquatic Vegetation Impact Analysis were completed to support the environmental evaluation of the inshore and offshore aquatic environment. These reports can be reference as Volume II, Appendix E and F, respectively.

The environmental consequences identified in the environmental evaluation of the inshore and offshore aquatic environment include the temporary impact of approximately 9.79 acres of seagrass within Laguna Madres and the temporary impact of 61.61 acres of soft-bottom marine habitat in the Gulf of Mexico due to pipeline construction and installation. The permanent removal of approximately 130 square feet of benthic habitat will occur as a result of installation of the SPM buoy system piles and PLEM. Temporary impacts to water quality of the marine environment will occur during construction but sedimentation and turbidity impacts will be mitigated for through the use of BMPs such as weighted turbidity curtains and sediment storage barges. HDD will also be utilized to avoid certain areas of impact to minimize adverse impacts to the aquatic environment. Operational impacts will be minor or negligible and include disturbance of the water column by vessels at the SPM buoy system or the unlikely event of a hydrocarbon release.

Cumulative impacts were assessed based on the Framework for Cumulative Impact Analysis. Overall, the cumulative impacts of the proposed Project when considered with other Projects will be short-term (during construction) to permanent (within the footprint of the SPM buoy system), and minor. Activities that could impact the aquatic environment in the Project area include offshore oil and gas exploration and production; waterway improvement Projects, and marine traffic associated with the oil and gas industry, as well as recreation. Offshore oil and gas exploration activities can include installation/removal of mooring platforms and laying of pipelines and associated anchoring activities, service vessel operations, supporting infrastructure discharges, and oil spills. Many platforms have discharges of drilling wastes, produced water, and other industrial wastewater streams that have adverse impacts on water quality. The primary cumulative effect from exploration and production activities would be the installation of platforms and other permanent structures, which would simultaneously remove soft-bottom habitat and provide hard structure for faunal communities. Waterway improvement Projects are generally short-term and their effects (turbidity and sedimentation, with the potential for limited habitat loss for new construction) would typically be limited to the area where these activities take place. Ongoing marine traffic associated with recreational activities and offshore oil and gas exploration have the potential for inadvertent releases of

petroleum products, which could result in impacts on the aquatic environment similar to those described for the Project. Given the low probability of a spill associated with the proposed Project, and the implementation of federal regulations, the potential for cumulative impacts due to inadvertent releases of petroleum is unlikely and would be minor.

27.2.6 Commercial and Recreational Fisheries

Section 6 provides information on Gulf commercial and recreational fisheries – some of the most productive fisheries in the world. The Gulf of Mexico's marine habitats, ranging from coastal marshes to the deep-sea abyssal plain, support a varied and abundant faunal assemblage. Commercially fished areas of the Gulf include the proposed Project area and coastal Texas.

The Project will be located in both estuarine and offshore habitats. The Inshore Pipelines will traverse the estuarine Laguna Madre between Padre Island and the shore of the mainland. The Offshore Pipelines will begin at the seaward boundary of Padre Island and extend to the SPM buoy system at a depth of 93 ft. (28 m). Estuarine and estuarine-dependent species, as well as fishermen targeting those species, will be present in the Laguna Madre. Fish species likely to be found in the vicinity of the offshore Project components are characterized as demersal and coastal pelagic; however, certain life stages of estuarine and reef species will also be present in the vicinity of the offshore Project components. Potential impacts to commercial and recreational fisheries resources can result from impacts to habitat that support species within a fishery, including EFH.

Construction and installation of the Project components would likely result in a short-term and negligible to minor impact on commercial and recreational fisheries related to habitat modification. The only measurable impact to commercial or recreational fishing activities would be the proposed safety zone around the Project, which would result in beneficial, but minor, impacts on fishery populations. However, this approximately 174-acre (79-hectare) area of the GOM surrounding the proposed SPM buoy system represents a very small percentage of all of the area available to fishers throughout the northern GOM. During both construction and decommissioning, specific areas may be closed to fishermen due to safety concerns, but these impacts would be only temporary and would not affect fishers' ability to fish elsewhere, nor affect fisheries populations. Based on the Project location (away from unique fishing habitat) and design (minimal footprint), impacts to commercial and recreational fisheries would be negligible and no additional mitigation measures are proposed.

Cumulative impacts were assessed based on the Framework for Cumulative Impact Analysis. Overall, the cumulative impacts of the proposed Project when considered with other Projects will be short-term (during construction) to permanent (within the footprint of the SPM buoy system), and minor. Cumulative impacts to the fisheries could be caused by Projects located within the Western Planning Area of the GOM, as well as the adjacent state waters. These include channel improvement and maintenance Projects, as well as minor coastal Projects in and around Corpus Christi; oil and gas exploration activities; and recreational boating. These Projects are generally short-term and their effects (turbidity and sedimentation, with the potential for limited habitat loss for new construction) would typically be limited to the area where dredging/construction takes place. As a result, the cumulative effects of construction of the Project, when considered with these Projects would be negligible. The primary cumulative effect from exploration and production activities would be the installation of platforms and other permanent structures within designated fishing areas. In the event of a spill, operators would be required to implement oil spill response procedures in accordance with applicable federal regulations to remove oil from the environment and mitigate impacts. Given the low probability of a spill associated with the proposed Project, and the implementation of federal regulations, the potential for cumulative impacts due to inadvertent releases of petroleum is unlikely and would be minor.

27.2.7 Wildlife and Protected Species

Section 7 provides information on wildlife and protected species, including marine mammals, migratory birds, threatened and endangered species, EFH, and invasive species. The Project area includes a

diverse set of habitats that include onshore terrestrial habitat in Kleberg and Nueces County, Texas and aquatic habitat in Laguna Madres and the Gulf of Mexico. This section describes the various habitats and species potentially located within the Project area, and the potential Project impacts on these resources. Potential impacts to commercial and recreational fisheries resources can result from impacts to habitat that support species within a fishery, including EFH. An EFH assessment was completed in support of this section and can be referenced as Volume II, Appendix G. Threatened and Endangered Species surveys and reports were completed for both inshore and onshore Project areas. These reports can be reference as Volume II, Appendix H and I, respectively. Additionally, a species-specific survey and report was completed for the endangered Red Knot and Piping Plover and can be referenced as Volume II, Appendix J.

Construction and installation of the Project components would likely result in a short-term and minor impacts to terrestrial species through loss of habitat, noise related impacts, increase in turbidity in aquatic habitats, and increased vessel traffic. Impacted wildlife communities would include those that use upland areas, coastal dune areas, and the identified wetland areas onshore and across Padre Island. Increased turbidity and suspended solid levels could also adversely affect fish eggs and juvenile fish survival, benthic community diversity and health, foraging success, and suitability of spawning habitat. Sediments in the water column could be deposited on nearby substrates, burying benthic invertebrates. The most sensitive portion of the offshore pipeline route is near shore, where it passes through shallow water and makes landfall on Padre Island. To avoid impacts on the coast of the barrier island, which includes wetlands and sensitive coastal dune habitat, the offshore pipelines will be installed by HDD at this location. Nekton and marine mammals are highly mobile and can avoid areas of increased turbidity; therefore, turbidity impacts are not anticipated for mobile nekton species (including most fish) and dolphins. Therefore, impacts are anticipated to be minimal and short-term.

Pile-driving will be used for installation of six anchor piles for the SPM buoy system and four PLEM foundation piles and will occur in depths of approximately 93 ft. (28 m). The most prevalent sources of continuous underwater sound associated with installation of the SPM buoy system will be the vessels used for construction, during construction activity and transit. Impacts from and underwater sound due to these continuous sources will be negligible and are unlikely to result in temporary noise levels that are injurious to marine species. However, impulsive sound from pile-driving will exceed thresholds established by NOAA for the protection of marine species. As estimated sound levels for pile-driving exceed the threshold for behavioral effects and injury to fishes, pile-driving activities could result in the mortality, injury, or disturbance of fishes that are present in the vicinity of pile-driving activity. Because pile-driving for the Project would be limited to the 5-week period required for construction of the SPM buoy system, and given the small size of the ZOIs, impacts are expected to be short-term and minor, and would not result in population-level effects. Noise from pile-driving would be audible to sea turtles in the Project vicinity; potential physical and behavioral effects on sea turtles are described above. Noise created by pile driving at the SPM buoy system is expected to exceed the levels of behavioral and physical effects designated by NMFS for the protection of sea turtles. Temporary increases in noise associated with installation of the Project facilities, including airborne noise from pile-driving, could result in temporary impacts on birds in the vicinity of construction. Because marine birds are highly mobile, they would likely avoid areas of active construction. Given the distance from shore, noise would not impact coastal birds. Therefore, impacts on birds from construction of the Project are anticipated to be temporary and minor.

Impacts on wildlife and protected species during operation of the Project would generally be limited to presence of the SPM buoy system, port calls by the VLCCs (approximately eight per month), the sporadic transit of support vessels and helicopters to and from the offshore port, and the presence of the restricted zones. Once installed, the pipelines would be buried a minimum of 5 ft. (2 m) below the seafloor; although the habitats and respective faunal communities disturbed during construction would take various amounts of time to recover to pre-construction levels, no additional impacts would be incurred during operations.

Although not anticipated to occur, a release of petroleum products from the SPM buoy system or pipelines would also impact the aquatic environment.

Cumulative impacts were assessed based on the Framework for Cumulative Impact Analysis. Overall, the cumulative impacts of the proposed Project when considered with other Projects will be short-term (during construction) to permanent (within the footprint of the SPM buoy system), and minor. Activities that could impact the marine environment in the Project area include offshore oil and gas exploration and production; waterway improvement Projects, and marine traffic associated with the oil and gas industry, as well as recreation. Although activities associated with land-based Projects can impact the marine environment, it is more than likely that these onshore Projects will not result in additive negative impacts when combined with the Texas Gulf Terminals Project. It has been determined that the Proposed Action will have no effect on small tooth sawfish, humpback whale, Bryde's whale, sperm whale, bald eagle, interior least tern, Gulf Coast jaguarundi, ocelot, black-laced cactus, south Texas ambrosia, and slender rush pea. It has also been determined that the Proposed Action may affect, but is not likely to adversely affect the large tooth sawfish, Nassau grouper, oceanic white-tipped shark, green sea turtle, Kemp's ridley sea turtle, hawksbill sea turtle, loggerhead sea turtle, leatherback sea turtle, Sei whale, blue whale, fin whale, West Indian manatee, red knot, piping plover, whooping crane, and Northern aplomado falcon. Given the temporary, minor effects of Project implementation protected species, and given that other Projects would also be subject to the ESA, it is expected that the cumulative impacts of the Project on protected species, combined with the multiple Projects listed above, would also be minimal and temporary in nature.

27.2.8 Cultural Resources

Section 8 includes the cultural resources component of this environmental evaluation serves to identify the setting and potential location of both prehistoric and historic sites within the Project area in accordance with Bureau of Ocean Energy Management (BOEM) and all applicable federal and state laws and guidelines. This section also serves to assess the potential impacts to cultural resources and discusses the mitigation measures that would serve to avoid or minimize these impacts. Cultural resource evaluations are based upon findings from historical research, predictive modeling, and geotechnical and geophysical field surveys conducted within the Project area.

The BOEM has completed a series of archaeological baseline studies to define those areas of the OCS that have potential for historic and/or prehistoric archaeological resources. The BOEM considers the entire Gulf Coast to be a high-probability area. Marine archaeological surveys and reports are required for those areas defined as having archaeological potential prior to approval of any BOEM-permitted activities. Archeological survey reports are included as part of the DWPL application as Appendices within Volume III – Confidential Appendices.

No known cultural resources are present in or within 1,000 ft. (304.8 m) of the terrestrial inshore or offshore portions of the Project area. However, one potentially significant magnetic anomaly, possibly representing a historic resource, has been identified buried within the submerged parts of the inshore portion of the Project area. However, horizontal directional drilling (HDD) locations were modified such that the pipeline infrastructure will be installed beneath Anomaly 1. Construction equipment will not encroach within 164 ft. (50 m) of the potential historic site, and the pipeline will be installed at least 10 ft. (3.0 m) below the seafloor in the vicinity of the anomaly. Maintenance and access to the pipeline corridor and valve site during normal operation would be conducted within the existing pipeline corridor and would thus have no impact on cultural resources. Due to the lack of anchorage at the DWP, no ground or seafloor disturbing impacts would be expected. As no cultural resources are located within the viewshed of the Project, no impacts to the environment of cultural resources are to be expected from the operation of the Project.

Cumulative impacts were assessed based on the Framework for Cumulative Impact Analysis. 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. The proposed Project will not permanently impact historic properties listed on or considered eligible for listing on the National Register of Historic Places (NRHP). Therefore, any potential incremental increase in cumulative impacts on cultural resources from the other Projects in consideration with the Project will be negligible.

27.2.9 Socioeconomics

Section 9 examines the baseline socioeconomic conditions in the vicinity of the Project, and the Project's potential impacts on those conditions during installation/commissioning, routine operations, upsets and accidents, and decommissioning. Socioeconomics refers to the basic attributes associated with the human environment, and the socioeconomic attributes addressed in this section are population; workforce, income, and employment; housing; public services; taxes, revenues, and economic base; and environmental justice. The socioeconomic impact area was loosely defined as the coastal bend of Texas including the three-county region of Nueces, Kleberg, and San Patricio counties. Included at the end of the potential impacts assessment is an Environmental Justice analysis. The Project was not found to cause disproportionate impacts to potential Environmental Justice communities.

A primary industry within Texas and the Coastal Bend region is centered on the production and transport of oil and gas, both onshore and offshore. Thus, the Oil and Gas Industry in Texas and in the Coastal Bend region is one of the major employers. There are numerous recreational and tourist amenities in the socioeconomic impact area. Due to the coastal environment, many of the recreational activities are tied to the Gulf of Mexico and water activities. The beaches at Port Aransas and Padre Island are well known. The Padre Island National Seashore (PINS) is known throughout the country for its sandy beaches, vegetation, and birding activities. The maritime industry is essentially comprised of enterprises that engage in designing, manufacturing, operating, repairing, or supplying vessels and their component parts. It also includes managing and operating shipping lines, shipyards, dry docks, and marine railways.

Installation and commissioning of the proposed Project will require engineering, construction management, and construction personnel with specialized skill sets for both onshore and offshore oil and gas storage, pipeline, and transfer facilities. Specialized marine equipment will also be necessary. As noted, Texas has a strong work force in the oil and gas industry and Corpus Christi is a major maritime entity. Therefore, it is anticipated that the majority of workers needed for installation and commissioning will come from within the state, region, and socioeconomic impact area.

There are no anticipated requirements for socioeconomic resources' mitigation for the Project. There will be no residential relocations as a result of the Project's implementation. Ongoing communication with local stakeholders, including local businesses and those involved in fishing and the tourism industry, will be important to help identify and resolve any potential adverse impacts to socioeconomics. The local economy and labor force would benefit from the long-term and temporary employment. There would also be a temporary increase in the local population due to construction. Best management practices would be used to ensure that impacts from construction would be minimized.

Of the Projects identified in the cumulative impact analysis, those with the greatest potential to contribute to cumulative impacts on socioeconomic factors such as population, housing, employment, and tourism are the Corpus Christi LNG Terminal, offshore oil and gas exploration and production, waterway improvement Projects, and the commercial and residential development Projects. The proposed Project will have negligible socioeconomic impacts during operation and therefore is likely to have a negligible contribution to cumulative impacts on population, employment, and local services. However, based on the results of the cash flow modeling, the construction and operation of the proposed Project would result in a positive impact to, and support the, continued growth of both U.S. and local economies.

27.2.10 Geological Resources

Section 10 provides information on the geological resources present within the proposed Project area. The Project will be located in both estuarine and offshore habitats. The Inshore Pipelines will traverse the estuarine Laguna Madre between Padre Island and the shore of the mainland. The Offshore Pipelines will begin at the seaward boundary of Padre Island and extend to the SPM buoy system at a depth of 93 ft. (28 m). 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. Except for the dunes located on the eastern portion of the inshore Project area and localized normal faults, there are no unique geological features present in the study areas for the Project. In addition, the Project is likely to affect soils and sediments within the Project area. Seafloor stability will be protected using careful Project siting. Apart from affecting the sediment itself, sediment disturbance would likely result in minor impacts on water quality and marine resources.

The environmental consequences identified in the environmental evaluation include disturbance to seafloor sedimentary processes is expected due to sediment displacement, increased turbidity, and increased scour 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 seafloor to the pre-excavation contours, and consequently, to the pre-floor seafloor sedimentary regime. 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.

During construction, minor, adverse impacts on soils and sediments within the pipeline construction corridor can be expected. Disturbance of soils within the terrestrial portion of the Project area would result in the increased potential for erosion, compaction, and mixing of topsoil. Disturbance of sediments and increases in turbidity within the submerged portions of the Project area can be expected by pipeline installation, anchor piling installation, and through the direct contact of anchors or supports from jack up work boats. These impacts would be temporary, minor, and reversible. 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.

The methodology for evaluating impacts to coastal zone resources has identified consequence-producing factors within three distinct phases of the Project, including Construction, Operation, and Decommissioning. Consequences are assessed to determine the magnitude of impact. Cumulative impacts were assessed based on the Framework for Cumulative Impact Analysis. Overall, the cumulative impacts of the proposed Project when considered with other Projects will be minimal or negligible. While activities necessary in offshore oil and gas exploration and production, including the decommissioning of existing infrastructure, carry the potential for impacting local geological resources, activities present in the Western Planning Area have not demonstrated any adverse cumulative impact on geologic resources, with the potential exception of regular resource reserve reduction. Overall the proposed Project will not adversely affect geological resources; therefore, it will not contribute to any potentially adverse cumulative impacts on the geologic resources in the Western Planning Area.

27.2.11 Coastal Zone Use, Recreation, and Aesthetics

Section 11 discusses the Coastal Zone land and marine uses, recreation and aesthetics of the Project area and anticipated impacts to such from the construction and operation of the DWP.

The methodology for evaluating impacts to coastal zone resources has identified consequence-producing factors within three distinct phases of the Project, including Construction, Operation, and Decommissioning. Consequences are assessed to determine the magnitude of impact. The development of the onshore storage facility will result in a permanent take of land in the footprint of the facility. The

land use in the region of the onshore storage facility is generally agriculture, however, the land where the onshore storage facility will be located does not currently have any farming activity. Impacts to local land use because of the inshore pipeline crossing are anticipated to be permanent and of negligible significance. The Texas RRC database indicated that there is one gas transmission pipeline (owned by Mustang Island Gathering, LLC) that transects the proposed offshore pipeline corridor at the northwest/2 of Mustang Island Large Block 818. Based on a review of records, the existing pipeline to be crossed is not currently operational. No other offshore pipelines or other submerged infrastructure has been identified within the pipeline ROW.

The entirety of the proposed Project is within the Texas Coastal Management Zone. To minimize potential impacts to coastal resources, the Applicant will install the coastal crossing of the offshore pipelines using horizontal directional drilling (HDD). Given the amount of boating opportunities in the near and offshore waters in the area, impacts on boaters will be temporary and negligible. Once operational, the Project is anticipated to have a no impact to recreational parks and beaches. Since the nature of the land use surrounding the onshore storage facility is primarily rural and/or vacant with limited sensitive receptors, and as Project pipelines will be buried and land re-vegetated, no impact to aesthetics and visual amenity resulting from the onshore Project activities during operation is anticipated. Upsets or accidents, such as a vessel collision or minor hydrocarbon release, may cause temporary negligible impacts to offshore commercial uses. The effects may occur for a limited period and would be naturally reversible.

Cumulative impacts were assessed based on the Framework for Cumulative Impact Analysis. Overall the proposed Project's contribution to cumulative impacts on marine transportation would be long-term and negligible, as the VLCCs and service vessels calling on the DWP will result in a nominal increase in the current vessel traffic transiting the area. The entirety of the proposed Project is within the Texas Coastal Management Zone. During the alternatives review and selection process, consideration was given to the avoidance of sensitive resources, such as sensitive and protected ecological areas and residential areas. While it is likely there would be some level of impact to coastal zone uses, recreation, and viewshed resulting from implementation of the proposed Project, due to historic and ongoing oil and gas activity in this region, with mitigation in place, the overall residual impact is anticipated to be minor. Several cumulative effects on commercial fishing could be associated with development of offshore Projects. These include a decrease in the amount of unrestricted water, a localized increase in vessel traffic, and alteration of natural viewsheds. Given the size of offshore Projects relative to the GOM, these impacts are considered minor but long term. The proposed Project would have permanent but negligible impacts on water-based recreation, primarily associated with the small 1,500 ft. operational safety zone around the SPM buoy system. It is unlikely that the additional installation of the Project would cause a significant visual impact that is inconsistent with the typical views in the GOM. Overall, the cumulative effect of the concurrent Projects on the viewshed in the region of the Gulf shared by the Project would be negligible.

27.2.12 Meteorology, Air Quality, and Noise

Section 12 includes the meteorology, air quality, and noise components of the Environmental Evaluation. It serves to identify existing meteorological conditions, existing air quality and noise. This section identifies potential impacts to local and regional air quality as well as impacts from noise due to the Project. Since air emissions and noise can be affected by meteorology, meteorological conditions are presented to describe the general setting of the Project. Air quality and noise evaluations are based on USEPA, BOEM, and other applicable federal and state laws and guidelines. This section also discusses the mitigation measures that would serve to avoid or minimize these impacts. Air quality evaluations for construction and operation are based upon emission estimates developed from Project equipment specifications, emission factors, predictive modeling, and comparison to applicable air quality standards. Volume II, Appendix K presents the Air Quality Information documents, supporting information for the EIS. This document is summarized in the following sections. Emissions from onshore and offshore were evaluated for the DWPL application and an Air Quality Analysis is presented as Volume II, Appendix L of

this volume. Impacts from the onshore facilities are summarized in the TCEQ Authorizations for Onshore Facilities included in Volume I.

Similarly, noise evaluations for construction and operation account for existing noise conditions, with potential impacts based on equipment noise profiles, predictive modeling, and comparison to applicable noise limits.

During construction, short-term, minor noise impacts will occur in the vicinity of the Project facilities. Noise-generating activities will include operation of construction equipment to install the onshore storage facility and pipelines; HDD activity; vessel traffic associated with pipe-laying and transport of equipment, materials, and workers; and pile-driving. Due to the distribution of construction activity along the pipeline length, distance from the nearest NSAs, and short-term nature of construction, impacts will not be significant. In addition, the Safety Zone will exclude any recreational vessels from the immediate vicinity of the SPM buoy system, where operational noise impacts will be greatest. Vessel activity planned for the Project will be consistent with other, ongoing activity in the GOM. Therefore, overall operational noise impacts will be long-term and negligible. During operations, equipment at the onshore storage facility will result in localized, minor noise increases; however, noise from the onshore storage facility is not expected to be audible at the nearest NSAs. A combination of short- and long-term predominantly minor adverse impacts on air quality would be expected during construction, operation, and decommissioning of the proposed Project. Based on the analysis presented in the sections above, potential impacts on ambient noise are summarized in the table below.

Direct impacts to air quality are assumed to be limited to VOC emissions from marine loading operations. Indirect impacts to air quality are assumed to be caused by operation of the crude carrier when moored to the SPM buoy system, and the ancillary sources on the crude carrier deck (such as crane engine, cargo pump, ballast pump, boiler, and fugitives). The air quality impact is considered to be minor and long-term based on the air dispersion modeling analysis and the BACT analysis included in these appendices. Detailed tables of air emissions are provided in Volume II, Appendix K. The DWP will be constructed and operated using the best available technology, thereby preventing or minimizing adverse impacts to the air quality to the extent possible.

As described in the Volume II Introduction, cumulative impacts were assessed based on the Framework for Cumulative Impact Analysis. Cumulative impacts are the combined result of the impacts of an action that, when considered with the impacts of other actions, would result in a resource impact. It is assumed that representative background concentrations for the region may account for the impacts from other offshore sources in the absence of additional information. Emissions from these sources could overlap with air quality impacts from operation of the DWP. Based on the limited onshore noise contribution from the Project and the localized nature of offshore noise, cumulative noise effects will only occur where another Project is in close proximity to the proposed Project. Given the expected attenuation of noise from operation of the onshore storage facility and SPM buoy system, as well as the distance between these facilities and NSAs, operation of the Project facilities will not contribute to cumulative noise impacts. However, vessel activity during construction and operation of the Project will contribute to cumulative sound levels. Given the level of existing commercial vessel traffic in the GOM, the contribution of the Project to cumulative vessel traffic consistent with existing uses of the waterways transited by these vessels. Therefore, associated noise impacts will be negligible.

27.2.13 Navigation and Navigation Safety

Section 13 includes the navigation and navigation safety components of the Environmental Evaluation. This Section aims to identify the current, existing navigation paths, statistics, and trends within the vicinity of the proposed Project, and how they are anticipated to be impacted by the proposed Project.

Shipping and navigation resources within the vicinity of the proposed Project include fairways, anchorages areas, dredged navigation channels, intracoastal waterways, and ports. Within the Gulf of

Mexico there is an extensive network of fairways radiating off the shoreline and crossing GOM. Within the vicinity of the Project, the nearest fairway radiating from the shore extends from the Aransas Channel, approximately 22.5 miles along the shoreline, north from the Project. At 7.5 miles off of the shoreline the fairway is met by another fairway which extends south. The proposed location of the DWP is not in the vicinity of any existing safety zones. Safety zones, no anchoring areas, and areas to be avoided, are established to promote safety of life and property, marine environmental protection, and navigational safety at DWP and adjacent waters. Establishment of a temporary safety zone during installation of the Project is not likely to significantly affect commercial shipping or activities at the Port of Corpus Christi.

As described in the Volume II Introduction, cumulative impacts were assessed based on the Framework for Cumulative Impact Analysis. During construction of the Project, an increase in marine traffic movements are expected to occur during the 2019 – 2020 construction period due to construction vessels and supply barges accessing the Project location. When combined with expected vessel service associated with construction of the other Projects, as identified in the Framework for Cumulative Impact Analysis, and in combination with other Projects for which the number of deliveries is not publicly known, concurrent construction of these Projects will increase the number of vessels transiting the shipping channels and fairways in the Western Planning Area. While this change in vessel traffic may be noticeable for some users of the waterways in the Project vicinity, impacts on these users from vessel traffic associated with construction will be consistent with existing use of the waterway. Collectively operation of these Projects will increase traffic in the Western Planning Area, however, the increase in transits will be spread geographically from the Port of Brownsville to Port Arthur and throughout the GOM.

Further, safe navigation practices as established though the 1972 Convention on the International Regulations for Preventing Collisions at Sea will mitigate potential impacts from the increased vessel traffic. Aids to Navigation system will be installed and maintained by the DWP owner/operator in accordance with the regulations in 33 CFR 66. With mitigation in place, the overall residual impact to navigation and navigation safety within the vicinity of the Project is anticipated to be of minor adverse significance during construction, and minor beneficial significance during operation.

27.2.14 Safety and Security

Section 14 includes the safety and security components of the Environmental Evaluation. Discussions of the various safety issues associated with the construction and operation of the proposed Project, including potential mitigation to enhance safety. This section includes detailed discussions of the properties of crude oil along with a chronology of historical incidents associated with crude oil.

Section 14 reviews recent studies conducted on the subject of crude oil and crude oil export including the use of advanced modeling techniques to estimate risk to the public from large releases of crude oil on the water. In order to quantify the impacts of a potential oil spill at the DWP and associated offshore components and the subsequent response requirements, oil spill trajectory modeling was completed. A tactical response plan was also completed to detail the equipment and the deployed locations that would be required to mitigate the impacts of a worst-case scenario oil spill on the coast near the DWP. It is important to understand that the trajectory modeling is done assuming no response team is deployed, meaning that no oil is being recovered or diverted in the model. In a real-life situation, teams would be mobilized immediately to start mitigation efforts. The discharge volume is also a calculated volume based on the entire content of the sub-marine pipeline, irrespective of the system features designed to reduce the released volume during a failure in the system, such as shut-off valve locations and settings, sea bed bathymetry, and pipeline depth and routing. Two simulation releases (at two different rates) were modeled for each season. The two releases add up to the calculated volume for the worst-case discharge (WCD). The worst-case discharge was calculated based on a very unlikely event that the subsea pipeline suffers a full-bore rupture and all the contents of the offshore pipeline is evacuated.

Each deterministic seasonal model run was analyzed to determine any potential environmental and/or socioeconomic impacts. The trajectory modeling shows what could be impacted. In order to determine

potential impacts, an expansive data search was conducted to identify the sensitive areas in and around Corpus Christi. These areas are presented in the report. The report also has maps that illustrate the shoreline impacts relative to these areas. The main threat from an oil spill offshore is on marine life and on the coastal environment, if the spill were to make landfall. Threats and the overall impact of oil in water are dependent on the amount of oil spilled and the environmental conditions during the response efforts.

27.2.15 List of Preparers

Section 15 includes a detailed list of all entities and individuals involved in the development of this DWPL application.

The list of prepares is included below.

Role / Resource Topic	Name / Title	Degree(s)	Years of Experience	Firm / Affiliation
Environmental Evaluation	Marisa Weber Director of Environmental Services	B.S. Marine Biology and Marine Fisheries Texas A&M University M.S. Biological Sciences The University of Southern Mississippi	20	Lloyd Engineering, Inc.
Environmental Evaluation	Justin Wiedeman Senior Environmental Scientist	B.S. Wildlife Ecology, Texas A&M University	6	Lloyd Engineering, Inc.
Environmental Evaluation	Courtney Gerken Environmental Scientist	B.S. Wildlife Ecology, Texas A&M University M.S. Environmental Analysis, Rice University	5	Lloyd Engineering, Inc.
Project Engineer	Jeffrey Gorman	B.S., Industrial Engineering, Universidad de Guayaquil NE Louisiana University	30	Lloyd Engineering, Inc.
Air Quality Permitting and Modeling	Brian Burdorf Project Manager	B.S Mechanical Engineering Texas A&M University MBA, Kellogg School of Management Northwestern University	27	Trinity Consultants
Marine Operations, Safety, Navigation, Risk Assessment	Kristen Dill	B.S. Engineering M.S. Naval Architecture and Marine Engineering, University of Michigan	11	Dill and Associates
Marine Archaeology	Robert Gearhart / Principal Investigator - Marine	1987 M.A., Anthropology, University of Missouri at Columbia, 1981 B.A., Anthropology, Iowa State University, Ames.	33	BOB Hydrographics, LLC
Alternatives, Assistant Document Manager, QA/QC	Angela Love / Project Manager	1999 M.S., Environmental Biology, Emporia State University, 1996 B.S., Biology, University of Kansas	20	S&ME
, General Climate and Meteorology	Kristy Smedley Senior Scientist	2000 M.S., Coastal Science / Parasitology, University of Southern Mississippi; 1994 B.S. Environmental Science, University of Tennessee at Chattanooga	15	S&ME

Application Table of Contents	Mark Augspurger Principal Scientist	1986 M.F., Forest Ecology, Clemson University, 1978 B.S., Forest Management, Clemson University	30	S&ME
QA/QC - Document Review	Elizabeth Porter/ Senior Scientist	1983, BA, Geology, State University of New York at Buffalo; 1985 MS, Geology, University of Georgia	30	S&ME
Methodology of Environmental Evaluation; Regulatory and Compliance requirements; General Setting; Project Overview Description and Background;	Tami St. Germain/ Project Scientist	1990, BA, Wildlife Management, University of Southwestern Louisiana	27	S&ME
Socioeconomic, Environmental Justice, Recreation, Coastal Uses, Aesthetics	June Farrell, Senior Planner	2000, M.S in Urban and Regional Planning, Florida State University; 1996, B.A Sociology, Stetson University	22	S&ME
Socioeconomic, Environmental Justice, Recreation, Coastal Uses, Aesthetics	Charlotte Jallans-Daly / Senior Scientist	2005 MSc Water and Environmental Management, University of Hertfordshire; 2001 BSc Geography, University of Luton	16	S&ME
Marine Mammals, Aquatic Environment, Fisheries, Essential Fish Habitat	Jennifer McCoy, Senior Project Scientist	2004 B.S., Marine Biology, Texas A&M University, Galveston	13	EDGE Engineering and Science, LLC
Support for Aquatic Environment, Essential Fish Habitat	Rachel Levert, Environmental Professional	2011, M.S., Environmental Science; 2009, B.S. Wildlife and Conservation.	7	EDGE Engineering and Science, LLC
Noise	J. Scot Vann, Senior Environmental Consultant	1996, M.S. Environmental Engineering; 1994, B.S. Civil Engineering	22	EDGE Engineering and Science, LLC
Noise, Support for Biological Resources	Louise Holley, Environmental Professional	2009, M.S. The College of William and Mary; 2007 B.S., Biology	9	EDGE Engineering and Science, LLC
Support for Commercial and Recreational Fisheries, Support for Coastal Zone Use, Recreation, and Aesthetics, Cumulative Impacts	Jennifer Ward, Economist	2010, M.S., Resource Economics and Policy, University of Maine 2001, B.A. Mathematics, University of North Carolina	13	Edge Engineering and Science, LLC
Support for GIS	Ramsey Redman, Environmental Professional	2000, B.S. Environmental Science	17	EDGE Engineering and Science, LLC
Biological Survey	Timothy Garrett, Environmental Specialist I	2017 M.S., Wildlife Ecology, Texas A&M University 2014 B.S., Wildlife Ecology, Texas A&M University	1	SWCA
Piping Plover Survey Team Leader	Kelly Gonzales, Environmental Specialist III	2009 B.S., Wildlife and Fisheries Sciences, University of Texas A&M	7.5	SWCA
Cultural Resources Principal Investigator-InShore	Todd L. Butler Cultural Resources Program Director	1997 M.A., Anthropology; University of Kansas, Lawrence 1991 B.A., Anthropology; University of Nebraska, Lincoln	26	SWCA

Geological Background, Terrestrial Cultural Resources Survey and Reporting	C. Wesley Mattox, Cultural Resources Principal Investigator	2011 M.A., Anthropology, McGill University, Montreal 2004 B.A., Anthropology and History, Vanderbilt University	11	SWCA
Geological Background, Cultural Resources Reporting	Caleb Foreman, Cultural Resources Specialist I	2016 B.A., Anthropology, Louisiana State University.	1	SWCA
Biological Survey and Reporting	Jonathan Mitchell, Environmental Specialist I	2007 B. S., Wildlife and Fisheries Sciences, Texas A&M University	1	SWCA
Biological Survey	Olivia Hall, Environmental Specialist I	2016 B.S. Natural Resources Management: Wildlife Biology, Texas Tech University	1.5	SWCA
Biological Survey	Monty Criswell, Environmental Specialist I	2014 B.S. Biology, University of Houston, Victoria	1	SWCA
Biological Survey and Reporting	Taylor Guest, Environmental Specialist II	2015 M.S. Coastal Sciences, Univ. of Southern Mississippi 2012 B.S., Natural Resources Management: Fisheries, Texas Tech University	3	SWCA
Water Quality Environmental Evaluation Reporting	Christopher Bailey, Environmental Specialist I	2016 B.S. Biology, University of Houston, Downtown	1	SWCA
Project Manager, Avian Survey, Environmental Evaluation Reporting	R. Thomas Sankey, Environmental Specialist XII	1985 M.A. Geography (Avian Ecology Thesis), University of Kansas 1981 B.S. Geography, University of South Carolina	31	SWCA
Deputy Project Manager, Biological Survey, Environmental Evaluation Reporting, Technical Reporting	Eric C. Munscher, Environmental Specialist VII	2004 B.S. Animal / Wildlife Science, Pennsylvania State University 2006 M.S. Biology, University of North Florida (Mesopredator Predation Control Thesis).	15	SWCA
Piping Plover Survey Principal Investigator	Paul Sunby, Environmental Specialist IX	1982 B.S. Geology; University of Wisconsin - Platteville	34	SWCA

28.0 §148.105(aa) Aids to Navigation

28.1 148.105(aa)(1) Proposed Aids to Navigation

The proposed DWP would consist of aids to navigation in accordance with 33 CFR 149, Subpart E. The Applicant does not intend to request private aids to navigation under the provisions of 33 CFR 149.510. The location of the proposed DWP and surrounding vicinity is considered a low vessel traffic area. As such, there is no need to add new navigational aids to mark channels into or out of the proposed DWP.

Aids to navigation would be located on the SPM buoy system and on the floating hoses extending to vessels moored at the DWP. Refer to Sheet 4 of the Engineering Drawings provided as part of this DWPL application for a depiction of the proposed DWP in relation to existing fairways, the proposed safety approach fairway, and anchorage areas.

During the detail design phase of the proposed Project, a navigation study will be completed to confirm assumed marine traffic in the vicinity of the DWP and operational conditions. To ensure risks are of acceptable levels, during operations at the proposed DWP two experienced and trained mooring masters will be utilized during mooring and departure of vessels into and out of the DWP. A Port Aransas-Corpus Christi pilot will be onboard to assist the vessel master during navigation from existing fairways into and out of the DWP (an approximate distance of two (2) nautical miles).

For the following reasons, new aids to navigation at the DWP are not being proposed:

- Local mooring masters and pilots will be utilized with local experience related to weather conditions, subsea hazards, and nearby vessel traffic.
- The depths within the vicinity of the proposed DWP are sufficient to maintain adequate underkeel clearances for the vessel types proposed to be moored at the DWP.
- The SPM buoy system and associated floating hoses will be equipped with aids to navigation including lights and radar reflectors.
- All vessels to be moored at the DWP will be equipped with radar and global positioning system (GPS) technology.

For the reasons described above, the Applicant does not intend to request private aids to navigation under the provisions of 33 CFR 159.510.

All aids to navigation would be detailed in the Final Operations Manual prepared for the proposed DWP based on coordination between the Applicant, USCG, and MARAD. A Draft Operations Manual is included for reference as Appendix A of Volume III (Confidential). Aids to navigation fixed to the SPM buoy system includes:

- One (1) radar reflector
- One (1) 360-degree white light flashing the Morse code letter “U” at 15 second intervals
- One (1) omnidirectional fog horn sounding Morse code letter “U” at 30 second intervals

Refer to Section 18, §148.105(q), for specifications of the SPM buoy system. The specifications for the Project specific buoy will be finalized during detailed design phases. Aids to navigation information is also provided in the Navigational Aids section of the Draft Operation Manual provided as Appendix A of Volume III (Confidential).

28.2 148.105(aa)(2) Obstruction Lights and Rotating Beacons

The proposed SPM buoy system would display the obstruction lights required by 33 CFR 149.520 and as further described by the obstruction light requirements at 33 CFR 67. The characteristics would be as required by 33 CFR including:

- Color: White
- Characteristic: 360-degree obstruction light of horizontal visibility
- Effective intensity: 5 nautical miles range
- Height above water: A minimum of 10 feet above the water
- General description of the illumination apparatus: Omnidirectional light flashing the Morse code letter “U” at 15 second intervals.

28.3 148.105(aa)(3) Sound Signal

The proposed SPM buoy system would consist of an omnidirectional fog horn and use the sound signal described at 33 CFR 149.585 to provide the required audible warning to vessels during periods of reduced visibility. The omnidirectional fog horn would consist of the following characteristics:

- Sound intensity: 112 decibel sounding pressure at 1 mile
- Sound range: Acoustic range of 0.5 nautical miles (0.9 km)
- Characteristic: Omnidirectional
- Sound signal: Blast Morse code “U” in normal operation at 30 second intervals
- Description: An omnidirectional sound single actuated manually or at the onshore control room

28.4 148.105(aa)(4) Each Proposed Buoy

The proposed Project does not consist of any navigational aid buoys. The proposed Project consists of (1) SPM buoy system as described in detail in Section 18, §148.105(q).

28.5 148.105(aa)(5) Radar Beacon (RACON)

A stainless-steel octahedral reflector consisting of a diameter of 0.50 meters would be mounted on the proposed SPM buoy on top of a steel rope to protect from entanglement.

29.0 §148.105(bb) National Pollutant Discharge Elimination System

The Federal Water Pollution Control Act Amendments of 1972, known as the Clean Water Act (CWA) authorizes the U.S. Environmental Protection Agency (USEPA) to issue National Pollutant Discharge Elimination System (NPDES) permits. This authority has been delegated to 45 of the 50 states. In 1998, the USEPA delegated authority to the state of Texas Commission on Environmental Quality (TCEQ) to implement the NPDES to permit surface water and stormwater discharges, predominately from industrial and domestic wastewater facilities, as well as from certain construction sites.

The Railroad Commission of Texas (RRC) has jurisdictional authority over the transportation and storage of crude oil in the State of Texas; however, the RRC has not been delegated authority by USEPA to administer the NPDES program for non-exempt oil and gas operations.

Based on input from USEPA Region 6, the onshore portion of the facility would not be exempt from the Clean Water Act 402(l)(2) for uncontaminated stormwater discharges from oil and gas exploration, production, processing, or treatment operations or transmission facilities. Hence, the onshore storage terminal facility (OSTF) will be required to obtain authorization to discharge stormwater during construction activities and normal operation. Refer to Appendix W for NPDES Permit Applications for Onshore Components.

While a NPDES permit would be required for operation of the proposed onshore components of the proposed Project; the offshore SPM buoy system would operate in federal waters, outside state of Texas waters. The SPM buoy system would not result in any discharges during operations and the vessels be connected to the SPM buoy system would be operating in the capacity as a means of transportation. Therefore, it is the Applicants understanding that neither the SPM nor the vessels loading crude oil will come under the jurisdiction of the EPA's NPDES Permit Program. Please refer to Appendix X for a NPDES Applicability Evaluation prepared for the proposed Project which discusses the regulatory applicability of NPDES for the offshore components associated with the Project.

30.0 §148.105(cc) Placement of Structures and the Discharge of Dredged or Fill Material

§148.105(cc) requires that the Applicant provide all information necessary to obtain a Department of the Army Permit administered by the U.S. Army Corps of Engineers (USACE) under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act, collectively known as a USACE Permit Application. The USACE Permit program provides a regulatory device under Section 10 of the Rivers and Harbors Act to allow for the placement of structures in navigable waters and Section 404 of the Clean Water Act for the discharge of dredged and/or fill material into wetlands, and/or other waters of the U.S. The Outer Continental Shelf Lands Act (OCSLA) extends the USACE regulatory authority under Section 10 of the Rivers and Harbors Act to federal waters over the Outer Continental Shelf (OCS).

The operation of the proposed Project as described within this DWPL application requires the installation and operation of offshore, inshore, and onshore Project components to allow for the loading of vessels at the proposed DWP. The proposed DWP would be positioned within the Gulf of Mexico, outside of territorial seas, within the Bureau of Ocean Energy Management (BOEM) block number 823. The proposed DWP is positioned in water depths of approximately 93 feet at Latitude N27° 28’ 42.60” and Longitude W97° 00’ 48.43”, approximately 12.7 nautical miles (14.62 statute miles) off the coast of North Padre Island in Kleberg County, Texas. A USACE Permit would be required for the construction of offshore, inshore, and onshore components as described in this DWPL application. As such, these activities associated with the proposed Project that would require a USACE Section 10/404 Permit include:

- Construction of the onshore and inshore pipeline infrastructure which may require discharge of fill materials in wetlands or other waters of the U.S.
- Installation of inshore pipeline infrastructure across the Laguna Madre
- Installation of inshore pipeline infrastructure across the Gulf Intracoastal Waterway (GIWW) via horizontal directional drill (HDD) crossing techniques.
- Installation of offshore pipeline infrastructure within the Gulf of Mexico
- Construction and installation of the proposed DWP located within the Gulf of Mexico

The proposed Project is located within the Southwestern Galveston District USACE District. As such, the Applicant has prepared and submitted a separate permit application requesting authorization for the proposed Project components regulated under the jurisdiction of the USACE, as necessary, for the construction and operation of the proposed Project (a connected action). Refer to Appendix K for the permit application submitted to the USACE requesting authorization for Project components regulated under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

31.0 §148.105(dd) Additional Federal Authorizations

As the lead agencies for administration of the Deepwater Port Act (DWPA), the U.S. Coast Guard (USCG) and the Maritime Administration (MARAD) are responsible for processing the Deepwater Port License (DWPL)application. The issuance of the license is the federal action required to comply with the National Environmental Policy Act (NEPA). As such, the USCG and the MARAD must ensure that issuance of a DWPL application complies with the provisions of other environmental laws that require consultations with federal and state agencies concerning specific environmental resources. A summary of the pertinent environmental laws and required federal and state permits are provided in Table 31-1, below.

Table 31-1: Summary of Environmental Laws

Agency	Authorization/Permit/Consultation
Federal	
USCG	• DWPA license application processing, post-licensing design, construction, operations and oversight • National Environmental Policy Act (NEPA) lead agency for preparation of a single Environmental Impact Statement for the onshore and offshore DWP facilities (collectively, the Project) • Certification that navigational aids for the DWP meet the applicable requirements
U.S. Department of Transportation (DOT), Maritime Administration (MARAD)	• DWP license application processing, jointly with USCG • Approval of DWP
DOT, Pipeline and Hazardous Material Safety Administration (PHMSA)	• Project pipeline safety regulation (DOT and DWP) • NEPA consultation
USACE	• RHA, Section 10 authorization • CWA (Section 404) Permit (Dredge and Fill Permit) • CWA (Section 401) Water Quality Certification • NEPA consultation
U.S. Environmental Protection Agency (EPA)	• CWA, National Pollutant Discharge Elimination System (NPDES) permit (OSTF only) • Clean Air Act (CAA), New Source Review (NSR) permit (40 CFR Part 52) (DWP only) • CAA Title V operating permit (40 Code of Federal Regulations (CFR) Part 70 • Marine Protection Research and Sanctuaries Act consultation • Beaches Environmental Assessment and Coastal Health Act • NEPA consultation
U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS)	• Endangered Species Act (ESA) Section 7 consultation • Marine Mammal Protection Act (MMPA) consultation • Magnuson-Stevens Fishery Conservation and Management Act consultation • National Invasive Species Act Consultation • NEPA consultation
Advisory Council on Historic Preservation (ACHP)	• National Historic Preservation Act (NHPA) Section 106 consultation
U.S. Department of the Interior (DOI), BOEM	• Outer Continental Shelf Land Act of 1953 (OCSLA) consultation re potential impacts on OCS lease blocks, pipeline right-of-way and survey coordination on the OCS, and archaeological coordination • NEPA consultation
DOI, Bureau of Safety and Environmental Enforcement (BSEE)	• OCSLA consultation • Oil Pollution Act of 1990 liability adjustment consultation • NEPA consultation
DOI, U.S. Fish and Wildlife Service (USFWS)	• NEPA Consultation • ESA consultation • Fish and Wildlife Coordination Act consultation • Migratory Bird Treaty Act consultation • Bald and Golden Eagle Protection Act

	• Coastal Barrier Resources Act consultation • National Invasive Species Act Consultation
U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS)	• National Invasive Species Act Consultation
U.S. Geological Survey	• Nonindigenous Aquatic Nuisance Species Control and Prevention Act of 1990
MARPOL	• Act to Prevent Pollution from Ships
State of Texas	
Texas, Office of the Governor	• Consent of the Governor
Texas General Land Office, Coastal Management Program	• Coastal Zone Management Act (CZMA) consistency determination • Submerged land lease
Texas, Railroad Commission	• Water Quality Certification • Pipeline Safety
Texas Historical Commission	• Section 106 National Historical Preservation Act Consultation • Antiquities Code of Texas
Texas Commission on Environmental Quality	• State Water Quality Standards

32.0 §148.105(ee) Sworn Statement

Pursuant to the Deepwater Port Act of 1974, as amended, and implementing regulations at 33 Code of Federal Regulations 148.105(ee), I, Denise Rogers, Compliance Manager of Texas Gulf Terminals Inc., attest that to the best of my knowledge, information and belief, the information provided in this application is true.

Denise Rogers -Compliance Manager
Texas Gulf Terminals Inc

SWORN TO AND SUBSCRIBED BEFORE ME,
On this 29 day of June, 2018.

(Notary's official signature)

06/23/2021
(Commission Expiration)

NOTARY SEAL

JENNIFER RUTH NEWTON
Notary Public, State of Texas
Comm. Expires 06-23-2021
Notary ID 126940373