APPENDIX G

Best Management Practices

Best Management Practices

Bluewater SPM Project

July 2021

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2.0 BEST MANAGEMENT PRACTICES

2.1 General Construction Techniques

The Oil and Gas industry utilizes a list of common and best practices to limit any potential for negative impacts such as erosion, sediment transport, noise, etc. to occur to surrounding wildlife and habitat. The following includes a list of general construction BMPs utilized during construction projects.

1. Marking Workspace (BWTT Application and USCG/MARAD/Golder mitigation recommendation to minimize impacts)

Prior to the start of construction, survey crews would mark the outside limits of the approved work areas (i.e., the construction right-of-way [ROW] boundaries and additional temporary workspace (ATWS), as well as the pipeline centerline, approved access roads, and features to be crossed.

2. Crossings (BWTT Application and USCG/MARAD/Golder mitigation recommendation to minimize impacts)

All crossings, utilities, or other hindrances would be properly identified.

3. Geotechnical Investigation (BWTT Information Request Response #22 and USCG/MARAD/Golder mitigation recommendation to minimize impacts)

Geotechnical investigations at each of the planned HDDs would occur including Inadvertent return (IR) risk evaluation; and source water identification and analysis as necessary for final engineering design.

4. Planning and Zoning (USCG/MARAD/Golder mitigation recommendation to minimize impacts)

BWTT would adhere to the requirements within the Port Aransas Coastal Management Plan and coordinate with local municipalities and counties to minimize potential impacts on planning and/or zoning.

5. Oil and Gas Wells (USCG/MARAD/Golder mitigation recommendation to minimize impacts)

Prior to construction, BWTT would identify and verify the locations of any oil and gas wells located within the workspaces.

6. Road Crossings (USCG/MARAD/Golder mitigation recommendation to minimize impacts)

BWTT would document existing roadway conditions prior to the start of construction. Damage to the roadways during construction and hauling activities would be monitored, documented, and repaired per state or local regulations and in consultation with landowners.

7. Road Crossing Permits (USCG/MARAD/Golder recommendation to minimize impact)

BWTT would be required to obtain road crossing permits from the appropriate jurisdiction and coordinate with each landowner to establish access agreements. Coordination would be conducted

with the appropriate agencies to ensure all jurisdictional requirements and special conditions of issued permits are followed.

8. Habitat Restoration Plan

The Draft Habitat Restoration Plan (Attachment A) would be finalized prior to construction and detail pre-construction, post- construction surveys, reference sites, methods, timing, material sourcing, duration and extent of monitoring activities, success criteria, and adaptive management would be used to restore each terrestrial and aquatic habitat type that may be temporarily affected by the project to pre-existing conditions.

9. Vehicle Inspection and Refueling Operations

The Contractor would inspect and maintain equipment to prevent unnecessary maintenance activities within Waters of the U.S.

The Contractor would assure that all land-based equipment is refueled and lubricated within the construction staging area and would be at least 100 feet away from all waterbodies and wetlands.

BWTT would require contractors to include drip pans for all heavy equipment parked overnight on the Project right-of-way, facilities, and contractor/pipe yards. (USCG/MARAD/Golder mitigation recommendation to minimize impact)

10. Stabilized Construction Entrances/Exits

Access to and from the Project site, at paved public roads, would be compacted via a stabilized construction entrance (e.g., crushed stone, gravel, riprap). The stabilized access points would serve to reduce sediment tracking from the site. Inspect regularly to look for evidence of off-site sediment tracking onto paved surface and replenish aggregate as needed. Accumulated sediment that has been tracked out from the site onto paved areas, roads, and sidewalks must be removed by the end of the same workday in which the tracking occurs or by the end of the next workday if tracking occurs on a non-workday.

Dust suppression activities, such as watering exposed soils and traffic management, would be employed to reduce nuisance conditions.

11. Topsoil

During excavation, topsoil would be collected, stockpiled and stabilized separately from subsoils per standard industry practice. Conserved topsoil would be re-applied as top-dressing over backfilled trenches to facilitate vegetation regrowth, as coordinated with landowners.

12. Tree/ Stump Removal (USCG/MARAD/Golder mitigation recommendation to minimize impacts)

Tree stump removal and grading would be limited to areas located within the construction corridor, including additional temporary workspaces, unless safety-related construction constraints require otherwise.

13. Stormwater Compliance

Both temporary and permanent erosion and sediment controls would be used to control stormwater and contain sediment on the site, where feasible. Standard industry practice BMPs would be implemented and inspected to minimize soil erosion and impacts on surface waters. Soil compaction mitigation would be conducted in accordance industry practices BMPs that would be identified prior to construction. Below are typical BMPs utilized during construction and selection will be based on current site conditions.

- Silt Fence

Silt fence would be imbedded a minimum of 6 inches in the soils surface, and where two sections are joined, would overlap a minimum of 6 inches. Accumulated sediment would be removed regularly, and the fence would be inspected to ensure that the bottom of the fence remains imbedded in the ground.

- Hay/Straw Bales

Hay/straw bales would be used as stormwater barriers and anchored in place with stakes, the first stake driven at an angle toward the previously positioned bale, and the second stake driven perpendicular to the ground surface. Bindings on bales would be horizontal and would not consist of wire. Bales would be replaced if damaged or if water is channeled underneath. An adequate supply of bales would be stockpiled on-site for immediate need or routine placement.

- Interceptor Dikes

Interceptor dikes (earthen berms) are determined to be necessary to reduce velocity and divert stormwater runoff from the construction ROW. Interceptor dikes are constructed of materials such as compacted soil and sandbags. Interceptor dikes would be constructed with a two tofive percent out slope to divert surface flow to a stable area. In the absence of a stable area, an energy-dissipating device would be constructed at the end of the interceptor dike.

- Rock Berms

Rock berms can be used in areas with high flow velocities (e.g., channels and outfalls) to filter sediment from water, reduce runoff velocity, and minimize erosion potential. Rock berms would be installed prior to land disturbance, when required. To prevent scouring and blow-outs, rock berms would be toed into the site soils. Clogged rock berms would be cleaned or replaced when excessive sediment fills the pore spaces and/or vegetation is growing from the rock berm as it would prevent pass-through of stormwater. Gabion baskets would be used when high flow conditions are expected.

- Compaction Mitigation

Soil compaction mitigation would be conducted to help prevent erosion and sedimentation. In agricultural and residential areas, ensure the subsoil has been de-compacted via a plow or other deep tillage method prior to replacing topsoil or as required by landowner. As appropriate, determine additional soil compaction mitigation methods in severely compacted areas.

14. Soil Erosion and Sedimentation Control

Soil erosion, sedimentation and stabilization control devices, such as silt fencing, hay/straw bale utilization, interceptor dikes, rock berms, mulching, would be installed, inspected, and maintained per standard industry practice.

15. Grading and Trenching (Provided in the BWTT Revised BMP Plan per Information Request #80)

A 50-foot gap would be implemented for every 500 linear feet of sidecast material resulting from trench excavation activities. Based on field conditions, the gap intervals may be modified.

16. Revegetation and Seeding

Temporary stabilization would be necessary in denuded areas to allow equipment to conduct proper grading activities. Seed all disturbed soils within 14 days of final grading as weather and soil conditions allow. On slopes steeper than 30 percent, seed immediately after final grading, weather permitting. These areas would be seeded exclusively with a seed mixture of native grasses and forbs that are approved by the Natural Resources Conservation Service (NRCS) and/or landowner requirement. Areas seeded would be monitored for proper percent cover as well as invasive plant species, such as Brazilian peppertree and Chinese tallow, until 70% revegetation and stabilization has occurred based on pre-existing conditions. Management practices would avoid methods that rely on herbicides, as much as possible, and instead use less destructive means such as mowing and weed control fabric.

Generally, the Applicant would revegetate all disturbed areas in accordance with applicable laws, regulations, and special permit conditions, that would be developed prior to construction.

Permanent stabilization consists of vegetative seeding in all remaining disturbed, unvegetated areas affected by construction. The following guidelines would be useful in establishing permanent vegetation in those areas disturbed by construction activities.

In residential areas, restore all turf, ornamental shrubs, and specialized landscaping in accordance with the landowner’s request, or compensate the landowner.

Approved seed composition would be uniformly applied in accordance with the manufacturer's written recommendations. In the absence of any recommendations, prepare the seedbed in disturbed areas to a depth of three to four inches using appropriate equipment to provide a firm seedbed; a seed drill equipped with a cultipacker is preferred for application. Broadcast or hydro-seeding can be used at double the recommended seeding rates. Where seed is broadcast, firm the seedbed with a cultipacker or roller after seeding.

Where hand-broadcast seeding is used, the seed would be applied at half the doubled rate in each of the two separate passes. The passes would be made perpendicular to each other to ensure complete and uniform coverage. As needed, the Applicant may use soil additives, such as fertilizers or pH modifiers (i.e., lime).

Within areas where revegetation is not planned (such as the estuarine scrub shrub wetlands located within the construction corridor of the inshore segment of the Project) or revegetation is not deemed successful due to lack of cover or presence of noxious or invasive species, additional

vegetation monitoring and revegetation efforts may be required past the construction phase of the Project and into operation.

17. Noxious and Invasive Species Impact Management

To mitigate the potential for the spread of noxious and/or invasive species as a result of the Project, construction contractors would utilize industry standard practices for the cleaning of equipment prior to its transport and use for the proposed Project. Additionally, upon reseeding/revegetation efforts, construction contractors would avoid the planting or use of seed containing any noxious species or invasive species.

18. Mulching

Mulching will be used to stabilize the right of way per industry practice. Mulch would be applied on slopes within 100 feet of waterbodies and wetlands at a rate of no more than three tons per acre, as needed. If wood chips are used as mulch, do not use more than one ton per acre; the addition of nitrogen (at least 50 percent is slow release) may be included asnecessary.

19. Cleanup

Cleanup operations would commence immediately following backfill operations. Complete final grading, topsoil replacement, and installation of permanent erosion control structures within 20 days after backfilling the trench (10 days in residential areas). If seasonal or other weather conditions prevent compliance with these time frames, maintain temporary erosion controls until conditions allow for the completion of cleanup.

A travel lane may be left open temporarily to allow access by construction traffic if the temporary erosion control structures are installed. When access is no longer required, the travel lane must be removed, and the right-of-way must be restored to pre-construction contours. Permanent erosion controls would be installed following the removal of temporary controls.

Remove construction debris from all construction work areas and grade or till the ROW to leave soil in proper condition for seeding and planting. Every effort to complete final cleanup of an area (including final grading and installation of permanent erosion control structures) would be completed immediately following construction completion. The disturbed ROW would be seeded as soon as possible after final grading as weather and soil conditions allow.

20. Hydrostatic Test Water Discharge (BWTT Application and Information Request Response #77)

Hydrostatic test water discharges would occur upon construction completion of the Project. Two discharge locations are expected within marine habitats, one at the HDD exit point near San Jose Island and the other at the SPM buoy location. Chemicals approved for hydrostatic testing by the U.S. Environmental Protection Agency may be introduced to the test water. BWTT would follow all guidelines and requirements per the NPDES and RRC permit conditions.

21. Waste Disposal

The Contractor would be responsible for removing waste from the site, including proper disposal, in accordance with applicable federal, state, and local regulations. Methods and locations for the regular collection, containment, and disposal of excess construction materials and debris (e.g.,

timber, slash, mats, garbage, drill cuttings and fluids, excess rock) would be determined throughout the construction process. Disposal of materials for beneficial reuse must not result in adverse environmental impacts and is subject to compliance with all applicable survey, landowner, or land management agency approvals and permit requirements

Construction equipment would be rinsed out as needed on-site. The rinse sites would provide for soil infiltration of rinse water, and no detergents would be used. Sediment barriers would be used as needed to prevent water from wash sites from becoming a potential pollutant source in stormwater discharge. Captured sediment from the wash sites would be properly disposed of.

22. Spill Control

Prior to construction and operation, an Integrated Contingency Plan (BMP #90) detailing emergency procedures for addressing accidental releases and spills during construction and releases would be prepared and implemented to prevent spills, leaks, and other releases of hazardous materials that could impact onshore water quality, as applicable.

If a spill of fuel or used oily material is less than 25 gallons to land or less, than a sheen on water and the Contractor's crew can safely handle it, the crew would use construction equipment to containerize all spill material, contaminated soil, and absorbent material in a manner consistent with the spilled material's characterization.

If the spill exceeds a reportable quantity and/or cannot be adequately excavated and disposed of by the Contractor's crew alone, the Contractor would immediately notify the Operator.

In addition to spills, releases or inadvertent returns of products associated with the construction, operation, or decommissioning of the proposed project, other construction related activities, such as dewatering and maintenance, occurring in or near aquatic habitats (including the Gulf of Mexico and Redfish Bay) may negatively impact fish, shellfish, and other aquatic resources. Due to the Project's proximity to aquatic habitats, the Project would be coordinated with Texas Parks and Wildlife Department (TPWD) Region 4 Regional Response Coordinator (361-825-3246) for appropriate authorization(s) and technical guidance to ensure protection of aquatic wildlife.

23. Material Storage

- Construction chemicals and materials, and stockpiles of dirt and topsoil, would be stored in a manner that prevents these materials from becoming a potential pollutant source in stormwater discharge.
- Contaminated Sediments or Groundwater Encountered During Construction

Upon suspicion of contaminated sediments or groundwater during construction activities, contractors would follow the project's emergency response plan and site-specific safety plan.

24. BMP Maintenance and Inspections

Once the controls are in place, qualified inspection personnel with stop work authority would inspect, monitor, and ensure all control structures installed would be maintained. Additionally, the Applicant or the designated Contractor would provide continued maintenance of all erosion and sediment controls and other stormwater-related methods.

25. Storm Preparedness (USCG/MARAD/Golder mitigation recommendation to minimize impacts)

BWTT would coordinate with local county emergency management personnel prior to storm events to ensure storm preparedness per the emergency response plan.

26. Cathodic Protection (BWTT Application)

Cathodic protection equipment would be installed as per required specifications on the two 30-inch-diameter pipelines that would include appropriately spaced rectifiers, test stations, inline inspection markers, and other cathodic protection measures and equipment as required. Milepost markers would be installed along the pipelines' route and pipeline identification signs installed at pipeline, road and property line crossings, and where it is deemed necessary by the operations staff.

27. Discharges from VLCCs (BWTT Application and USCG/MARAD/Golder mitigation recommendation to minimize impact)

Discharges from VLCCs would comply with all applicable regulations to prevent pollutants and marine waste from being disposed of improperly, including requirements created by the International Convention for the Prevention of Pollution from Ships. All other discharges would comply with the U.S. Coast Guard (USCG) Pollution Regulation limits for locations greater than 12 nautical miles offshore since the SPM buoys are located approximately 15 nautical miles from San Jose Island. VLCCs would arrive to the DWP with full ballast tanks and would empty them simultaneously during the loading process.

28. Construction Lighting (USCG/MARAD/Golder/TPWD mitigation recommendation to minimize impacts)

It is anticipated that 24-hour construction would occur for limited number of locations (i.e., HDDs). During nighttime HDD work, the applicant would direct light downward or toward active construction.

2.2 Wetlands and Waterbodies

Impacts to Waters of the U.S., including wetlands, for the proposed Project have been minimized by paralleling existing pipeline ROW and minimizing temporary workspace and ATWS to the maximum extent practicable. All Project-related activities during construction, operation, and decommissioning would comply with federal regulations to control the discharge of operational wastes such as discharges associated with hydrostatic testing, trash and debris, and sanitary and domestic waste that would be generated from construction activities associated with the Project.

29. Inshore Waterbody Installation Methods

Within trenched areas (as well as any other areas where ground disturbance is proposed), silt fencing or curtains is proposed to be used to prevent the dispersion of sediments and introduction into the water column.

30. Buffers (USCG/MARAD/Golder mitigation recommendation to minimize impacts)

Undisturbed wetlands, waterbodies, and sensitive resources, within proximity of the workspaces, would be marked with appropriate buffers and setbacks.

31. Temporary Erosion Controls

BWTT would install adequate erosion controls on the banks of streams and wetlands during construction activities per standard industry practices.

32. Silt Fencing

BMPs such as silt fencing would be utilized for construction activities in saturated soils to further minimize impacts to these sensitive areas. Silt fencing would be installed at the edge of the construction right-of-way where spoil could migrate into undisturbed portions of the wetland as necessary per federal, state, and local requirements.

33. Timber Mats

BMPs such as timber mats would be utilized for construction activities in saturated soils to further minimize impacts to these sensitive areas.

34. Restoration of contours

BWTT would restore disturbed areas to pre-construction contours and elevations.

35. Vegetation (BWTT Application)

Within wetlands, topsoil would be segregated and replaced following the installation of the pipeline to preserve local seedbank and aid in the natural revegetation of disturbed areas.

36. Trench Plugs (USCG/MARAD/Golder mitigation recommendation to minimize impacts)

Trench plugs, such as sack breakers or foam breakers, would be installed at the entry and exit points, if necessary, to maintain wetland hydrology and to minimize the flow of water to and from the trench.

37. Estuarine Scrub Shrub (BWTT Application)

In areas where clearing is required and revegetation is not planned, such as the estuarine scrub shrub wetlands located within the construction corridor of the inshore segment of the Project, BWTT proposes to compensate for permanent wetland impacts, in accordance with the approved USACE permit (#SWG-2019-00174).

2.3 Water Quality

38. Water Quality

Water quality impacts would be minimized by using the best available technology while constructing and operating the DWP to the fullest intent possible. All Project-related activities during construction, operation, and decommissioning would comply with federal regulations to control the discharge of operational wastes such as bilge and ballast waters, that would be generated from vessels associated with the Project.

Discharges associated with hydrostatic testing of pipelines during construction would be conducted in accordance with the issued hydrostatic test water discharge permits. All construction activities would be conducted in accordance with the water quality certification issued for the Project.

39. Onshore and Inshore Construction Monitoring and Adaptive Management Plan (USCG/MARAD/Golder mitigation recommendation to minimize impacts)

Due to the temporary nature of this work and the constantly evolving environment, an adaptive management plan will be developed to ensure mitigation measures as described in BMP#13) are maintained. This Plan will be reviewed and approved by the appropriate agency. BWTT will comply with the conditions of the water quality certification issued for the Project.

40. Offshore Construction Monitoring and Adaptive Management Plan (USCG/MARAD/Golder mitigation recommendation to minimize impacts)

Due to the temporary nature of this work and the constantly evolving environment, the adaptive management plan will be developed to ensure mitigation measures are followed. BWTT commits to minimizing the area of impact and duration of disturbance during installation and commissioning of the proposed project. A follow-up survey would be conducted to ensure coverage soil after construction completion. During offshore pipeline construction activities, BWTT will comply with the conditions of the water quality certification issued for the Project.

2.4 Wildlife Sensitive Areas

2.4.1 Migratory Bird BMPs

41. Migratory Bird Treaty Act (TPWD and USFWS mitigation recommendation to minimize impacts)

- It is recommended that in accordance with the Migratory Bird Treaty Act of 1918, vegetation clearing and grading would occur during non-breeding season for most avian species, (i.e., October to February) so that impacts on breeding birds would be avoided or kept to a minimum. Except within areas where whooping crane habitats occur (see BMP #60).
- If habitat would need to be cleared with mechanical devices between March 15 and September 15, conduct surveys to minimize impacts on nesting migratory birds. Surveys for active nests would be conducted by qualified biologists and would take place no more than five days prior to grading and clearing of workspaces. Should any active nests be identified during the surveys, consultation with USFWS and TPWD would occur to determine buffer placement and monitoring protocols for active nests. The USFWS typically recommends leaving a buffer of vegetation at least 100 feet (30 m) around nests of Passerines (i.e., songbirds) until young have fledged or the nest is abandoned. Many nesting raptors need buffers of at least 0.25 miles (400 m); however, eagles need 2-mile (3.2 kilometer) buffers around their nests.
- Areas deemed as potential breeding habitat for migratory birds would be identified and flagged as sensitive areas.

42. Active Rookeries (TPWD and USFWS mitigation recommendation to minimize impacts)

For waterbirds nesting near federally permitted activities, an equipment and activity set-back distance of 1,000 feet (304 m). This distance is consistent with the 1,000-foot buffer established for bird rookeries in the Texas General Land Office's Resource Management Codes and applies to colonial waterbird rookery islands and to tern or black skimmer colonies along shorelines. Construction would not take place within these areas until it is determined the young have fledged.

43. Injured Birds (USFWS recommendation)

If an injured bird is encountered during project operations, please report the injured bird to Amos Rehabilitation Keep in Port Aransas, Texas, at 361-749-6793.

2.4.2 General Wildlife BMPs

44. Species Training and Surveys (USFWS recommendation)

A qualified biologist would conduct onshore and inshore pre-construction surveys to determine the presence of any active bird nest protected under the Migratory Bird Treaty Act (MBTA), state listed T&E species and federally listed T&E species. During construction activities, routine inspections would be conducted by qualified environmental inspectors, with stop work authority, to determine the presence of any active bird nest protected under the MBTA, state listed species, and federally listed species. Work crews would be educated on the appearance, status, and BMPs for all listed species that may occur in the Project Area and be able to identify the species and implement appropriate notification and avoidance protocols. All personnel must be advised that there are civil and criminal penalties for harming, harassing, or killing threatened or endangered species.

45. Escape Ramps

For open trenches and excavated areas, escape ramps would be installed in excavated areas that would allow trapped wildlife to climb out on their own. A qualified biologist with stop work authority would be notified in the event wildlife becomes trapped to supervise and/or resolve.

46. Erosion and Seed/Mulch Stabilization (TPWD and USFWS Recommendation)

Erosion and seed/mulch stabilization materials that avoid entanglement hazards to wildlife species would be used when necessary. Wildlife entanglement can occur due to the mesh found in many erosion control materials; therefore, no-till drilling, hydro mulching, and/or hydroseeding would be used when possible. If the use of erosion control blankets or mats cannot be avoided, the product would contain no netting or contain loosely woven, natural fiber netting in which the mesh design allows the threads to move, therefore allowing expansion of the mesh openings. Plastic mesh matting would be avoided. The erosion controls would be properly secured and regularly monitored to avoid wildlife entanglement or entrapment.

47. Workspace Reduction (TPWD recommendation)

BWTT would consult with the landowners on minimizing impacts on live oak forested or wooded shrub areas as negotiated with the landowner. This may include minimizing workspace or avoiding tree/shrub removal.

48. Inspections (USCG/MARAD/Golder mitigation recommendation to minimize impacts)

Equipment and vehicles would be inspected regularly to help prevent fluid leaks and contamination of sensitive areas.

49. Mobile Migratory Species (USCG/MARAD/Golder mitigation recommendation to minimize impacts)

During construction of the Project, the Applicant would maintain inshore and onshore active construction workspaces so that highly mobile migratory species avoid active construction. Prior

to workspace reclamation, vegetation and ponding would be maintained to prevent establishment of nesting or foraging habitat during active construction.

2.4.3 Marine Mammals BMPs

50. NMFS Vessel Strike Avoidance Measures and Reporting for Mariners (Expanded on the measures included in NMFS Vessel Strike Avoidance Measures and Report for Mariners included in the SWCA BA submitted with BWTT Application)

To minimize the potential for vessel strikes of marine mammals, Bureau of Ocean and Energy Management NTL No. 2016-G01, the National Marine Fisheries Service (NMFS) Vessel Strike Avoidance Measures and Reporting for Mariners Vessel Strike Avoidance and Injured/Dead Protected Species Reporting, would be followed by all Project construction and support vessels. BWTT would provide ship captains with the NMFS Vessel Strike Avoidance Measures and Report for Mariners and would advocate compliance with the following measures:

- Vessel operators and crews would maintain a vigilant watch for marine mammals to avoid striking sighted protected species.
- When whales are sighted, vessels must maintain a distance of 100 yards or greater between the whale and the vessel.
- When small cetaceans are sighted while the vessel is underway (e.g., bow-riding), attempt to remain parallel to the animal's course. Avoid excessive speed or abrupt changes in directions until the cetacean has left the area.
- Reduce vessel speed to 10 knots or less when mother/calf pairs, groups, or large assemblages of cetaceans are observed near an underway vessel, when safety permits. A single cetacean at the surface may indicate the presence of submerged animals in the vicinity; therefore, prudent precautionary measures would always be exercised. The vessel would attempt to route around the animals, maintaining a minimum distance of 100 yards whenever possible.

51. West Indian Manatee Conservation Measures (USFWS Recommendation)

- Staff and crew would be instructed not to feed or water manatees.
- The biological monitor would contact the U.S. Fish and Wildlife Service at (361) 533-6765 and the Texas Marine Mammal Stranding Network 800-962-6625 (800-9MAMMAL) at if a manatee is sighted.
- All in-water operations, including vessels, must be shut down if a manatee comes within 50 feet (15 meters) of the operation. Activities would not resume until the manatee has moved beyond the 50-foot radius of the Project operation, or until 30 minutes elapse if the manatee has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.

52. Pelagic Species and Marine Mammal Conservation Measures (SWCA BA included in BWTT Application)

The conservation measures for the oceanic whitetip shark, giant manta ray, and Bryde's, fin, sei, sperm, humpback, and blue whales are discussed below:

- A qualified biologist would conduct biological monitoring for these species during open water construction and operation activities.
- BWTT employees and contractors would receive training on proper identification of these species and procedures for notifying supervisors if these species are observed within the Action Area.
- If the species are observed within the Action Area, construction activities would be suspended until the animals leave of their own accord.
- BWTT would implement appropriate noise mitigation through coordination with NMFS and implementation of noise abatement measures.

2.4.4 Listed Species

53. Flagging Potential Listed Species Breeding Areas (USFWS Recommendation)

Areas within construction work areas deemed as potential breeding habitat for protected species would be identified and flagged as sensitive areas.

54. State-Listed Species Biological Monitor (USCG/MARAD/Golder/TPWD mitigation recommendation to minimize impacts)

If a state-listed species is observed in the Project Area, biological monitoring would be conducted and by a qualified biological monitor with a Scientific Collecting Permit from the TPWD Wildlife Permits Program, would coordinate with TPWD to handle the necessary state-listed species and be brought on-site or readily available to remove any species that are identified within the Project Area or may be trapped in trenches or excavated areas during construction. The qualified biological monitor would relocate the state-listed species in an area away from the workspace in a safe location.

55. Federally Listed Species Biological Monitor (USFWS recommendation)

A qualified biologist, with the authority to temporarily halt work crews, would be available to inspect the Project Area to identify risks to threatened or endangered species.

56. Offshore Biological Monitoring (BWTT Application and USCG/MARAD/Golder mitigation recommendation to minimize impacts)

Qualified biological monitors would be present during pile driving activities to monitor the area and help prevent marine mammals and sea turtles from acoustic injury during pile driving. Should a marine mammal or sea turtle be identified within the Zone of Influence; pile driving would be suspended until the animal leaves the area under its own accord and is a safe distance away.

2.4.5 Species Specific

57. Northern Aplomado Falcon Conservation Measures (SWCA BA included with BWTT Application and USFWS Recommendations)
    - Nesting season is February through July; therefore, the preferred time for major work or work that requires a significant amount of equipment is August 1 through January 31. Where that is impracticable, pre-clearing nest surveys would be conducted by a qualified biologist if habitat would be cleared with mechanical devices during nesting

season, a buffer would be implemented for any identified Northern Aplomado falcon nests, as coordinated with USFWS.

- Construction and maintenance activities will mostly be conducted during daylight hours to avoid noise and lighting issues during the night. If construction or maintenance work activities would continue at night, all lights would be shielded to direct light only onto the work site, the minimum wattage needed would be used, and the number of lights would be minimized. Noise levels would be minimized. All generators would be in baffle boxes (a sound-resistant box that is placed over or arounda generator), have an attached muffler, or use other noise-abatement methods in accordance with industry standards.
- BWTT employees and contractors would receive training on proper identification and procedures for notifying supervisors if the species is observed. For the year-round resident northern Aplomado falcon, a distance of 300 to 600 feet (90-182 m) would be maintained if birds are observed in the area, as coordinated with USFWS.
- Aboveground utilities required for operation of the pipeline would be equipped with devices to discourage nest building and perching (e.g. visual fright devices).

58. Piping Plover and Red Knot Conservation Measures (SWCA BA included with BWTT Application and USFWS Recommendations)

- A qualified biologist would conduct biological monitoring for these species within their suitable habitats to identify areas of known occurrence. Biological monitors would look under equipment for piping plovers, which may be in the area from July 15 to April 1, and for red knots during the spring and fall. The biologist would note that observations at sunrise and sunset are the most effective times to discover the location of roosting birds.
- Report sick or injured piping plovers and red knots to the USFWS Corpus Christi Ecological Services office at (361) 533-6765.
- Materials and vehicles required for the proposed Project would be staged in upland areas and transported as needed to the proposed workspaces. Equipment would be driven above the “wet line” on the beach to minimize disturbance of piping plovers.
- Mud or wind tidal flats compress under the weight of construction vehicles, and the resulting depressions or ruts may remain for years. These ruts act as dams, depriving the upper reaches of wind tidal flats from saltwater, thereby reducing survival of benthic infauna that the piping plover feeds on. The number of vehicles transiting from the upland areas to the Project Area be kept to a minimum, and that vehicles all use the same pathway to the extent practicable.
- After the proposed Project construction is completed, the mud or wind tidal flats would be restored to preconstruction slope and contours, and all ruts would be leveled.
- Any future routine maintenance activities will not occur if the piping plover or red knot is found within the maintenance area, until the animals leave of their own accord. Operations personnel will receive training on proper identification of piping plover and red knot identification.

- If a piping plover or red knot is detected within 165 feet of geotechnical boring activities or construction activities, all activities within 165 feet of the individual would stop as soon as safely possible and crew members would avoid the area to the maximum extent practicable until the biological monitor confirms that the animal has vacated the area. Coordination with USFWS would occur to determine the appropriate actions.
- BWTT employees and contractors would receive training on proper identification of piping plover and red knot identification, the potential for vehicle collisions with these species, and procedures for notifying supervisors if these species are observed.
- The discharge of water across critical and/or suitable habitat would be avoided or minimized.
- Erosion, runoff, and sedimentation would be prevented or minimized during construction in suitable habitat areas by utilizing BMPs such as silt fence and matting.
- Temporary access roads would be micro-sited to avoid or minimize, to the maximum extent practicable, areas where roadbed erosion or surface flow entrapment could enter suitable habitat.

59. Whooping Crane Conservation Measures (SWCA BA included with BWTT Application and USCG/MARAD/Golder mitigation recommendation to minimize impacts/USFWS recommendation)
    - A qualified biologist would conduct biological monitoring for the species within suitable habitats to determine if any individuals are present.
    - BWTT employees and contractors would receive training on proper identification of the species and procedures for notifying supervisors if the species is observed.
    - Work in whooping crane areas would be conducted outside of the November 1st to April 30th wintering season to the maximum extent possible. If work will be conducted in whooping crane areas during the November to April wintering season, BWTT will coordinate with the USFWS. For any work conducted during the wintering season, BWTT would follow the below BMPs along with any BMPs developed as a result of coordination with USFWS.
    - If individuals are observed within 1,000 feet of construction activities, all work would cease until the crane moves outside that 1,000-foot work buffer on its own accord.
    - If equipment over 15 feet high is to be used during construction, the equipment would be flagged or marked to increase visibility and lessen the risk of collisions.
    - During nighttime hours and periods of low visibility, all construction equipment containing components that could reach 15 feet would be lowered to prevent any potential interference with the species.
60. Sea Turtle Conservation Measures (SWCA BA included with BWTT Application and USFWS Recommendations)

The conservation for the green, Kemp's ridley, hawksbill, leatherback, and loggerhead sea turtles are discussed below:

- Biological monitors would be used to avoid impacts to sea turtles. Immediately report dead, injured or cold-stunned sea turtles (see Section 2.8.2.9) to the Texas Sea Turtle Stranding and Salvage Network (STSSN) at Padre Island National Seashore: 361-949-8173 ext. 226, or the sea turtle hotline: 866-887-8535 (866-TURTLE5).
- If sea turtles or sea turtle tracks are located on the beach, activity would cease immediately within 100 feet (30 meters) of the nest site. Immediately contact Padre Island National Seashore at 361-949-8173 ext. 226, or the sea turtle hotline: 866-887-8535 (866-TURTLE5). Remain at the site until a biologist arrives, but do not disturb the sea turtle or tracks. Never walk on or disturb nesting sites. After the turtle is finished laying her eggs, she must be allowed to enter the surf. If a representative cannot stay until a biologist arrives, please carefully mark the site by laying pieces of beach debris, such as pieces of wood or other debris, in a large circle around the nest area, not on top of the nest, so biologists would be able to find the nest when they arrive.Never insert flagging or sticks into the sand around a nest as this could damage the eggs.
- Lights would be down-shielded and of a low wavelength to avoid disorientation of night-nesting sea turtles and emerging hatchlings making their way to the surf.
- No equipment would enter a work area until after an initial sea turtle survey is conducted and the biological monitor notifies equipment operators that they are clear to proceed. This is especially important for beach operations during nesting season (March 15-October 1, anytime of day or night).
- Turtle monitors and/or patrollers would receive Department of the Interior training from Padre Island National Seashore or other approved sources. Biological monitors must be able to recognize sea turtle tracks in the sand.
- BWTT would implement appropriate sea turtle noise mitigation through coordination with NMFS and implementation of noise abatement measures.
- As air temperatures drop towards 40°F and water temperatures drop towards 50°F, construction contractors would notify all essential personnel that a potential cold stunning event is likely and that they shall go on alert.
- As water temperatures reach 50°F, construction contractors would mobilize a search boat and environmental monitors to search for stranded, stunned, and/or distressed sea turtles in the Action Area. Sea turtles that are cold stunned would float at or near the surface of the water, unless they have drowned, and then they would sink below the surface of the water. Therefore, when they are initially cold stunned and still alive, they are easily located; sea turtle heads are very large, have a distinctive profile, and are easily identified up to a distance of approximately 150 yards, especially with the aid of binoculars and/or spotting scopes. Environmental monitors would be trained in the detection and identification of sea turtles.
- If a stranded or cold-stunned sea turtle is located within the Action Area, the environmental monitor would immediately take photographs of, and GPS coordinates for, the stranded turtle. Then the environmental monitor would immediately call the Sea Turtle Stranding and Salvage Network (STSSN) on their 24-hour hotline. The

environmental monitor would give STSSN personnel the location and description of the sea turtle and would request immediate assistance.

- The NOAA lists several contacts for the STSSN, including
  - Donna Shaver, PhD, Texas Coordinator for the STSSN, 361-949-8173, ext. 226
  - University of Texas (UT) - Marine Science Institute Animal Rehabilitation; Keep, 361-749-6793
  - 1-866-887-8535 (1-866-TURTLE-5)
- The search vessel and environmental monitor would accompany the cold stunned sea turtle, protecting it from harm and/or approach by other vessels, until STSSN personnel arrive to take possession of the sea turtle. STSSN estimates that picking up the sea turtle takes a few hours to complete after they are contacted. Turtles that drown beforethey can be rescued would be considered casualties of natural selection and not a take under the Endangered Species Act.
- Due to the requirement for those handling federally listed sea turtles to hold USFWS and/or the NMFS handling permits, it would be the responsibility of the STSSN personnel to take possession of and transport any cold stunned turtles to the rehabilitation center at the University of Texas Marine Science Institute. Environmental monitors are not authorized to handle or rescue sea turtles.
- Environmental monitoring will cease once water temperatures in the Action Area rise above 50°F. Due to its proximity to the Action Area, NOAA Buoy RTAT2 would represent the prevailing surrogate at all times for on-site water temperatures.
- Environmental monitoring will resume once water temperatures drop to below 50°F. There will be an operational stand-down in the event a stunned sea turtle is discovered.
- Environmental monitoring would not be necessary if there are no barges, boats or vessels operating during a cold stunning event.

2.5 Cultural Resources

Known cultural resources or potential cultural resources are to be avoided. If avoidance of known cultural resources or potential cultural resources is not possible, additional investigations and a treatment plan would be developed in consultation with the Texas Historical Commission (THC) and applicable federal agencies.

61. Access and Maintenance

Access and maintenance of the Project would be completed through corridors which avoid cultural resources.

62. Unanticipated Discovery Plan

An Unanticipated Discoveries Plan would be developed and implemented. This plan would be reviewed by the THC and applicable federal agencies. All proposed Project construction, operation, and decommissioning personnel would be familiar with the plan and the steps that the

Project has agreed to follow in the event of the discovery of significant cultural resources including human remains.

Notification procedures regarding unanticipated discoveries to all interested parties, including the lead federal agency and the Texas Historical Commission, would be implemented. Interim treatment measures to protect the discovery from weather, looting and vandalism, or other exposure to damages would be applied.

63. Unidentified Cultural Resource Discovery

If previously unidentified cultural resources or historic properties are discovered during Project construction or restoration activities, any Project personnel that detect the discovery must immediately stop Project construction or restoration activities at the site of discovery and all Project ground-disturbing activity within a 50-meter radius of the discovery (this area is herein referred to as the exclusion zone). Access to the exclusion zone must be limited immediately. The construction contractor would then notify a designated representative of the discovery. Following notification of the discovery, the designated representative would immediately inspect the work site and determine the extent of the affected archaeological resource as defined by the THC or by the THC in consultation with the archaeologist retained by the applicant.

64. Offshore Construction Discoveries

In the event that shipwreck remains, or other potentially historic or archaeological materials, are discovered anywhere during the construction of the offshore portion of the Project, work would be halted immediately, and steps taken to ensure that the site is not disturbed. In state waters less than 3 nautical miles offshore, work must be halted within 50 meters (164 ft) of the find. In state waters greater than 3 nautical miles offshore, work must be halted within 150 meters (492 ft) of the find. BWTT would notify the State Marine Archaeologist at the THC immediately for further direction concerning the discovery. In federal waters, work must cease within 305 meters (1,000 ft) of the find. BWTT, would contact Bureau of Ocean and Energy Management's Regional Supervisor of Leasing and Environment within 48 hours of the discovery for further instructions concerning the find.

2.6 Harbor Island Facility

Construction of the Harbor Island Operations Facility would start with site preparation to establish the conditions necessary for the construction and installation of the proposed infrastructure. The construction and installation of the Harbor Island Operations Facility would be completed using current industry standard practices. The Harbor Island Facility would be constructed within an approximate 12-acre site located on Harbor Island in Nueces County, Texas.

65. Site Preparation

A pre-construction survey would be conducted to confirm the site location as shown on the construction drawings. All clearing, grading, and site elevation would be conducted according to construction permits and following erosion control BMPs. Following receipt of final survey results, a comparison against the engineering design would be conducted and verified prior to starting installation.

66. Construction Contractor Entrance/Exit

Construction materials would be delivered to the construction site via existing access roads to minimize disturbance to areas outside the designated ATWS and 12-acre site. All construction

contractors and equipment, as well as transport vehicles, would enter and exit the site at a controlled entrance. The controlled entrance and exit location would include security for site as well as a stabilized construction entrance. The construction entrances/exits and staging areas would be cleaned regularly to keep them clear of debris and materials. A stabilized construction entrance would be utilized to minimize off-site vehicle tracking. Dust suppression activities, such as watering exposed soils and traffic management, would be employed to reduce nuisance conditions.

67. Lighting

Lighting would be required throughout the Project Area during construction, operation, and decommissioning of the deepwater port facility. In addition to navigational beacons, lighting would be used for safety and security around facilities. As proposed, the Project would minimize terminal lighting to that required for safety and navigation and lights would be down-shielded and/or directed at the water.

Where appropriate, lighting technologies found at the International Dark-Sky Association (https://www.darksky.org/) and BMPs would be used. Specifically, security lighting within any fenced compounds would be fully down-shielded and directed away from vegetation outside of fenced areas. Security lighting around on-ground facilities would also be motion- or heat-sensitive to eliminate constant nighttime illumination.

2.7 Noise

Mitigation measures to mitigate impacts as a result of noise generated by construction activities would be implemented. The following listed items are included in potential noise mitigation efforts put forth by BWTT.

68. Temporary Barriers

Temporary barriers would be placed between construction workspaces and nearby noise sensitive areas. BWTT is specifically investigating the use of barriers between construction workspaces and nearby noise sensitive areas at HDDs 4, 5, 6, and 7.

69. Equipment Operation

Only necessary equipment would be operated simultaneously.

70. Limiting

Operation of idle equipment would be limited when not required.

71. Mufflers

Ensure mufflers are properly installed and maintained throughout the construction period.

72. Noise Abatement (SWCA BA included with BWTT Application and USCG/MARAD/Golder mitigation recommendation to minimize impacts)

Noise abatement measures would be implemented based on continued coordination/consultation with the USFWS and NMFS.

73. Pile Driving Mitigation

BWTT will coordinate with National Marine Fisheries Service (NMFS) to determine the acceptable sound level thresholds and mitigation efforts during pile driving. Based on this coordination, BWTT will determine the mitigation measure that needs to be employed to meet the

determined sound thresholds. Examples of mitigation measures that may be employed based on coordination with NMFS may include, but are not limited to:

- Use of the lowest energy hammer feasible for installation of the piles;
- The use of "soft starts," using a lower hammer energy level to begin pile-driving, which allows sensitive species to avoid the vicinity prior to peak pile-driving noise;
- The use of a bubble curtain or other sound damping system to minimize propagation of pile-driving noise

Additionally, sound damping systems that may be employed to achieve the acceptable sound level thresholds, as coordinated with NMFS, may include but, are not limited to:

- Hydro Sound Damper (HSD) – The HSD system consists of a fisher net where HSD elements with different sizes and distances from each other are mounted. With ballast ring on the seabed and a floating system on the sea surface, the fisher net, including the HSD elements, can be located in a short distance (<1 meter) around the pile. The HSD elements can consist of foam plastic or gas-filled balloons. The radiated noise from the pile must cross the HSD elements and would be reduced due to reflection and absorption. In principal, the HSD elements act like air bubbles in the water, with the advantage that they cannot be drifted by current and their size and, therefore, the resonance frequency is adjustable.
- Noise Mitigation Screen (NMS) – An NMS system consists of a double-wall steel screen (tube). The pile would be inserted into this system. The space between the two screens is filled with air; additionally, air bubbles can be feed-in between pile and NMS system (water-air-composite). The radiated sound crosses the internal bubble curtain as well as the air-filled double-wall steel screen and would be reduced due to reflection (impedance gap).
- Cofferdam – The cofferdam system consists of a single-wall steel tube. The pile would be inserted into this system. Near the seabed, a gasket (seal ring) is installed so that the space between pile and cofferdam can be evacuated from water by pumps. In principal, the pile can be installed "in air" and not in water so the pile radiates the sound into air and would cross the steel tube thereafter. Due to the different impedances the pile-driving noise would be reduced by reflection.

2.8 Air Quality

Mitigation measures to mitigate impacts to air quality generated by construction activities would be implemented. The following listed items are included in potential air quality mitigation efforts put forth by BWTT.

74. Reduction in Air Emissions During Construction (USCG/MARAD/Golder mitigation recommendation to minimize impacts)
    - Use EPA Tier 3 or 4 nonroad engines during construction when available
    - Non-road construction equipment engine related air emissions would be minimized through the appropriate maintenance of equipment as required by the manufacturers. BWTT contractors will ensure the equipment is maintained accordingly throughout the useful life of the non-road engines via the required manufacturer's recommendations.

EPA's non-road engine regulations work to reduce emissions in a cost-effective manner through the ordinary process of fleet turnover.

- Limit idling of engines (equipment and generators) when not in use, any equipment not in use for more than five minutes would be turned off and restarted.
- A USCG-approved Fugitive Dust Control Plan will be followed

75. Reduction in Air Emissions During Operations (USCG/MARAD/Golder mitigation recommendation to minimize impacts)
    - Marine vessels operating at the DWP will not be owned by BWTT. However, BWTT would require that all marine vessels arriving at the Deepwater Port to meet all marine vessel engine emissions requirements under IMO air emissions control standards.
    - BWTT will meet all EPA air permit emissions conditions and recordkeeping requirements.

2.9 Horizontal Directional Drilling (HDD)

The following BMPs would be implemented at each HDD construction area to minimize impacts to the environment.

76. Construction Notification

Prior to access or construction activities associated with HDD crossings, all necessary approvals or permits would be received. Notifications, road crossings, access points, and construction area demarcations/restrictions management practices will be followed similar to the remaining onshore pipeline construction BMPs listed above.

All buffer zones or restricted areas would be identified and flagged prior to mobilization and site preparation. In addition, any restricted areas identified by permits/approvals would be flagged. Access to these restricted areas would be prohibited unless authorized by the appropriate regulatory authority in the case of permits/approvals. A restricted area around any operations equipment during HDD installation is anticipated within Laguna Madre or Gulf of Mexico waters.

77. Site Preparation

A pre-construction survey would be conducted to confirm the HDD entry and exit points (within HDD Boxes) for the pilot bore. All HDD entry and exit points would be clearly staked or marked in the field. During site preparations the size, slope grade, berm walls, and ingress and egress would be defined. All matting used during HDD installation would be removed upon completion.

Entry or exit casings would be installed in the event it is required at an HDD crossing. Casing would be installed according to the geo-technical information and profile design. Casing would be cleaned by the casing contractor prior to use. Casing final design would be based on actual geotechnical information, as necessary.

78. HDD Inadvertent Return Contingency Plan

The most likely occurrence of inadvertent mud releases developing during drilling operations is from Inadvertent Returns.

Upon detection of an inadvertent release of drilling fluid (bentonite) occur, all drilling activities would cease, containment and subsequent clean-up would begin immediately as described in the BWTT Inadvertent Return Contingency Plan.

As previously mentioned, any inadvertent returns of products associated with the construction, operation, or decommissioning of the proposed Project, and other construction-related activities, such as dewatering and maintenance, occurring in or near aquatic habitats (including the Gulf of Mexico and Redfish Bay), may negatively impact fish, shellfish, and other aquatic resources. Due to the Project's proximity to aquatic habitats, the Project would be coordinated with TPWD's Region 4 Regional Response Coordinator (361-825-3246) for appropriate authorization(s) and technical guidance to ensure protection of aquatic wildlife.

79. Cleanup and Restoration

Following the completion of the HDD, the temporary workspaces would be cleaned up and restored to original contours and vegetated conditions.

2.10 SPM Buoys

80. Offshore Site Preparation

The location of the anchor piles and chains would be surveyed for any obstruction and to confirm seafloor bathymetry prior to commencement of the pile driving.

81. SPM Buoy System Installation BMPs

For the construction of the SPM buoy system, the Applicant would utilize land-based fabrication to minimize the timing and disturbance associated with offshore installation, as practicable.

82. Navigation Safety

Navigation safety measures are discussed in Section 2.11 in Section 2.13.

83. Lighting (BWTT Application and USCG/MARAD/Golder/TPWD mitigation recommendation to minimize impacts)

Permanent lighting would be installed at the SPM buoys and is mandatory per USCG safety requirements during operation. These lights cannot utilize down-shielding because they are put in place to ensure boats in the area can see the floating structure and avoid collisions. The lights on the SPM buoys are not anticipated to have harmful effects on birds that may be in the area. Birds flying around illuminated structure would also prevent inadvertent bird strikes at night.

In addition, lighting would be required for the offshore component of the Project during construction and decommissioning of the deepwater port facility. In addition to navigational beacons, lighting would be used for safety and security. As proposed, the Project would minimize lighting to that required for safety and navigation and lights would be down-shielded and/or directed at the water during construction and decommissioning, to eliminate both skyward and sea surface illumination which has the potential to attract fishes and invertebrates.

2.11 Offshore Pipeline Installation

84. Survey

All necessary charts, nautical aids, navigational warnings, and signs required to properly conduct the installation of the pipelines would be identified prior to the commencement of construction activities. There would be onboard, the required survey personnel for continuous 24-hour per day positioning of each installation vessel, as necessary.

85. Offshore Pre-existing Pipelines (BWTT Application)

Prior to laying the pipeline across any pre-existing pipeline, the pre-existing line would be marked with a minimum of three buoys.

86. Installation Depth (BWTT Application)

Pipeline would be installed at a minimum of three feet below the seabed in areas of 200 feet of water or less, to prevent from damage to the pipeline and aid in avoidance and mitigation to existing features located on the seafloor.

87. Scour (USCG/MARAD/Golder mitigation recommendation to minimize impacts)

Scour near the piles would be limited to the immediate vicinity of the pile to avoid excess damage to the seafloor.

2.12 Mitigation/Response

88. Integrated Contingency Plan (BWTT Info Request Response #133)

BWTT would develop an Integrated Contingency Plan (ICP) in consultation with appropriate state and federal agencies prior to operation. The ICP would ensure the appropriate equipment and resources are available in the extremely unlikely chance that a large-scale spill was to occur. In the event of an oil release an ICP, along with the Texas General Land Office (GLO) Oil Spill ToolKit would be implemented to respond to the incident in a timely and effective manner. The ICP would be a strategic document that identifies initial actions in the event of a spill, notification procedures, identifies resources, and describes implementation of response strategies. The GLO Toolkit, as described above, includes maps detailing the location and type of equipment to be deployed in response to a release, and identifies sensitive resources for protection.

BWTT, as required by law, would contract with an Oil Spill Response Organization that owns and operates resources to respond to a spill and mitigate the potential impacts.

2.13 Navigational Safety and Marine Transportation

89. Navigation Safety

Risks due to other marine traffic in the area would be mitigated through establishing a safety zone around any vessel operating in the construction or installation of the offshore components.

90. Marine Transportation

To mitigate potential impacts from temporary safety zone and Project-related vessels on all marine uses during installation/commissioning, the Applicant would:

- Issue Notice to Mariners;
- Communicate with the USCG, the USACE Navigation Branch, and state and federal pilots regarding offshore Project installation activities; and
- Ensure that working vessels would issue VHF radio broadcasts, as needed.

To mitigate potential impacts from temporary safety zone and Project-related vessels on aesthetics and viewshed during installation/commissioning, the Applicant would:

- Utilize temporary safety zones of approximately 1,640 feet (500 meters) around sites that would limit close views of installation vessels and activities.

To mitigate potential impacts from safety zone and Project-related vessels on all marine uses, the Applicant would:

- Select a site in a location with limited oil and gas activity;
- Select a site in a location that does not have unique fishing or recreational properties compared with adjacent areas of the Gulf of Mexico; and
- Select a site in a location that does not have known significant sediment resources.

To mitigate potential impacts from safety zone and Project-related vessels on Marine Shipping and Commercial Ports during routine operations, the Applicant would:

- Work with USCG, widely distribute coordinates of each safety zone to marine communities prior to operation, and add to nautical charts prior to its effective date;

To mitigate potential impacts from temporary safety zone and Project-related vessels on aesthetics and viewshed during routine operations, the Applicant would:

- Select a site in offshore location that is not visible to land-based viewers;
- Utilize locating the DWP 15 nautical miles offshore which will not be within any land viewshed.

2.14 Public Access

91. Public Access Plan

BWTT would develop a Public Access Plan upon final design to ensure that the public maintains access to recreational resources within the Project Area throughout construction, as practicable. The Public Access Plan would outline measures to aim to avoid construction activities during key public events and prime recreational times based on coordination, and as requested from county and city officials, as well as provide adequate notification and communication on the construction schedule to county officials to assist to minimize impacts upon the recreation and tourism economy during the construction activities.

2.15 BMPs Based on Consultation

92. Eastern Black Rail BMPs

Where black rails are present[1], avoid disturbance activities March 1st through September 30th in

[1]Since BLRA presence/absence is currently unknown within the Project Area, presence is assumed year-round within potential suitable habitats (irregularly flooded E2EM and PEM).

suitable BLRA habitat. If this timing restriction cannot be achieved, then BWTT would implement the following measures:

- A survey would be done prior to the start of the proposed action to assess BLRA breeding activity within the planned project area, and surveys would be coordinated with the Texas Coastal Ecological Service's Office.
- A biological monitor on site would maintain pathways to refugia and avoid clearing in a way that creates isolated pockets of suitable BLRA habitat on the project site. In part this is done by linear clearing in the direction of refugia and avoiding clearing by decreasing concentric circles.
- The biological monitor may also be required to maintain a sufficiently slow pace of equipment moving through potential habitat which allows for the escape of the birds a head. Biological monitors would be aware that the species will run to escape oncoming disturbance and are highly unlikely to fly during day light.
- The biological monitor would have authority to stop work immediately if BLRA chicks or eggs are observed within the Project Area. In addition, the Texas Coastal Ecological Service's Field Office would be contacted immediately at (361)533-6765.
- If temporary access routes, pipeline routes, or staging areas occur within potential BLRA habitat BWTT would minimize traffic in these areas, therefore minimizing the construction footprint, by limiting the number of ingress and egress routes to the maximum extent possible.

BWTT would implement the following measures year-round in suitable BLRA habitat[1] within the Project Area:

- Lighting would be kept pointed at work zone for nighttime work and turned off at night while work is not being conducted, as possible. All permanent lighting would be pointed away from potential BLRA habitat, be down shielded, and would follow the Dark Skies for lighting.
- Projects involving revegetation of disturbed areas would use native plants which mimic the local site composition. Propagation of woody species would be avoided.

[1]Since BLRA presence/absence is currently unknown within the Project Area, presence is assumed year-round within potential suitable habitats (irregularly flooded E2EM and PEM).

ATTACHMENT A

Draft Habitat Restoration Plan

DRAFT
HABITAT RESTORATION PLAN
BLUEWATER SPM PROJECT

Prepared for:
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LIST OF ATTACHMENTS

ACRONYMS AND ABBREVIATIONS

Applicant	Bluewater Texas Terminal LLC
ATWS	additional temporary workspace
BMP	best management practice
BOEM	Bureau of Ocean Management
bph	barrels per hour
BWTT	Bluewater Texas Terminal LLC
DWP	Deepwater Port
DWPA	Deepwater Port Act of 1974
e.g.	Latin for exempli gratia, meaning "for example"
EIA	Energy Information Administration
etc.	Latin for et cetera, meaning "and other similar things"
GOM	Gulf of Mexico
HDD	horizontal directional drilling
i.e.	Latin for in est, meaning "in other words"
MARAD	Maritime Administration
MBAT	Migratory Bird Treaty Act
MHT	Mean high tide
MMbpd	Million barrels per day
NRCS	Natural Resource Conservation Service
NWP	Nationwide Permit
OCS	Outer Continental Shelf
PLS	pure live seed
Project	Bluewater SPM Project
ROW	right(s)-of-way
ROW	Right-of-way
SPCC	Spill Prevention Control and Countermeasures
SPM	Single point mooring
SWPPP	Stormwater Pollution Prevention Plan
TCEQ	Texas Commission on Environmental Quality
THC	Texas Historical Commission
TPDES	Texas Pollutant Discharge Elimination System
U.S.	United States
USDA	US Department of Agriculture

1 Introduction

Bluewater Texas Terminal LLC (BWTT) is proposing to construct, own, and operate a deepwater port (DWP), associated pipeline infrastructure, and operations facility collectively known as the Bluewater SPM Project (Project), to provide a safe and environmentally responsible solution for the export of abundant domestic crude oil supplies from major shale basins.

The Project will involve the construction and operation of a DWP, associated pipeline infrastructure, and Booster Station, to allow for the loading of Very Large Crude Carriers (VLCC) at the proposed DWP via two single point mooring (SPM) buoy systems. The proposed Project design would allow for up to two (2) VLCCs, or other crude oil carriers, to moor at two (2) SPM buoy systems. The proposed Project is capable of simultaneously loading VLCCs and other crude oil carriers at rates of up to approximately 80,000 barrels per hour (bph) and throughput capacities of approximately 16 VLCCs per month.

Based on the Environmental Evaluation prepared for the Project under the Deepwater Port Licensing Act (DPLA), there is potential for negative impacts to environmental resources due to the nature of the construction methods utilized in a DWP design such as the project mentioned above. BWTT has prepared a Best Management Practices (BMP) Plan to guide BWTT and any contractors constructing the DWP in the best practicable ways to avoid, minimize and mitigate any potential impacts, prior to and during construction that is under a separate cover.

Following implementation of the construction procedures and BMP plan, BWTT is providing the enclosed Habitat Restoration Plan. This Habitat Restoration Plan will be used to mitigate impacts from construction for all habitats that are disturbed. Procedures for avoidance, minimization, and mitigation of losses to both terrestrial and aquatic resources are included within the BMP plan and Habitat Restoration Plan, as well as the separate Permittee Responsible Mitigation Plan, as approved by the USACE for wetland impacts.

It is noted in 40 CFR 230.75 that minimization of adverse effects can be achieved by using planning and construction practices that institute habitat restoration techniques. In addition, 40 CFR 230.94 identifies specific components of a mitigation plan, such as a habitat restoration plan, including details related to pre- and post-construction surveys, reference sites, methods and timing of activities, best management practices, monitoring activities and ecological success criteria would be considered appropriate. The EPA recommends these elements be included in the habitat restoration plan to ensure habitat impacts are avoided and minimized during project construction and that impacts are fully restored with no temporal losses or secondary impacts incurred.

This Draft Habitat Restoration Plan therefore, details pre- and post- construction surveys, reference sites, methods, timing, material sourcing, duration and extent of monitoring activities, success criteria, and adaptive management that would be used to restore each terrestrial and aquatic habitat type that may be disturbed by the project. Potential indirect effects such as altered hydrologic conditions, soil disturbance, habitat fragmentation, and invasive species are also addressed.

2 Impacted Habitats

The proposed project area is located within the Northern Humid Gulf Coastal Prairies (NHGCP) (34a) Ecoregion (Griffith, et al., 2007), a gently sloping, mostly flat, coastal plain. Drainage is generally poor and soils remain wet for parts of the year. The historical vegetation is mostly tallgrass grasslands.

From the far western extent of the proposed Project, Onshore Pipelines travel east along an existing right-of-way (ROW), through agricultural land and wind farms; the Onshore Pipelines' ROW then continues northeast, before passing Gregory approximately 1 mi (1.6 km) to its north, and moving directly east, continuing through agricultural pasture. Once the Onshore Pipelines are approximately 0.7 mi (1.1 km) northwest of The Falman Colonia, the Onshore Pipelines then turn southeast and travel through an agricultural and rural residential setting on the northeastern outskirts of Aransas Pass until they are approximately 0.5 mi (0.8 km) from the coastline. There they turn southwest and traverse parallel to the Union Pacific (UP) railway in a vegetated ROW within an urban setting on the outskirts of Aransas Pass City, until the Onshore Pipelines enter an area of light industry and finally turn southeast and towards the shoreline.

The Inshore Pipelines would cross the southern portion of San Jose Island, a barrier island located adjacent to Aransas Pass and the Mission-Aransas National Estuarine Research Reserve. San Jose Island is a privately-owned island that is managed principally for wildlife. The public is only allowed on beach areas, below the vegetation line; however, vehicles are prohibited (Port Aransas Chamber of Commerce and Tourist Bureau 2019).

Two smaller islands between San Jose Island and the mainland would also be crossed (Harbor Island and Stedman Island). Harbor Island is directly behind San Jose Island and is accessible from multiple named channels, one of which (Aransas Channel) splits the island into two halves. Harbor Island is zoned for industrial activity and is home to oil and gas facilities (Port of Corpus Christi [POCC] 2019a). Stedman Island is a smaller island between Harbor Island and the mainline, which is traversed by Texas State Highway 361 and powerlines and is also home to oil and gas facilities.

The Redfish Bay State Scientific Area (RBSSA) encompasses the majority of the inshore waters between the inland side of San Jose Island and the mainland and is bounded to the west and east by the Corpus Christi Channel and Aransas Bay, respectively. The RBSSA, which also includes South Bay, is designated as a State Scientific Area due to the approximately 32,000 acres (ac) (12,950 hectares [ha]) of biologically sensitive communities including seagrass beds, oyster reefs, marshes, and mangroves (Texas Parks and Wildlife Department [TPWD] 2019 a,b). Due to the presence of seagrasses and the potential for long-term scarring from propeller scars, TPWD recommends the use of airboats, johnboats, shallow water boats, or trolling motors when traversing shallow waters. Although anchoring is allowed in the area, it is illegal to allow the uprooting of any seagrass plants by submerged propeller (TPWD 2019a). The Inshore Pipelines will cross the RBSSA for a total of 6.5 mi (10.5 km); however, all open water areas will be crossed using horizonal directional drill (HDD).

The installation of the Proposed Project inshore pipeline infrastructure involves the utilization of numerous construction techniques including HDD, bores, and open cut conventional excavation.

A majority of the wetlands identified within the proposed project area are palustrine emergent (PEM) and estuarine intertidal emergent (E2EM) wetlands followed by palustrine scrub-shrub (PSS), estuarine intertidal unconsolidated shore palustrine (E2USP) and estuarine intertidal scrub-shrub (E2SS) wetlands respectively.

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

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

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

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

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

The operations facility located on Harbor Island will include approximately 12 acres of land and house the necessary infrastructure to support the transport of crude oil through the proposed pipeline infrastructure to the deepwater port for the loading of moored vessels. The most sensitive portion of the Offshore Pipelines' route is near shore, where it passes through shallow water and makes landfall on San Jose Island. To avoid impacts on the coast of the barrier island, which includes estuarine wetlands and sensitive coastal dune habitat, the Offshore Pipelines will be installed by HDD at this location.

At the seaward edge of the HDD (about 3,900 ft [1,188.7 m] from shore), the Offshore Pipelines will cross soft-bottom habitats between the HDD Box to their interconnection with the SPM buoy systems about 17.0 mi (27.4 km) offshore. Offshore, trenching and backfilling for installation of the pipelines will be completed using a submersible pipeline jetting sled operated from an anchored pipe-laying barge. The pipelines will be buried a minimum of 3 ft (0.9 m) below the sediment surface.

The principle floating structures associated with the Project DWP includes two (2) SPM buoy systems each consisting of a catenary anchor leg mooring (CALM) system, 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 Project SPM Buoy System 1 would be anchored in approximately 88.5 feet of water approximately 15.0 nautical miles (17.26 statute miles) off the coast of San Jose Island The Proposed Project SPM Buoy System 2 would be anchored in approximately 89.5 feet of water, approximately 1.7 miles northeast of SPM Buoy System 1. The two proposed SPM buoy systems would be connected via 1.68 miles of two (2) 30-inch-diameter pipelines to allow for either the single or simulations loading at vessels.

Both Proposed Project SPM buoy systems will be of the CALM type consisting of a specifically arranged anchor chain system extending to 72-inch-diameter pile anchor piles installed on the seafloor. The proposed 72-inch-diameter pile anchor piles are positioned in a circular pattern with a horizontal radius of approximately 300 feet from the center of the SPM buoys. The CALM mooring system is designed to be capable of holding the position of the SPM buoy with a moored vessel under design operating conditions. The configuration of the CALM mooring system arrangement is designed to provide flexibility for the location of the PLEM and reduce potential interference with sub-marine hoses.

Both SPM buoy systems each utilize a PLEM system which serves as the primary manifold and connection point between offshore pipelines and the SPM buoys. The proposed PLEMs will connect offshore pipelines to the SPM buoy systems through a series of 24-inch-diameter sub-marine hoses. The PLEM systems consist of a steel frame structure positioned directly beneath each of the proposed SPM buoys.

Refer to Attachment 1 for a Project Detail Maps depicting the workspaces and project site locations for the various components discussed above.

3 Habitat Restoration Plan

The habitat restoration plan details pre- and post- construction surveys, reference sites, methods, timing, material sourcing, duration and extent of monitoring activities, success criteria, and adaptive management that would be used to restore each terrestrial and aquatic habitat type that may be disturbed by the project. Differences in methods or plan components for varying habitat types are also detailed in the following sections. The habitat restoration plan addresses restoration of terrestrial upland and wetland habitats. This plan does not address restoration of marine construction workspaces.

3.1 Pre- and Post-Construction Survey

Surveys of the entire designated workspace and additional temporary workspace areas will be completed according to the construction plan prior to beginning clearing or construction activities of any kind. Surveys will be conducted by certified land surveyor using a local coordinate system and survey-grade accuracy for elevations and reviewed by the Environmental Inspector to verify accuracy of site conditions. Construction will commences following the engineering plans, construction procedures plan and Best Management Practices (BMP) Plan for the site. All construction workspaces comprising the disturbed area will be regraded to pre-construction elevation contours immediately following construction. The site will then be surveyed following construction completion and grading to ensure pre-disturbance elevations are restored prior to initiation of the Habitat Restoration Plan. Post-construction survey will be completed within six months of final grading to ensure the site is suitable for replanting or erosion control methods.

Terrestrial and aquatic surveys will be conducted dependent on the habitat area that was disturbed with the construction workspaces. All surveys will be maintained by the contractor in digital format for verification by the project engineers and Environmental Inspector as needed. Once construction is complete and the contractors have confirmed that pre-construction elevation contours have been restored to the construction workspace area, the site will be prepared for habitat restoration.

3.2 Reference Sites

For each habitat area that is disturbed due to construction workspace or additional temporary workspace, a reference site will be selected to determine the habitat restoration type for that particular area. The reference site will be determined and flagged prior to beginning any disturbance of the construction area. The reference site will be selected as the nearest 10 sq ft area located outside of the designated construction workspace that contains equivalent habitat vegetation community, hydrologic regime, and soil conditions. The reference site area will be marked and photographed prior to any construction disturbance for each habitat type.

The reference site photographs, and flagged area will be used to base the restoration success criteria and vegetation community makeup for each habitat type.

3.3 General Restoration Methods

3.3.1 Grading and Topsoil Conservation

In order to minimize disturbances and enhance the ability of the right-of-way to quickly recover post-construction, the project contractor will grade the right-of-way only where necessary for excavation of the pipeline trench and/or where slopes exist that would not accommodate safe and efficient travel of equipment and personnel within the right-of-way in order to leave in-tact the root-zone of existing vegetation, allowing for more efficient regeneration of vegetation post-construction. For the trench excavation and grading of slopes where needed, topsoil would be stored separate from subsoil materials within the right-of-way thus preserving nutrients and native seed bank stored within the upper profile of the soil and aiding in restoration post-construction by spreading the more fertile topsoil across the top of the restored area.

In areas designated for topsoil segregation, the actual depth of the topsoil, to a maximum depth of 12 inches, will be stripped from:

- The area excavated above the pipeline; or
- The area above the pipeline plus the spoil storage; or
- The area above the pipeline plus the working side; or
- Entire ROW

Topsoil segregation will be completed as required by applicable agreements with the landowner or by site-specific conditions. Stripped topsoil is to be stockpiled in a windrow along the edge of the right- of-way. The Contractor shall perform work in a manner to minimize the potential for subsoil and topsoil to be mixed. Under no circumstances shall the Contractor use topsoil to fill a low area. If required due to excessively windy conditions, topsoil piles shall be tackified using either water or a suitable tackifier (liquid mulch binder). Gaps in the rows of topsoil will be left in order to allow drainage and prevent ponding of water adjacent to or on the right-of-way. Topsoil shall not be utilized to construct ramps at road or waterbody crossings.

3.3.2 Relieving Compaction

Compaction will typically be relieved in subsoils that have received substantial construction traffic, prior to replacing and respreading topsoil. Compaction will typically not be relieved in topsoils that have been left in place and that have not been driven on. Any rock that is brought to the surface during decompaction activities will be removed until the quantity, size, and distribution of rock is equivalent to that found on adjacent land as determined by the Environmental Inspector. Compaction will typically be relieved as follows:

- Compacted cropland shall be ripped a minimum of 3 passes at least 18 inches deep and all pasture shall be ripped or chiseled a minimum of three passes at least 12 inches deep before replacing topsoil.
- Areas of the construction right-of-way that were stripped for topsoil salvage shall be ripped a minimum of 3 passes (in cross patterns, as practical) prior to topsoil replacement. The approximate depth of ripping shall be 18 inches (or a lesser depth if damage may occur to existing drain tile systems). After ripping, the subsoil surface shall be graded smooth and any subsoil clumps broken up (disc and harrow) in an effort to avoid topsoil mixing.
- The de-compacted construction right-of-way shall be tested by the Contractor at regular intervals for compaction in agricultural and residential areas. Tests shall be conducted on the same soil type under similar moisture conditions in undisturbed areas immediately adjacent to the right-of-way to approximate pre-construction conditions. Penetrometers or other appropriate devices shall be used to conduct tests
- Topsoil shall be replaced to pre-existing depths once ripping and discing of subsoil is complete up to a maximum of 12 inches. Topsoil compaction on cultivated fields shall be alleviated with cultivation methods by the contractor. If there is any dispute between the landowner and the project contractor as to what areas need to be ripped or chiseled, the depth at which compacted areas should be ripped or chiseled, or the necessity or rates of lime and fertilizer application, the appropriate Natural Resource Conservation Service (NCRS) shall be consulted by BWTT and the landowner
- Plowing under of organic matter including wood chips and manure, or planting of a green crop such as alfalfa to decrease soil bulk density and improve soil structure or any other measures in consultation with the Natural Resource Conservation Service (NCRS) shall be considered if mechanical relief of compaction is deemed not satisfactory.

3.3.3 Rock Removal

Rocks that are exposed on the surface due to construction activity will be removed from the right-of-way prior to and after topsoil replacement. This effort will result in an equivalent quantity, size and distribution of rocks to that found on adjacent lands, as determined by the Environmental Inspectors. Clearing of rocks may be carried out with

a mechanical rock picker or by manual means, provided that preservation of topsoil is assured. Rock removed from the right-of-way shall be hauled off the landowner's premises or disposed of on the landowner's premises at a location that is mutually acceptable to the landowner and to the contractors.

3.3.4 Right-of-Way and Pipeline Markers

Upon completion of all backfilling, cleanup and restoration, including mulching and seeding of the construction right-of-way, and during the time when the Contractor is making permanent repairs to fences, the Contractor shall install pipeline markers on each side of all roads, railroads, fence lines, stream crossings, and other areas where the pipeline markers do not conflict with intended land use.

3.3.5 Easement and Right-of-Way Conditions

The permanent easement or right-of-way is the corridor following the pipeline alignment which provides access to inspection and maintenance operations while the pipeline is in operation for the life of the project. The easement agreement between the landowner and the pipeline sponsor is a legal agreement. Some aspects of the agreement pertaining to habitat restoration and maintenance are outlined below.

The right of way easement holder, "Grantee," shall restore the contour of the right-of-way, as near as reasonably practical to do so, upon completion of all construction, maintenance, replacement or removal operations.

After completion of construction, and whenever repair or maintenance is made on its pipeline, Grantee shall restore the ground disturbed thereby as nearly as practical to the condition thereof prior to the disturbance. Grantee shall not store or dispose of any materials, substances or debris on the Easement, including without limitation, any rocks, brush, branches, or trees which Grantee may have cleared.

In the event that the landowner of the easement, or "Grantor," determines, in its sole discretion, that its business or operations will require or benefit from the use of any portion of the Easement, Grantee, at its sole risk and expense, shall relocate all or any part of said pipeline, as applicable, within ninety (90) days after notification from Grantor. In such event, Grantor shall furnish Grantee with a suitable alternative right of way across the Property at no additional cost, subject to the terms of the easement agreement. Grantee agrees, in the event of such relocation request by Grantor, that it shall restore the surface disturbed thereby as nearly as practicable to the condition thereof prior to the disturbance.

3.4 Habitat-Specific Methods

3.4.1 Agricultural Land and Residential Landscape

3.4.1.1 Erosion and Settling

In the first year after construction, BWTT will inspect the ROW to identify areas of erosion or settling. Subsequently, BWTT will monitor erosion and settling through landowner reporting. Landowner reporting will be facilitated through use of BWTT's toll-free telephone number, which will be made available to all landowners on the ROW. Landowner reporting also may be facilitated through contact with BWTT's field offices. BWTT plans to minimize impacts on soil productivity that may result from construction activities but recognizes that some short- to long-term decreases in agricultural productivity are possible.

3.4.1.2 Seeding and Replanting

Areas of disturbance in native range shall be seeded with a native seed mix according to local NRCS after topsoil replacement. Improved pasture or crop land will be seeded with a seed mix approved by individual landowners. In residentially landscaped areas, immediately after backfilling the trench, all lawn areas, shrubs, specialized landscaping, fences, and other structures within the construction work area to its pre-construction appearance or

the requirements of the landowner. To the extent possible, mature trees and landscaping will be preserved while ensuring the safe operation of construction equipment.

3.4.1.3 Invasive Species Control

Invasive species of particular concern in Nueces and San Patricio counties is Chinese Tallow (*Triadica sebifera*). Other noxious weeds include balloonvine, Brazillian peppertree, chinaberry, giant reed, kudzu vine, and torpedograss to name a few. Invasive and noxious species have a greater likelihood of establishing in disturbed areas, such as construction sites, following soil disturbance due to their inherent nature to outcompete early growth of native species and propensity for quick proliferation.

The Chinese tallow tree represents a significant invasive species problem in many areas of Texas and across the southern United States. It adversely affects the diversity of native plants by invading and eventually dominating habitats ranging from marshes, to coastal prairies, to river bottoms, to upland forests, as well as disturbed sites and abandoned agricultural fields. The tree prefers wet soils but is very adaptable. The rapid forestation of the Chinese tallow tree has contributed significantly to the degradation of wetlands along the Gulf Coast. It is believed that the tree may alter soil chemistry, allowing the species to self-perpetuate once established.

The Chinese tallow tree control plan requires mechanical (cutting and hand pulling) to effectively remove this species during site preparation. Field personnel will be trained to identify Chinese tallow tree and use the prescribed mechanical treatment procedures. Control of Chinese tallow tree within the permitted construction workspace will be in accordance with landowner agreements. Grading and topsoil segregation construction techniques typically leave Chinese tallow trees systems behind, which allows for prolific re-sprouting. The entire tree system should be removed when possible. Vegetative debris containing Chinese tallow tree or its seeds should be segregated from other plant material for off-site disposal. Rootstock should be ground if on-site disposal is required. Field personnel will cut any remaining Chinese tallow trees found within the workspaces at ground level with power equipment or manual saws (SE-EPPC 2008). Debris will be gathered and transported to an approved off-site disposal facility. Cutting is most effective when trees have begun to flower to prevent seed production. Because Chinese tallow tree spreads by suckering, re-sprouts are common after treatment. Cutting is an initial control measure and will require repeated cutting of re-sprouts.

Chinese tallow is effectively controlled by removal of young seedlings; hand- or machine-pulling of seedlings and saplings provides excellent control. Plants should be pulled as soon as they are large enough to grasp but before they produce seeds. Seedlings are best pulled after a rain when the soil is loose. The entire root must be removed since broken fragments may re-sprout Because Chinese tallow is a successful invasive species, there is always a potential for the plant to establish. However, the goal of this plan is to allow native and other desirable plants sufficient opportunity to establish within areas disturbed during construction, thus preventing a monoculture invasion by tallow.

3.4.2 Upland Herbaceous

3.4.2.1 Seeding

The final seed mix for upland emergent or grassland areas shall be based on input from the local Natural Resource Conservation Service and the availability of seed at the time of reclamation. The landowner may request specific seeding requirements during easement negotiations.

- Certificates of seed analysis are required for all seed mixes to limit the introduction of noxious weeds and invasive species.
- Seeding shall follow cleanup and topsoil replacement as closely as possible. Seed shall be applied to all disturbed surfaces (except cultivated fields unless requested by the landowner) as indicated on the construction drawings.

- If mulch was applied prior to seeding for temporary erosion control, the Contractor shall remove and dispose of the excess mulch prior to seedbed preparation to support an adequate seedbed; and to ensure that seed incorporation or soil packing equipment can operate without becoming plugged with mulch.
- Identified seeding areas shall be seeded as specified by the contractor. Seeding rates shall be based on pure live seed.
- The Contractor shall delay seeding as directed by BWTT until the soil is in the appropriate condition for seeding.
- The Contractor shall use a approved drill seeder equipped with a cultipacker designed and equipped to apply grass and grass-legume seed mixtures with mechanisms such as seed box agitators to allow even distribution of all species in each seed mix, with an adjustable metering mechanism to accurately deliver the specified seeding rate and with a mechanism such as depth bands to accurately place the seed at the specified depth.
- The Contractor shall operate drill seeders at an appropriate speed, so the specified seeding rate and depth is maintained, as directed by BWTT
- The Contractor shall calibrate drill seeders so that the specified seeding rate is planted. The row spacing on drill seeders shall not exceed 8 inches.
- The Contractor shall plant seed at depths consistent with the local or regional agricultural practices.
- Broadcast or hydro seeding, used in lieu of drilling, shall utilize NRCS-recommended seeding rates. Where seed is broadcast, the Contractor shall use a harrow, cultipacker, or other equipment immediately following broadcasting to incorporate the seed to the specified depth and to firm the seedbed.
- The Contractor shall delay broadcast seeding during high wind conditions if even distribution of seed is impeded.
- The Contractor shall hand rake all areas that are too steep or otherwise cannot be safely harrowed or cultipacked in order to incorporate the broadcast seed to the specified depth.
- Hydro seeding may be used, on a limited basis, where the slope is too steep or soil conditions do not warrant conventional seeding methods. Fertilizer, where specified, may be included in the seed, virgin wood fiber, tackifier, and water mixture.
- BWTT shall work with landowners to discourage intense livestock grazing of the construction right-of-way during the first growing season by utilization of temporary fencing or deferred grazing, or increased grazing rotation frequency.

3.4.3 Upland Forested

Mitigation measures are required to ensure that pipeline construction activities have a minimal impact on forested lands. Clearing, grubbing, and grading of trees, brush, and stumps shall be performed in accordance with the following mitigative measures in addition to the requirements previously stated unless otherwise approved or directed by BWTT based on site-specific conditions or circumstances.

- Prior to the start of clearing activity, right-of-way boundaries, including pre- approved temporary workspaces, shall be clearly staked to prevent disturbance of unauthorized areas.
- If trees are to be removed from the construction right-of-way, BWTT shall consult with the landowner or landowner's designate to see if there are trees of commercial or other value to the landowner. Timber shall be salvaged as per landowner request.

- Tree stumps shall be grubbed to a maximum of 5 feet on either side of the trench line and where necessary for grading a level surface for pipeline construction equipment to operate safely.
- The contractor shall follow the landowner's or landowner designee's desires as stated in the easement agreement regarding the disposal of trees, brush, and stumps of no value to the landowner by burning, burial, etc., or complete removal from any affected property.
- Timber salvage operations shall use cut-off-type saw equipment. Felling shall be undertaken in a manner that minimizes butt shatter, breakage, and off ROW disturbance. Skidders or alternate equipment shall be used to transport salvaged logs to stacking sites.
- Trees shall be felled to fall toward the center line of the right-of-way to avoid breaking trees and branches off ROW. Leaners (felled trees that inadvertently fall into adjacent undisturbed vegetation) shall be salvaged.
- Trees and slash falling outside the right-of-way shall be recovered and disposed.
- Salvaged logs shall be limbed and topped before removal from the construction right-of-way. Log decks (if required) shall be oriented to best facilitate loading by picker trucks and be located adjacent to the working side of the right-of-way, where possible.
- The Contractor shall not be allowed to dispose of woody debris in wooded areas along the pipeline right-of-way.
- Pruning of branches hanging over the right-of-way shall be done only when necessary, for construction. Any branch that is broken or seriously damaged should be cut off near its fork and the collar of the branch preserved.
- All tree wastes, stumps, tree crowns, brushes, branches, and other forest debris shall be either burned, chipped (using a mobile chipper), or removed from the right-of-way according to BWTT instructions contained in the specific construction plan. Burial of this waste material on the site by the Contractor shall require the landowner’s authorization. Chips must not be spread over cultivated land.
- However, they may be spread and incorporated with mineral soil over the forest floor at a density that shall not prevent revegetation of grass.
- Stump removal and brush clearing shall be done with bulldozers equipped with brush rakes to preserve organic matter.

3.4.3.1 Maintenance of ROW

BWTT will maintain the permanent right-of-way free of structures, trees and shrubs so that the pipeline is visible during aerial inspections and accessible in the case of an emergency. Previously forested areas will be restored to herbaceous upland habitat following construction and maintained as emergent upland ROW for the life of the project. Seeding the ROW will follow the restoration plan outlined in Section 3.4.3 above for emergent upland areas.

3.4.3.2 Mitigating Fragmentation

Forest fragmentation due to maintenance of cleared pipeline ROW is a concern for landowners and environmental stewards. Fragmenting forested areas can negatively impact overall forest habitat quality and increase the introduction of invasive species on previously unaffected forests. Pipeline installation can mitigate the effects of forest fragmentation by minimizing the maintenance ROW to the minimum width through forested areas. BWTT will minimize the maintained ROW through forested areas as appropriate through signage and pipeline markers in order to reduce overall impact of pipeline easement fragmentation. The forested area on either side of the pipeline ROW will be allowed to naturally restore with no maintenance mowing conducted outside of the pipeline ROW.

3.4.4 Emergent Wetland

Emergent wetland habitat are areas previously identified as wetland areas by BWTT and USACE within the construction corridor or other temporary workspaces. All wetland areas will be clearly marked and identified with flagging during construction. A standard wetland environment typically has soils that are saturated and noncohesive.

Difficult trenching conditions are likely, resulting in excessively wide trenches. In these wetland environment types, supplemental support in the form of timber riprap or prefabricated equipment mats may be required for construction equipment to safely and efficiently operate. A flooded wetland involves the presence of standing water over much of the wetland area. Equipment typically cannot traverse the wetland and must generally move around that portion of the area. Access is typically limited to marsh backhoes or equipment working from flexifloats or equivalents. All impacts to emergent wetlands in temporary construction workspaces are deemed temporary impacts and proposed to be restored to habitat quality and function following construction and are not included in the USACE-approved mitigation plan for Waters of the U.S.

3.4.4.1 Elevation Restoration

All timber riprap, timber mats, and prefabricated equipment mats and other construction debris shall be removed upon completion of construction. As much as is feasible, the Contractor shall replace topsoil and restore original contours with no crown over the trench. Any excess spoil shall be removed from the wetland. The Contractor shall stabilize wetland edges and adjacent upland areas by establishing permanent erosion control measures and revegetation, as applicable, during final clean up.

3.4.4.2 Revegetation

The Contractor shall not use fertilizer, lime, or mulch in wetlands unless required in writing by the appropriate land management agency. Studies have shown that it is usually not necessary to plant any wetland plants in the wetland itself. Where adequate seedbed exists, simply returning water to the area will result in aquatic vegetation redeveloping. The aquatic plants that will likely grow include, arrowhead, cattails, sedges, marsh milkweed, water smartweed and bulrushes, or other species present in the seed bank based on the reference area adjacent to the site. For portions of the right-of-way undisturbed by trench excavation or grading, vegetation would remain relatively undisturbed and be allowed to regenerate from the already established root system.

3.4.5 Scrub-Shrub Wetland

Scrub-shrub wetland habitat can be found in both palustrine and estuarine project areas, specifically estuarine black mangrove wetlands, that will be impacted by the construction areas of the project. BWTT will maintain the permanent right-of-way free of structures, trees and shrubs so that the pipeline is visible during aerial inspections and accessible in the case of an emergency. All unavoidable, permanent impacts to scrub-shrub wetlands, including palustrine scrub-shrub and mangrove wetlands, are proposed to be mitigated for according to USACE requirements and mitigation as discussed in the Permittee Responsible Mitigation Plan for the project. Impacted Scrub-shrub wetland habitats will be restored to emergent wetland habitat along the pipeline ROW. All restoration of the emergent wetland habitat will follow the guidance outlined in section 3.4.4 above. Scrub-shrub plant species and mangroves will not be replanted as part of the restoration as these wetlands are mitigated for in the Permittee Responsible Mitigation Plan. If scrub-shrub species or mangroves reestablish over time in the construction area, outside of the maintained pipeline ROW, they will not be removed.

Due to the conversion of scrub-shrub wetland to emergent wetland habitat as a result of the permanent easement of the pipeline, mitigation for scrub-shrub areas is provided in the project permittee-responsible mitigation plan, as approved by the USACE. All wetland areas within conservation lands or easements will be restored to a level consistent with any additional criteria established by the relevant managing agency.

3.4.6 Riparian and Aquatic Habitat

All riparian crossings and aquatic areas within Redfish Bay are proposed to be crossed with HDD pipeline installation. Therefore, there are no anticipated impacts to aquatic or riparian habitats. Restoration of fringe habitats located within the HDD workspaces on the boundaries of the HDD crossing area will follow habitat specific restoration guidelines as outlined above. Unanticipated impacts to riparian or aquatic habitats due to HDD inadvertent return

discharges will be mitigated according to the Project's Inadvertent Return Contingency Plan, previously provided under separate cover.

3.5 Timing

All restoration of area grading, elevation contours, and soil quality should be completed immediately following completion of pipeline installation and hydrostatic testing. Seeding of bare soil areas should be performed within the recommended dates of the seed mix, as specified by USDA NRCS.

3.6 Material Sourcing

All pipeline trench backfill material shall be sourced from the adjacent stockpile of native material. Topsoil will be segregated from backfill material and placed on the top 12 inches of soil prior to final grading. Any remaining stockpiled material will be removed from the project construction area. There will be no foreign material used to backfill the pipeline trench or used as topsoil following construction.

Seeding mixes will be sourced from local soil conservation authority approved vendors (NRCS) as specified in the written recommendations for seed mixes, rates, and dates obtained from the local soil conservation authority or the request of the landowner or land management agency. Seeding is not required in cultivated croplands unless requested by the landowner.

3.7 Post-Restoration Monitoring and Maintenance

BWTT will conduct follow-up inspections of all disturbed areas, as necessary, to determine the success of revegetation and address landowner concerns. At a minimum, inspection will be conducted after the first and second growing seasons, unless otherwise requested from a landowner. Revegetation in non-agricultural areas shall be considered successful if upon visual survey the density and cover of non-nuisance vegetation, per permit requirements.

BWTT will monitor and correct problems with drainage and irrigation systems resulting from pipeline construction in agricultural areas until restoration is successful. Restoration shall be considered successful if the right-of- way surface condition is similar to adjacent undisturbed lands, construction debris is removed (unless otherwise approved by the landowner or land managing agency), revegetation is successful, and proper drainage has been restored. Routine vegetation mowing or clearing over the full width of the permanent right-of-way in uplands will be accomplished as per permit requirements. However, to facilitate periodic corrosion/leak surveys, an appropriate corridor on the pipeline may be cleared at a frequency necessary for inspection. Efforts to control unauthorized off-road vehicle use, in cooperation with the landowner, shall continue throughout the life of the project. Maintain signs, gates, and access roads as necessary.

3.8 Success Criteria

At least one Environmental Inspector is required for each construction spread during construction and restoration. The number and experience of Environmental Inspectors assigned to each construction spread shall be appropriate for the length of the construction spread and the number/significance of resources affected. Environmental Inspectors shall have peer status with all other activity inspectors. Environmental Inspectors shall have the authority to stop activities that violate the environmental conditions or stipulations of all environmental permits or approvals, or landowner easement agreements; and to order appropriate corrective action.

The previously identified reference site will be used to base success criteria for each habitat restoration site. Success criteria specific to each habitat are discussed below. Following construction and restoration of the construction areas, there will be 3 habitat types remaining: Agricultural or residential landscaped land, herbaceous upland, and emergent wetland. All forested or shrub areas will be permanently converted to herbaceous due to the permanent maintenance and safety access requirement of the pipeline easement.

3.8.1 Agriculture/Residential Land

Success criteria of agricultural restoration or restoration of landscaped residential areas is to be based on matching the restored areas' soil and vegetation condition to the reference area, and success will be based on initial inspection from the Environmental Inspector and, following inspection, any landowner reporting. Following the restoration activity, BWTT will continue with routine pipeline aerial inspection and ROW maintenance but will rely on landowner reporting for any unsuccessful soil restoration or revegetation restoration results. Landowner reporting will be facilitated through use of BWTT's toll-free telephone number, which will be made available to all landowners on the ROW. Landowner reporting also may be facilitated through contact with BWTT's field offices.

3.8.2 Upland Herbaceous

Adjacent reference areas for upland herbaceous habitats will be surveyed and composition of species identified. Revegetation in non-agricultural areas shall be considered successful if upon visual survey the density and cover of non-nuisance vegetation are similar in density and cover to adjacent undisturbed lands of the reference site. If, following 1 year, after restoration of the site was completed, the area has not reached similar visual species composition corresponding to species also present at the reference site, adaptive management techniques will be applied.

3.8.3 Emergent Wetland

Adjacent reference areas for emergent wetland habitats will be surveyed and absolute cover of each identified emergent wetland species identified. The success criteria for restored upland herbaceous habitat areas will consist of meeting 30% of the absolute aerial coverage value of the reference site and contains similar species composition following one growing season. If, following 1 year after restoration of the site was completed, the area has not reached at least 30% aerial coverage of species composition corresponding to species also present at the reference site, adaptive management techniques will be applied.

3.9 Adaptive Management

Adaptive management will consist of remedial actions to take place in the event that the success criteria for a restoration site have not been met following the initial restoration effort. Adaptive management will consist of an initial assessment of the restoration site to determine what the potential issue may be as to why the site is not meeting success criteria. The assessment may result in the environmental inspector deciding that there is a need for an elevation survey of the habitat area, and/or a vegetation survey of the site and an adjacent 10 sq ft reference area. Vegetation survey of an area larger than 10sq ft on the habitat restoration site may be completed using a reference quadrat. Documentation of the site elevation and species composition will be recorded and filed as part of the overall monitoring and maintenance records of the project.

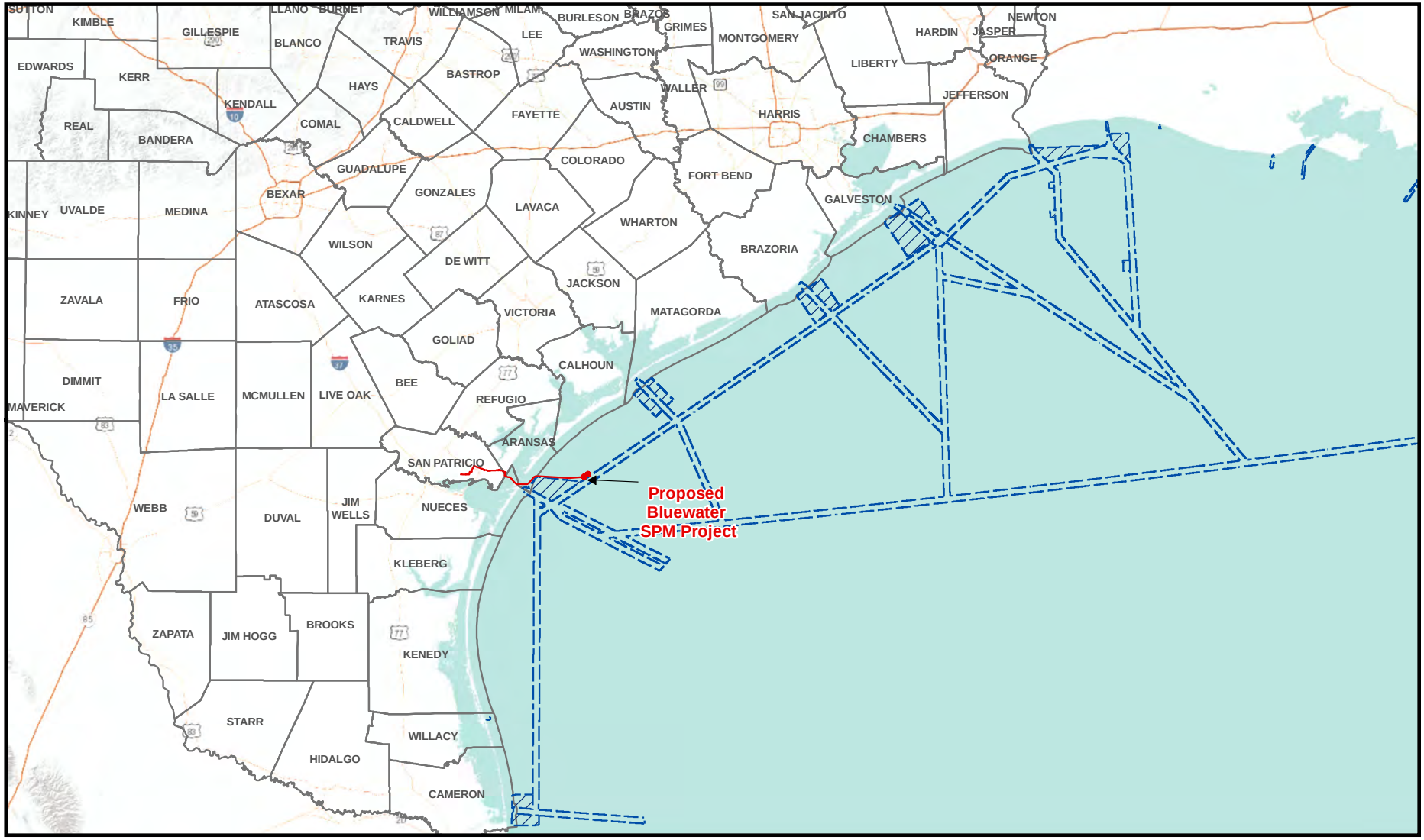
Dependent on the results of the surveys, it may be determined by the environmental contractor that re-grading, re-contouring, or re-seeding of the site is necessary. Initiation of adaptive management will begin a new 1-year monitoring period for the specific failed habitat area, which boundaries are determined by the vegetation survey. The goal for the site would be to meet the success criteria within the next 1 year following adaptive management.

3.10 Records

All records of surveys, landowner communication, restoration activities, and adaptive management will be completed by the Environmental Inspector, or contractor, and maintained by BWTT for the life of the project to be made available to resource agencies or permitting authority upon request. At the end of the 1-year success criteria benchmark, a final report or letter will be documented by BWTT, verifying the success of all restoration activities for the project. The letter can be submitted to the respective agencies, as per permit requirement.

ATTACHMENT 1
PROJECT FIGURES AND CONSTRUCTION WORKSPACE MAPS

View text description of map.



Map Details

- Proposed Project Components
- Navigational Fairways
- Anchorage Areas
- Counties

1 inch = 50 miles

0 25 50

Miles

N W E S

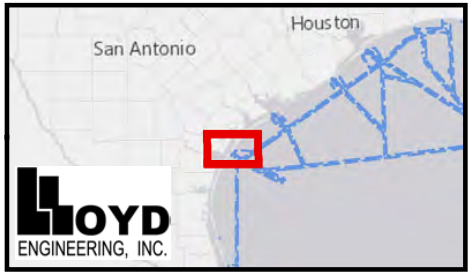
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

Figure 1
Proposed Project Vicinity Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 03, 2021

View text description of map.



Map Details

- SPM Buoy
- Onshore Pipelines
- Inshore Pipelines
- Offshore Pipelines
- Harbor Island Booster Station
- SPM Buoy ATBA and Safety Zones
- Navigational Fairways
- Navigation Channels
- Anchorage Areas
- Counties

1 inch = 5 miles

0 2.5 5

Miles

N W E S

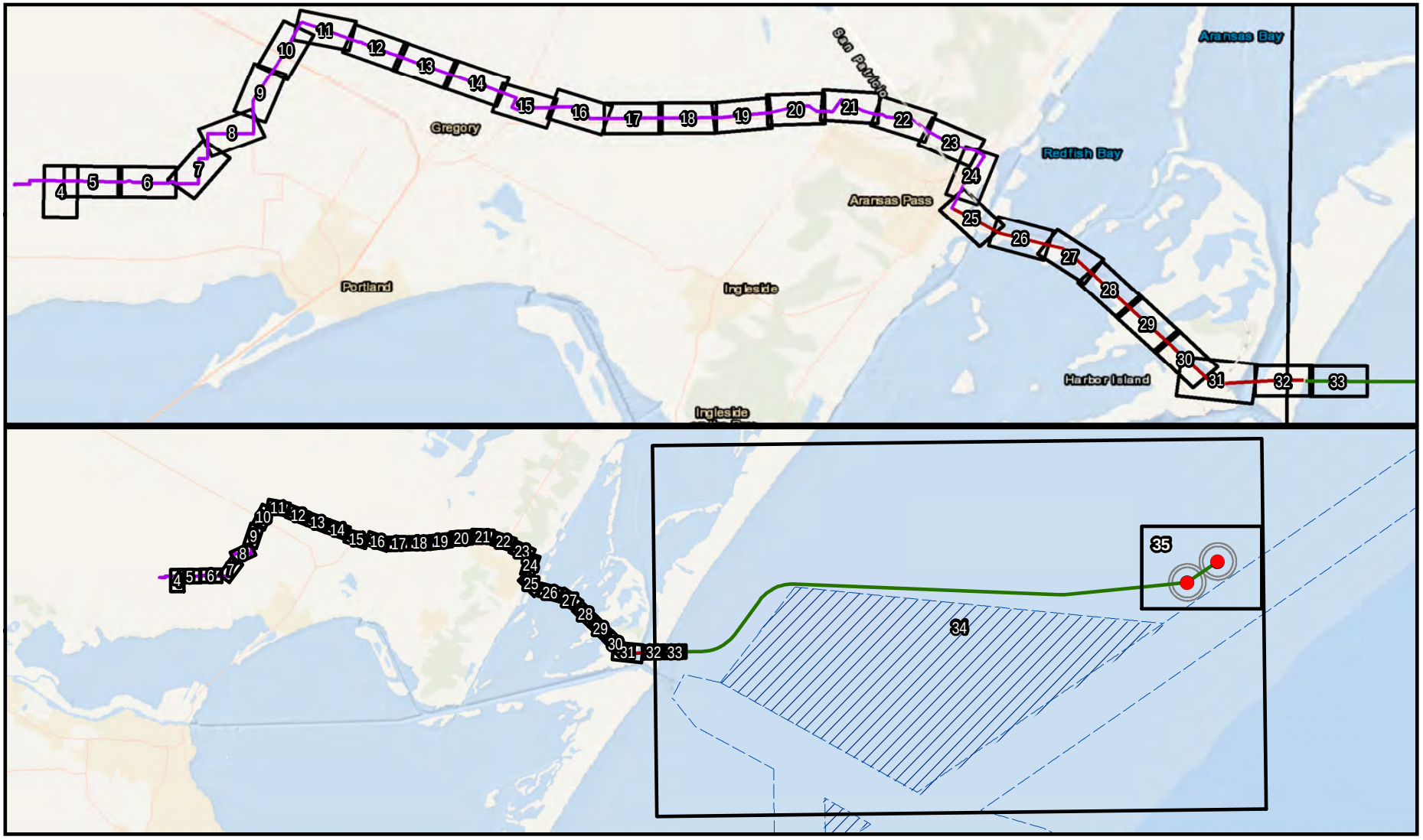
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

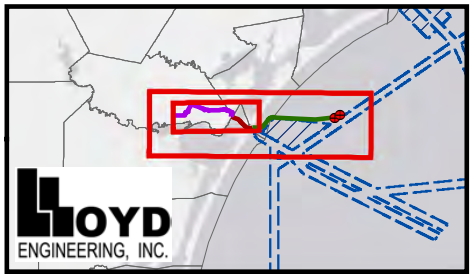
Figure 2
Proposed Project Component Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.





LLOYD ENGINEERING, INC.

Map Details

- Figure Index
- SPM Buoy System
- Onhshore Pipelines
- Inshore Pipelines
- Offshore Pipelines
- SPM Buoy ATBA and Safety Zones
- Navigational Fairways
- Anchorage Areas

1 inch = 6 miles

0 3 6

Miles

N W E S

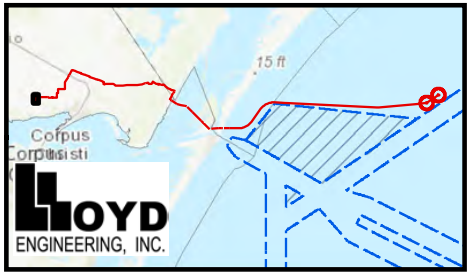
Coordinate System: NAD 1983 HARN StatePlane Texas South FIPS 4205 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983 HARN
Units: Foot US

Figure 3
Proposed Project Figure Index

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 03, 2021

View text description of map.



Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

1 inch = 800 feet

0 405 810

Feet

N

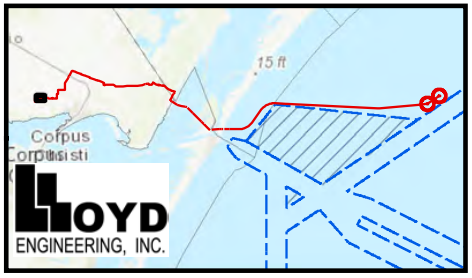
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

Figure **4**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.



Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

1 inch = 500 feet

0 250 500

Feet

N

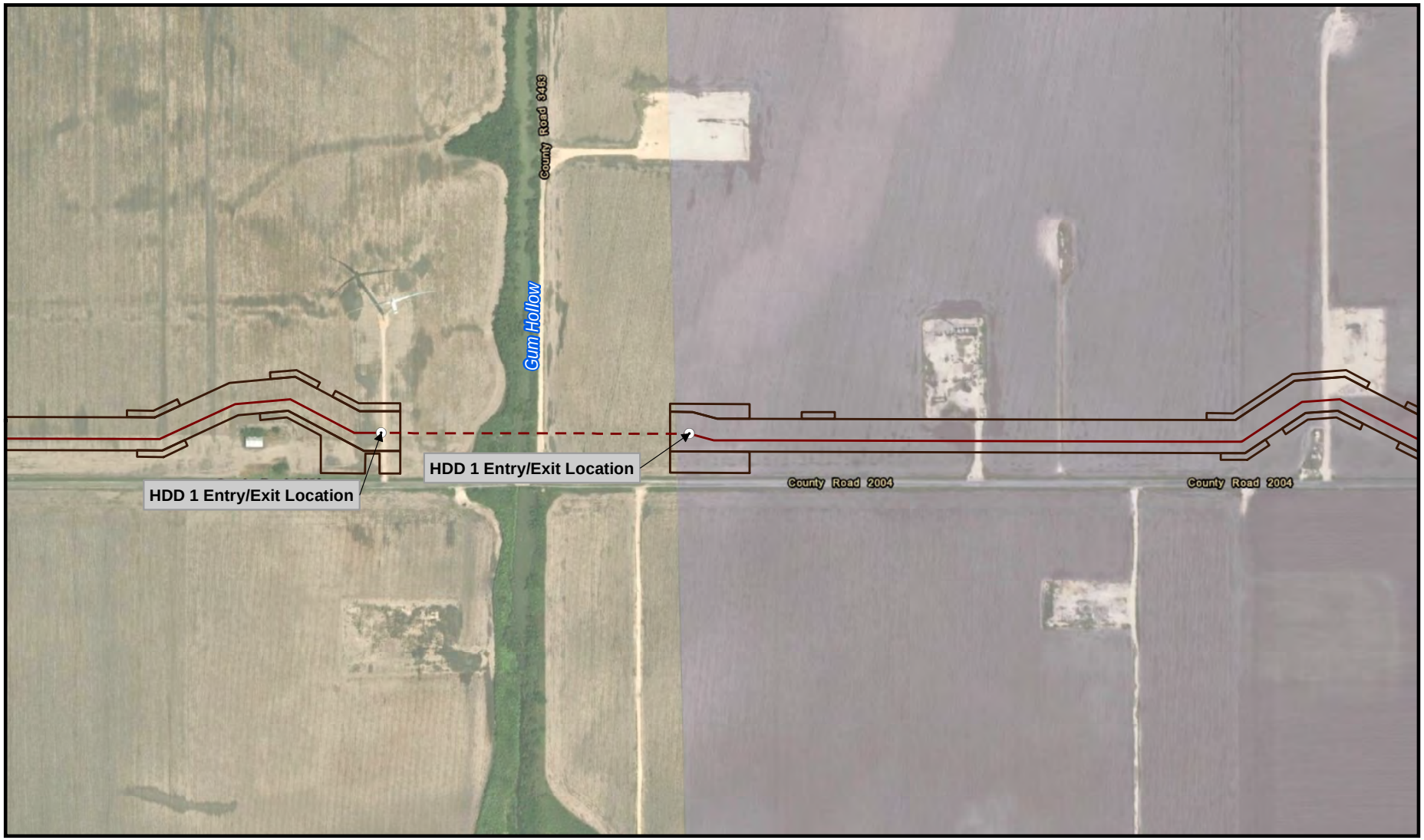
Coordinate System: NAD 1983 2011
StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

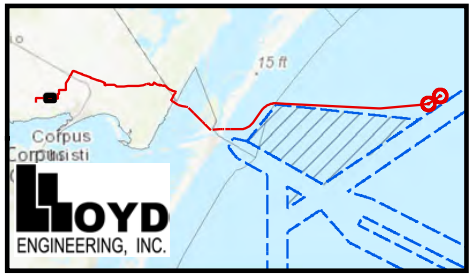
Figure **5**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.





Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

1 inch = 500 feet

0 250 500

Feet

N

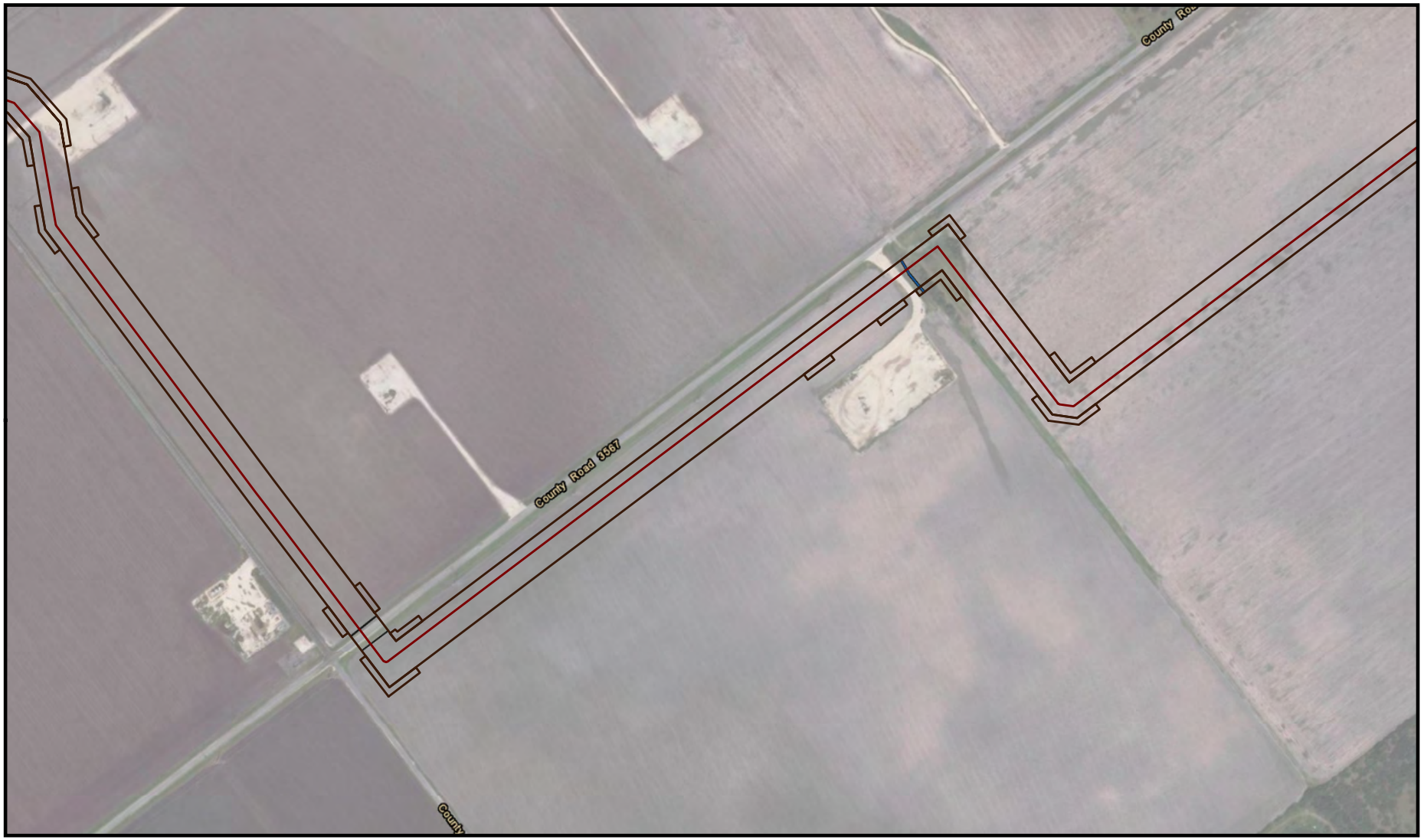
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

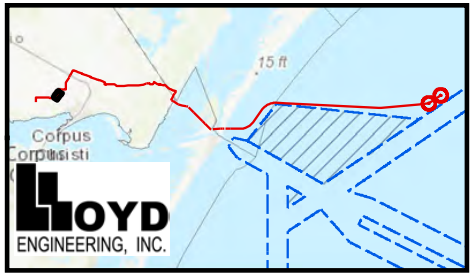
Figure **6**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.





Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

1 inch = 500 feet

0 250 500

Feet

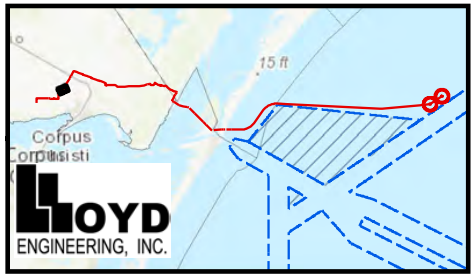
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

Figure 7
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.



Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

1 inch = 500 feet

0 250 500

Feet

N

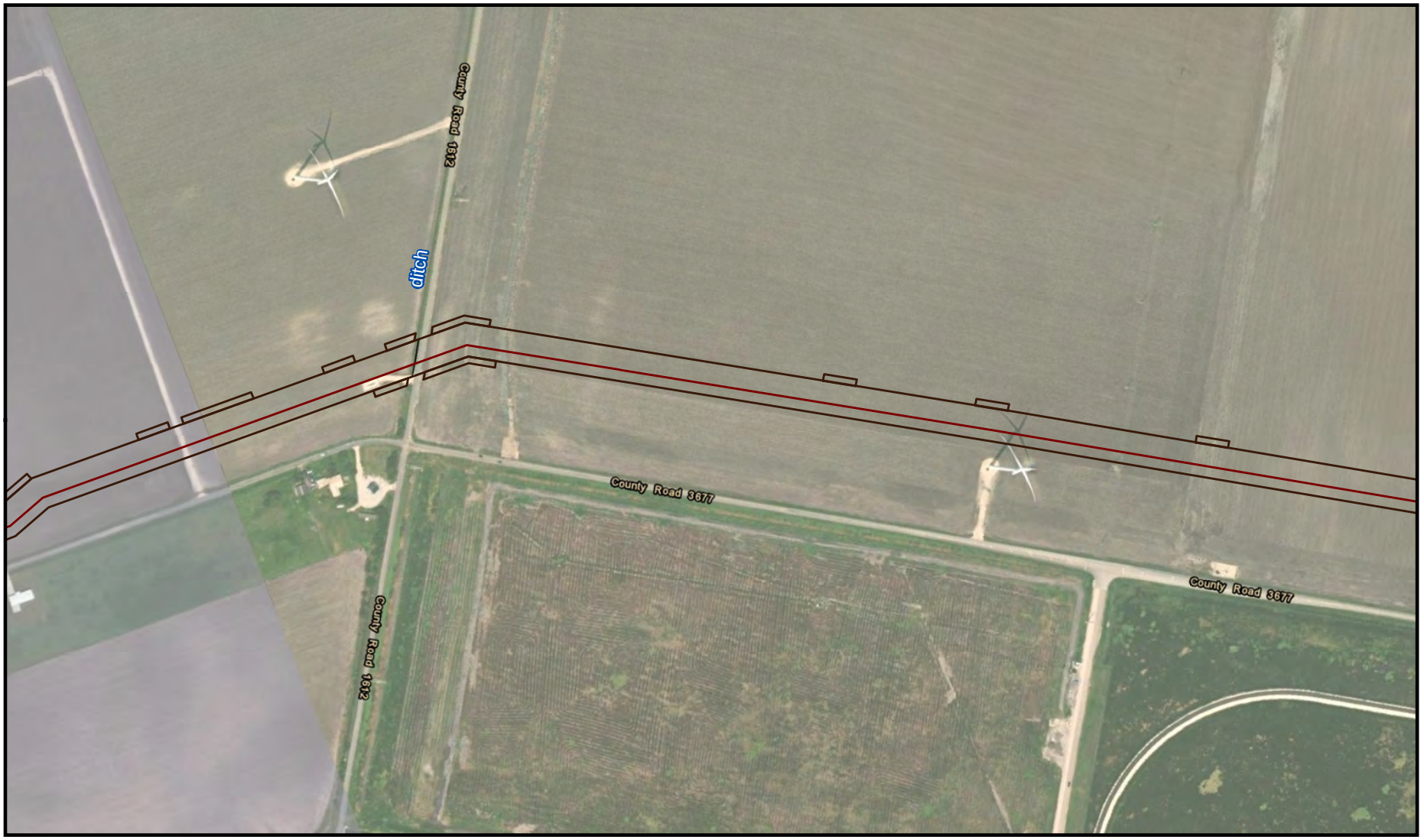
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

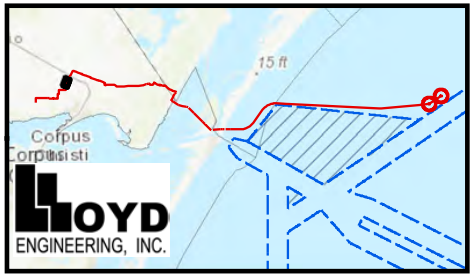
Figure **8**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.





Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

1 inch = 500 feet

0 250 500

Feet

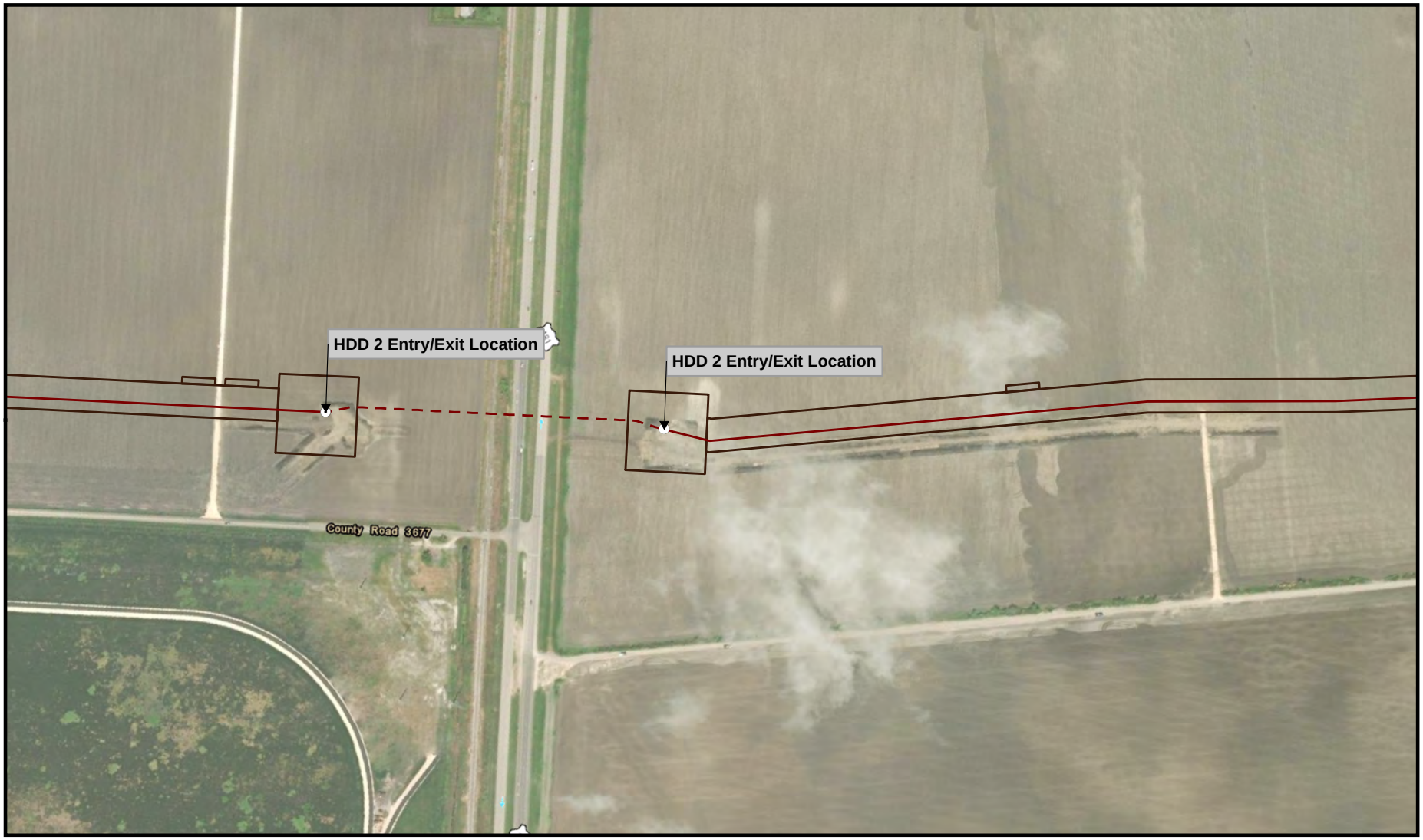
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

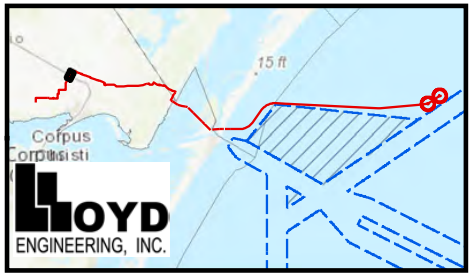
Figure **9**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.





Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

1 inch = 500 feet

0 250 500

Feet

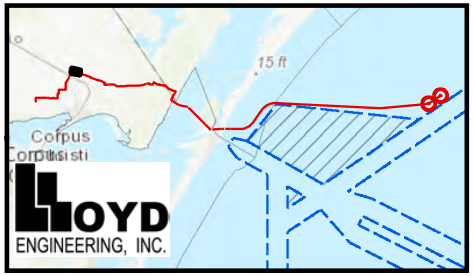
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

Figure **10**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.



Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

1 inch = 500 feet

0 250 500

Feet

N

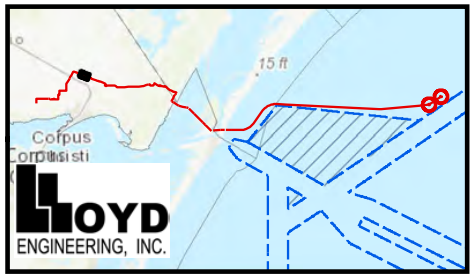
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

Figure **11**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.



Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

1 inch = 500 feet

0 250 500

Feet

N

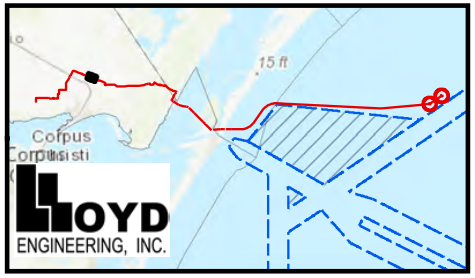
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

Figure **12**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.



Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

1 inch = 500 feet

0 250 500

Feet

N

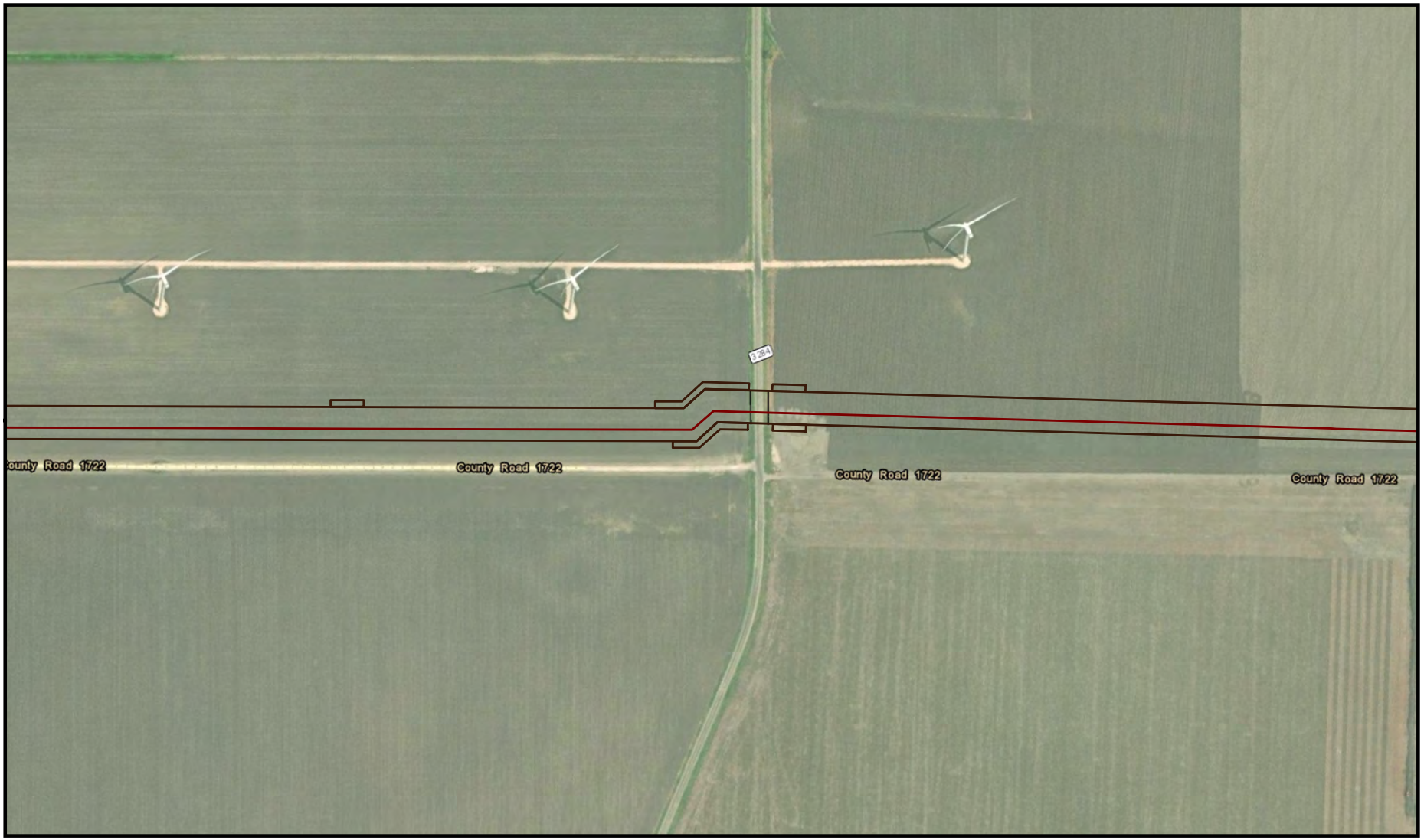
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

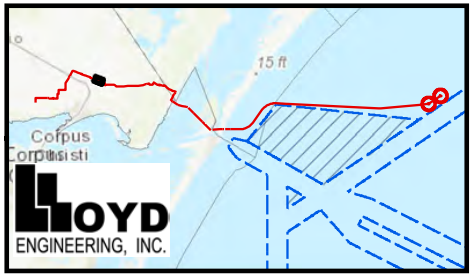
Figure **13**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.





Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

1 inch = 500 feet

0 250 500

Feet

N

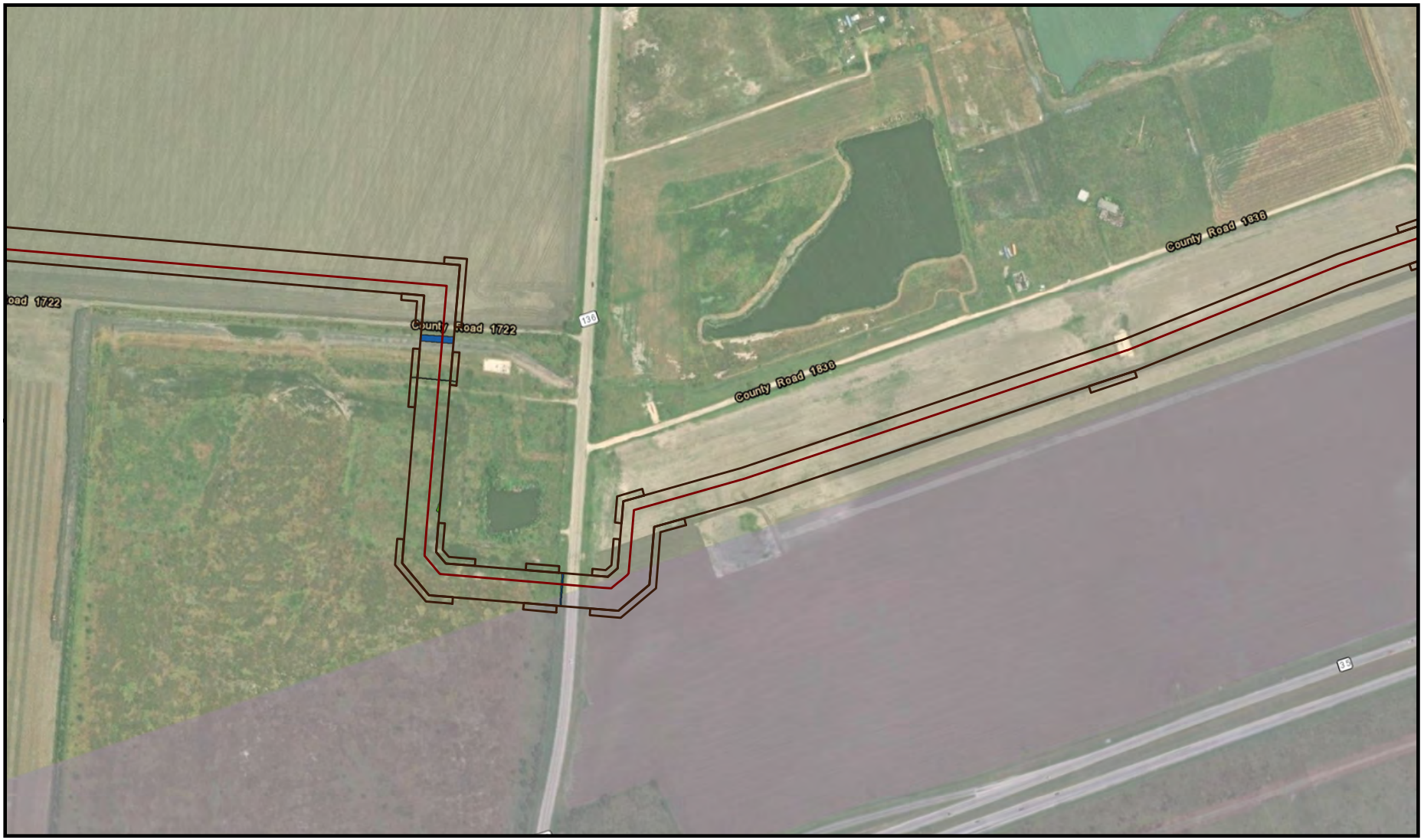
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

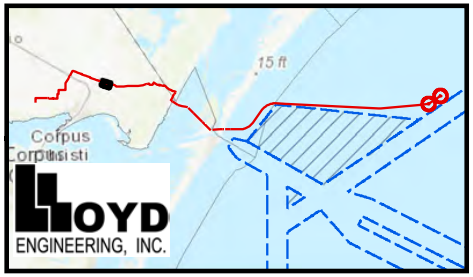
Figure **14**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.





Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

1 inch = 500 feet

0 250 500

Feet

N

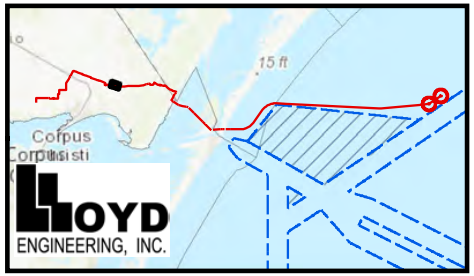
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

Figure **15**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.



Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

1 inch = 500 feet

0 250 500

Feet

N

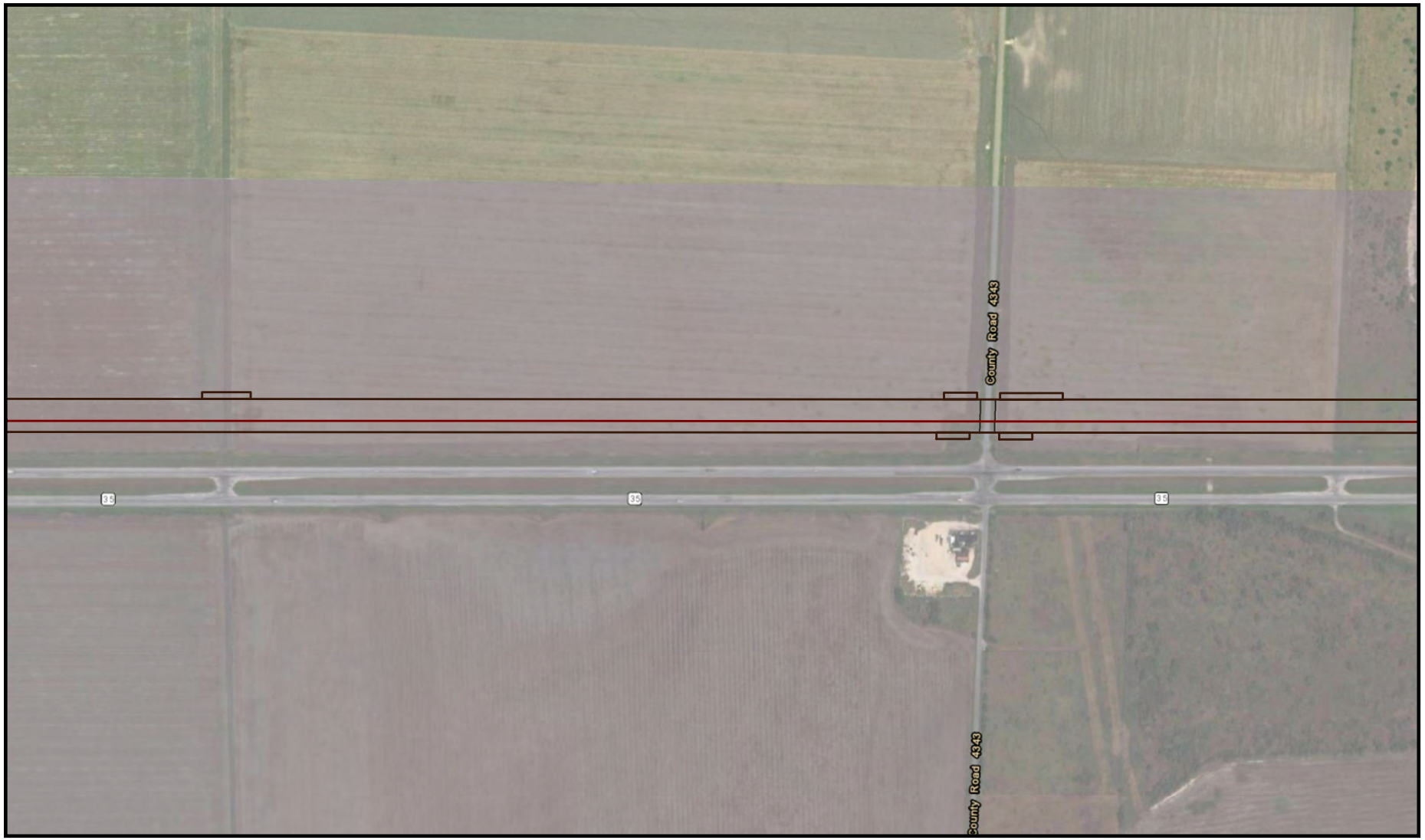
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

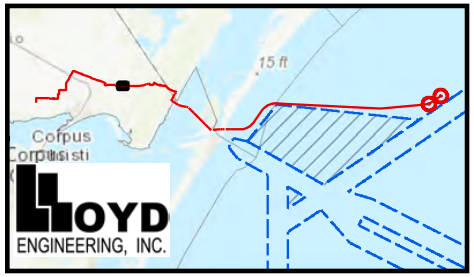
Figure **16**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.





Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

1 inch = 500 feet

0 250 500

Feet

N

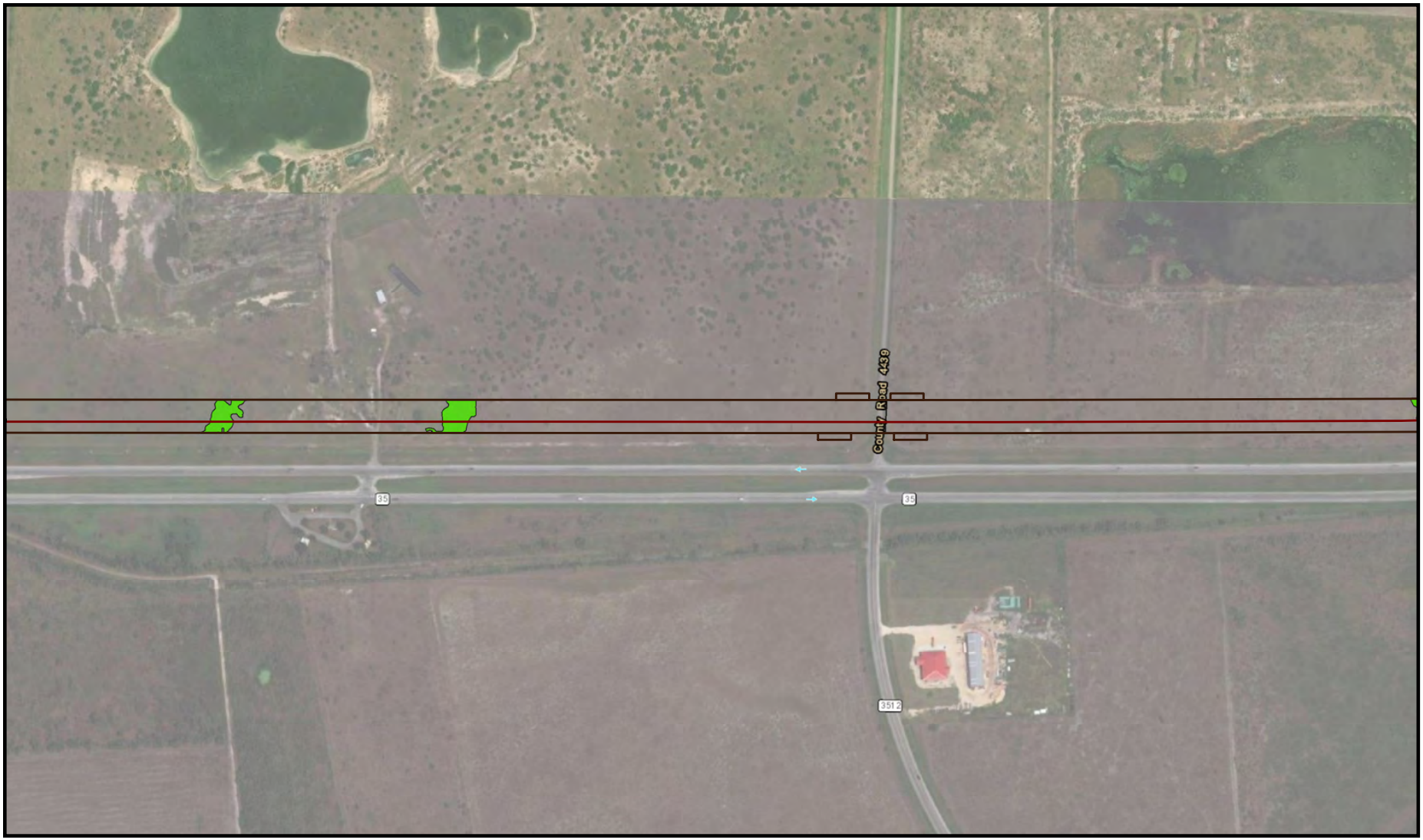
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

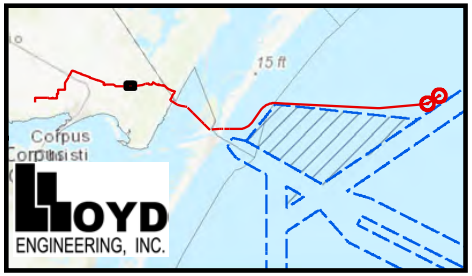
Figure **17**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.





Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

1 inch = 500 feet

0 250 500

Feet

N

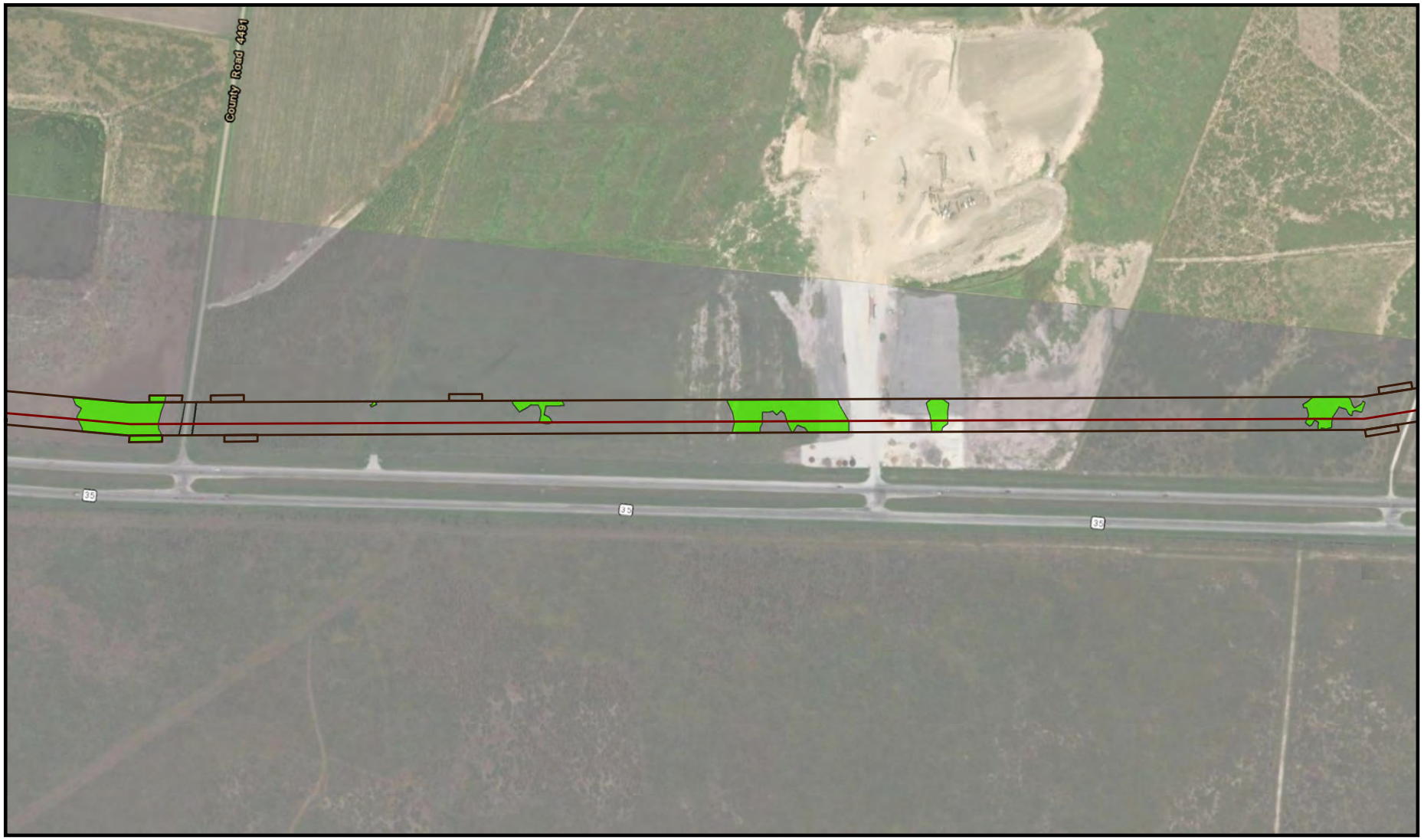
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

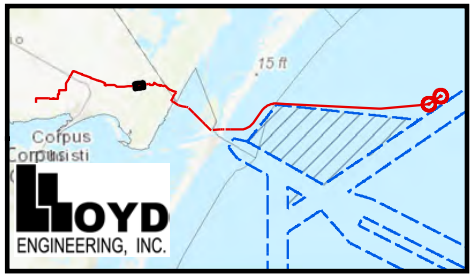
Figure **18**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.





Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

1 inch = 500 feet

0 250 500

Feet

N

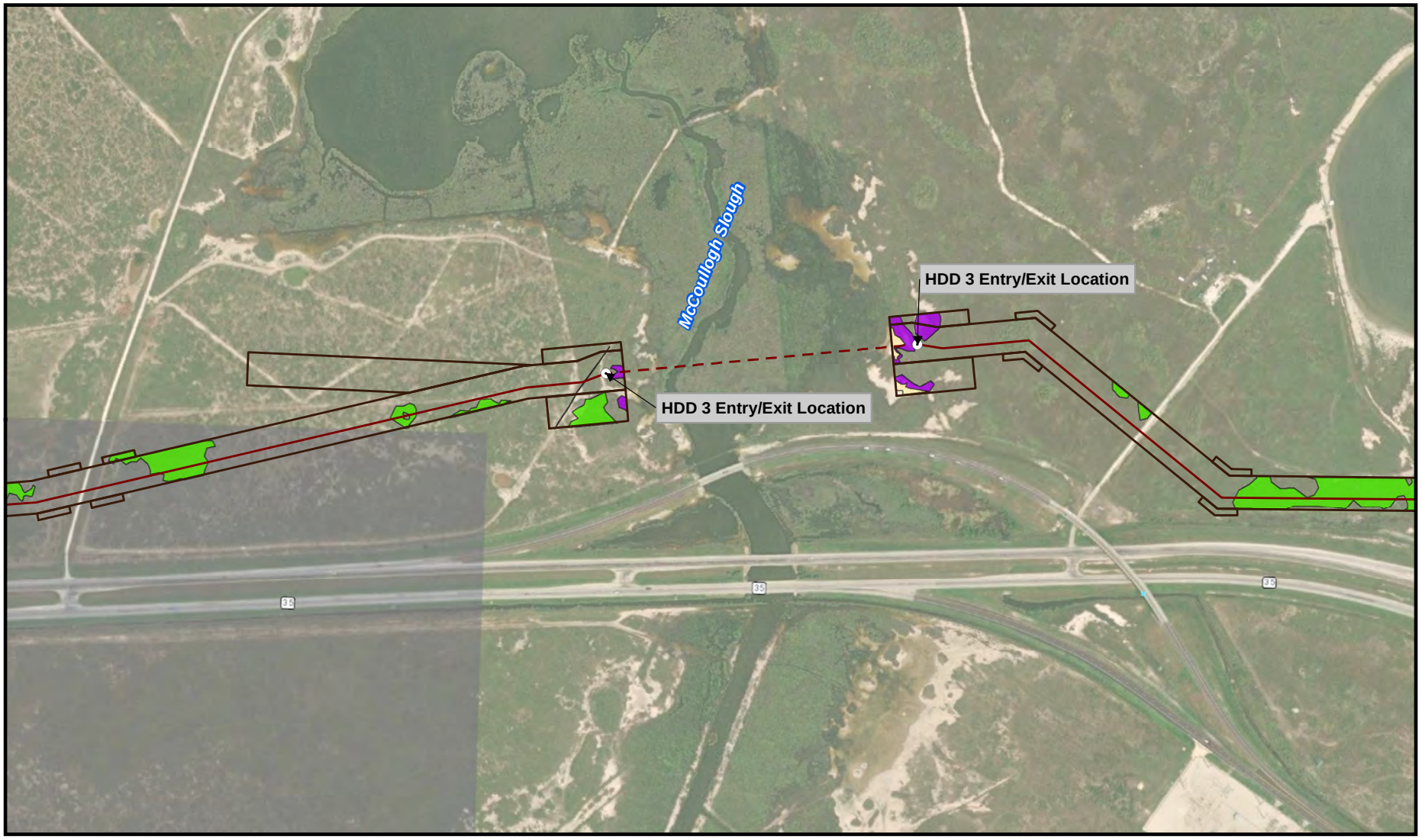
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

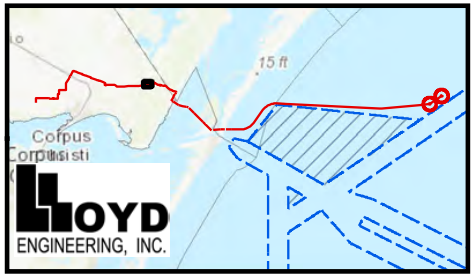
Figure **19**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.





Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

1 inch = 500 feet

0 250 500

Feet

N

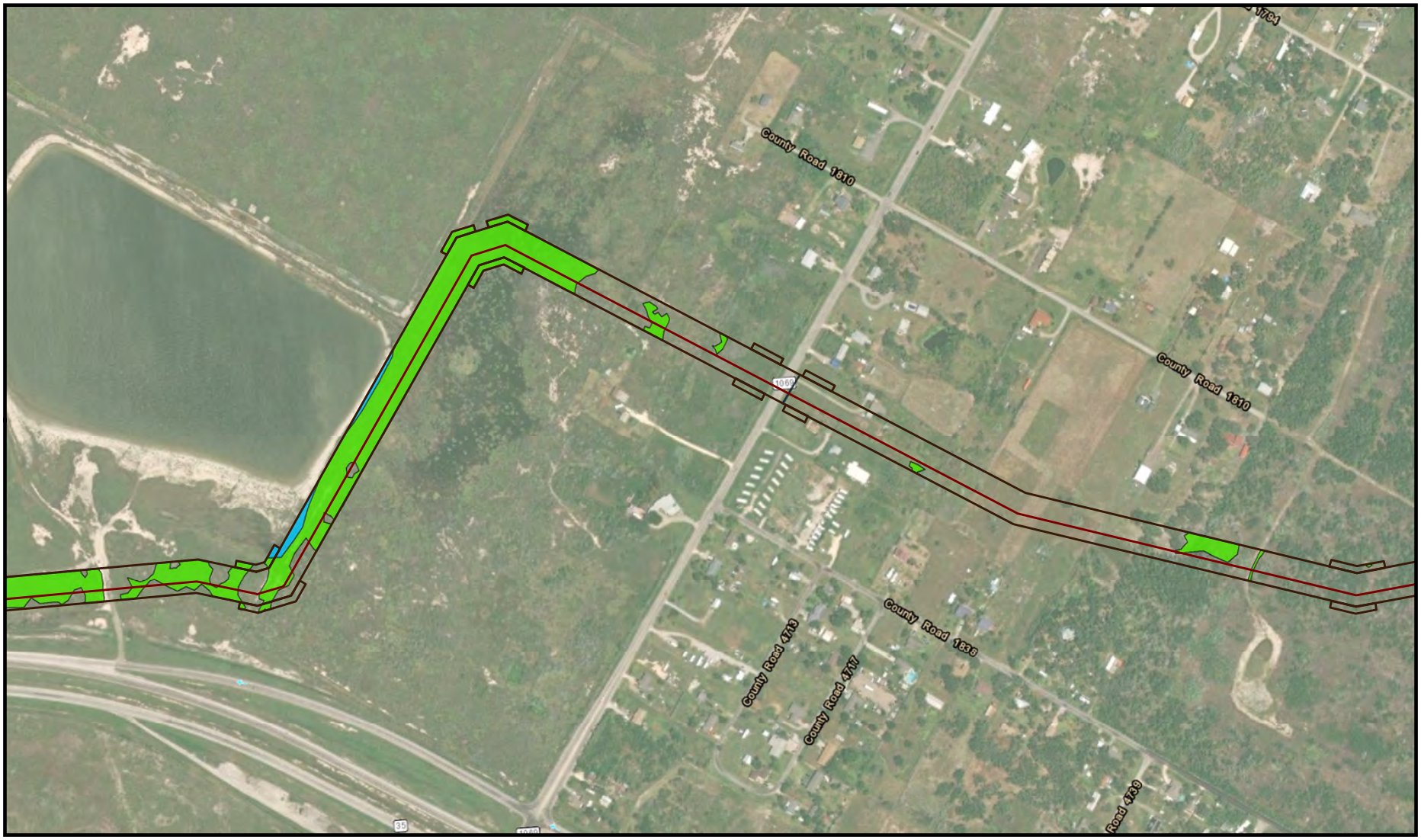
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

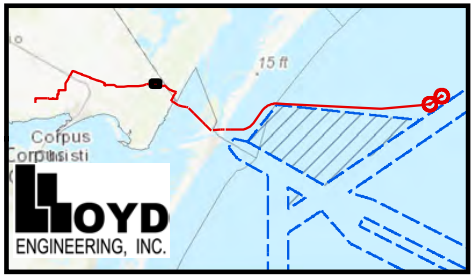
Figure **20**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text descriptions of map.





Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

1 inch = 500 feet

0 250 500

Feet

N

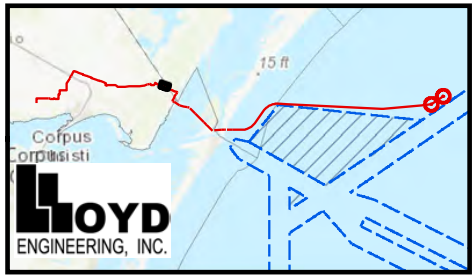
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

Figure **21**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text descriptions of map.



Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

1 inch = 500 feet

0 250 500

Feet

N

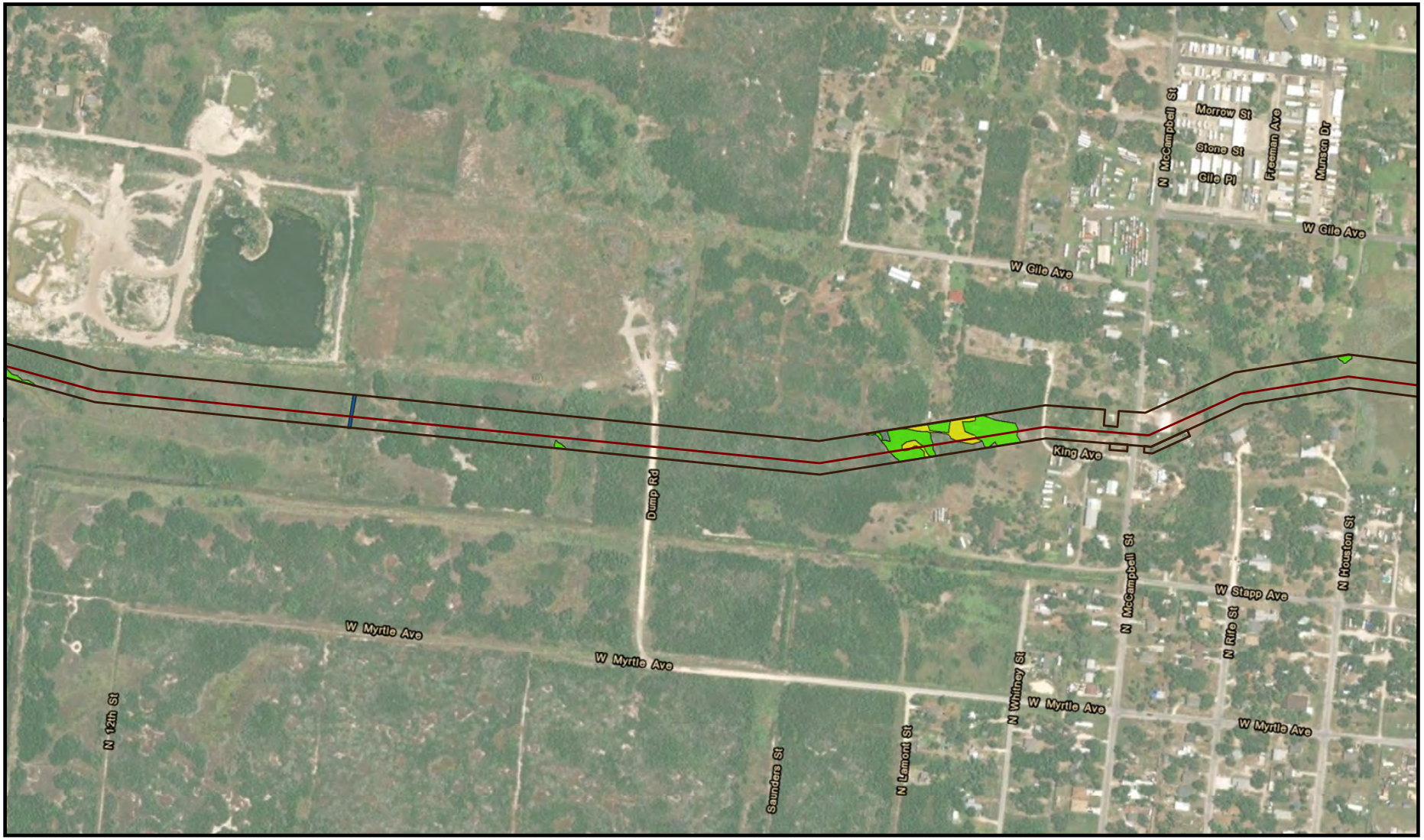
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

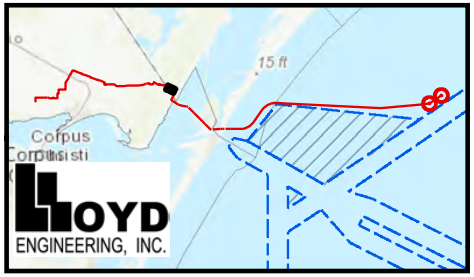
Figure **22**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text descriptions of map.





Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

1 inch = 500 feet

0 250 500

Feet

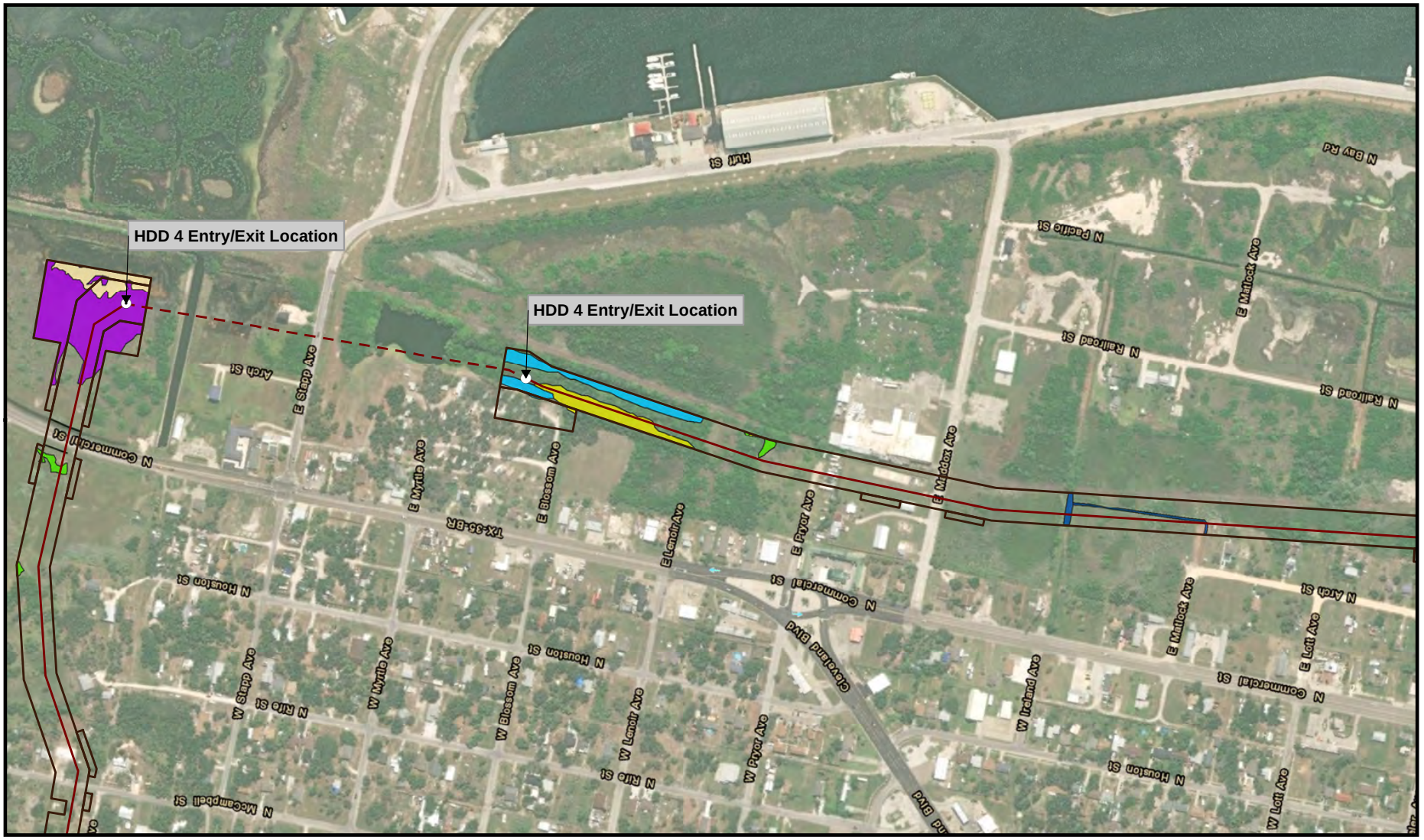
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

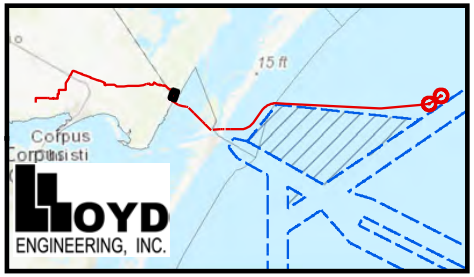
Figure **23**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text descriptions of map.





Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

1 inch = 500 feet

0 250 500

Feet

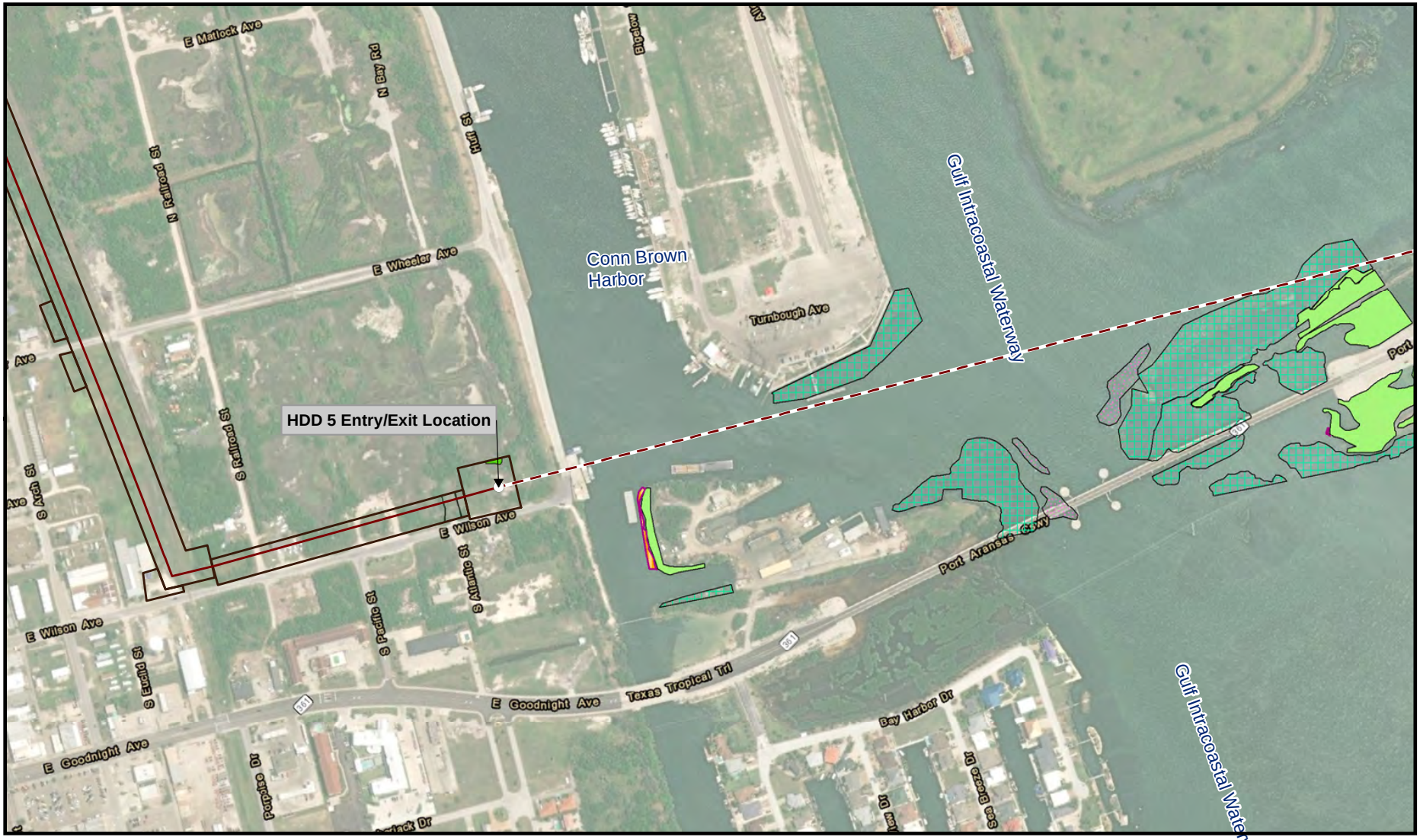
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

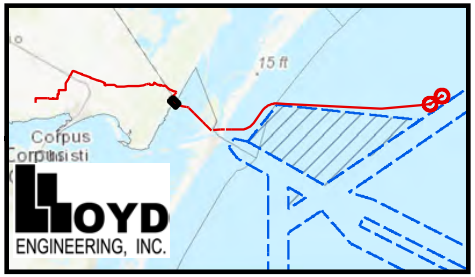
Figure **24**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text descriptions of map





Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

Aquatic Resources

- Algae Bed
- Intertidal Marsh
- Scattered Oyster Shell
- Seagrass
- Shell Hash

1 inch = 500 feet

0 250 500

Feet

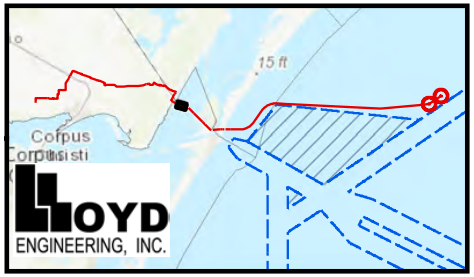
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

Figure **25**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.



Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

Aquatic Resources

- Algae Bed
- Intertidal Marsh
- Scattered Oyster Shell
- Seagrass
- Shell Hash

1 inch = 500 feet

0 250 500

Feet

N

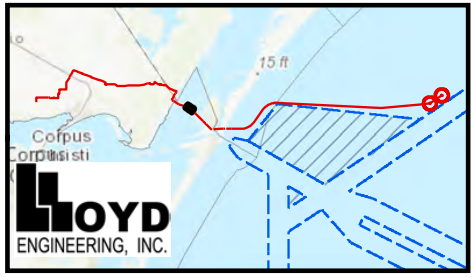
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

Figure **26**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.



Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

Aquatic Resources

- Algae Bed
- Intertidal Marsh
- Scattered Oyster Shell
- Seagrass
- Shell Hash

1 inch = 500 feet

0 250 500

Feet

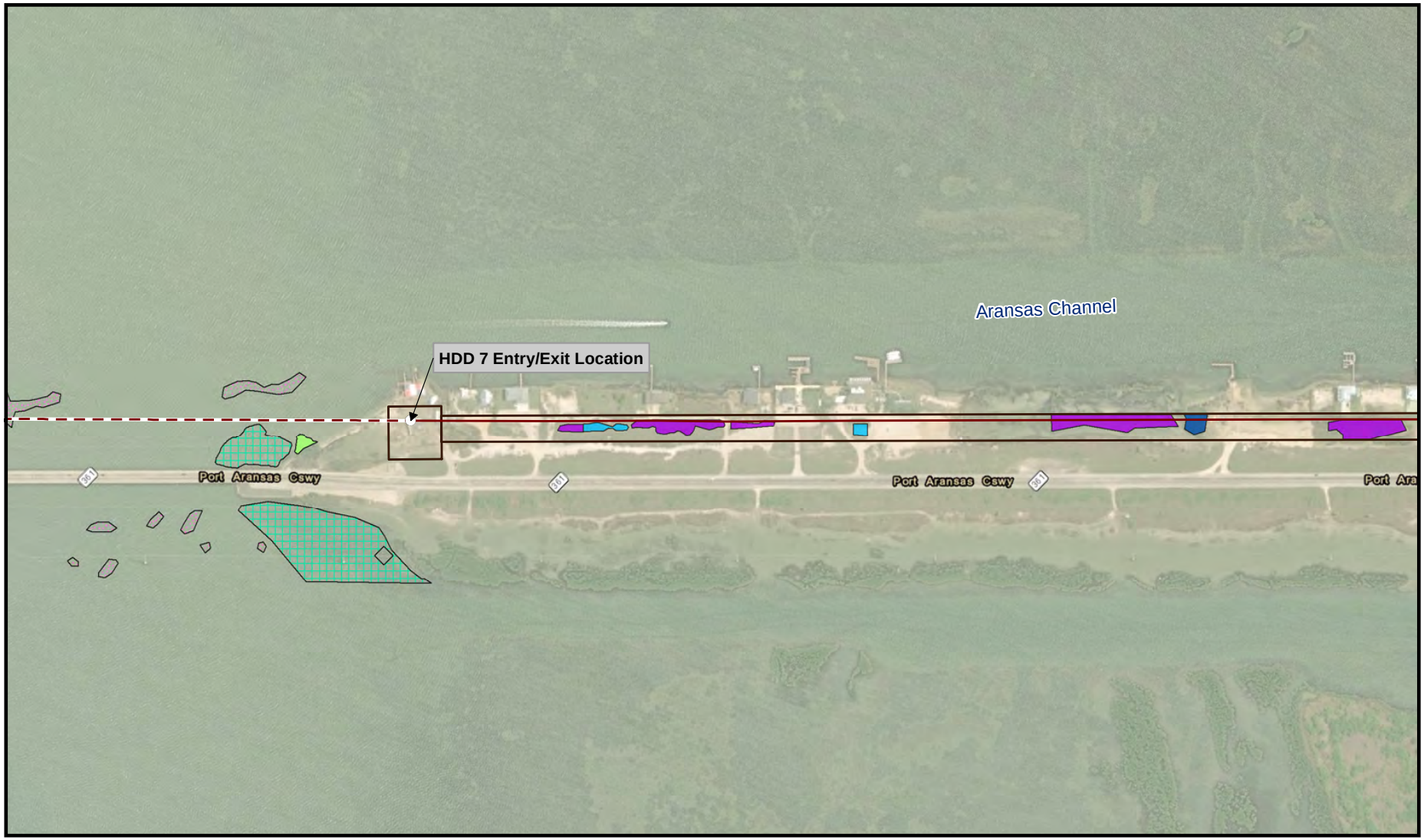
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

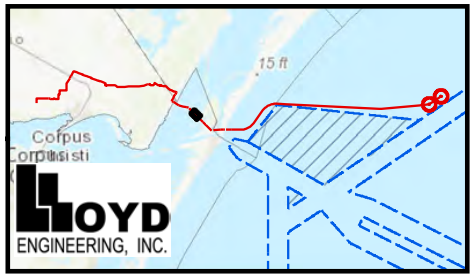
Figure **27**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.





Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

Aquatic Resources

- Algae Bed
- Intertidal Marsh
- Scattered Oyster Shell
- Seagrass
- Shell Hash

1 inch = 500 feet

0 250 500

Feet

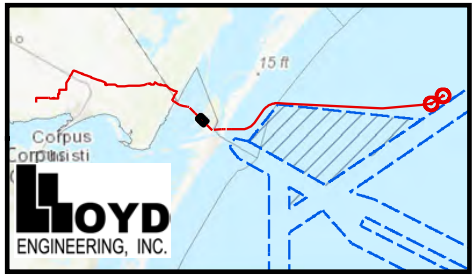
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

Figure **28**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.



Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

Aquatic Resources

- Algae Bed
- Intertidal Marsh
- Scattered Oyster Shell
- Seagrass
- Shell Hash

1 inch = 500 feet

0 250 500

Feet

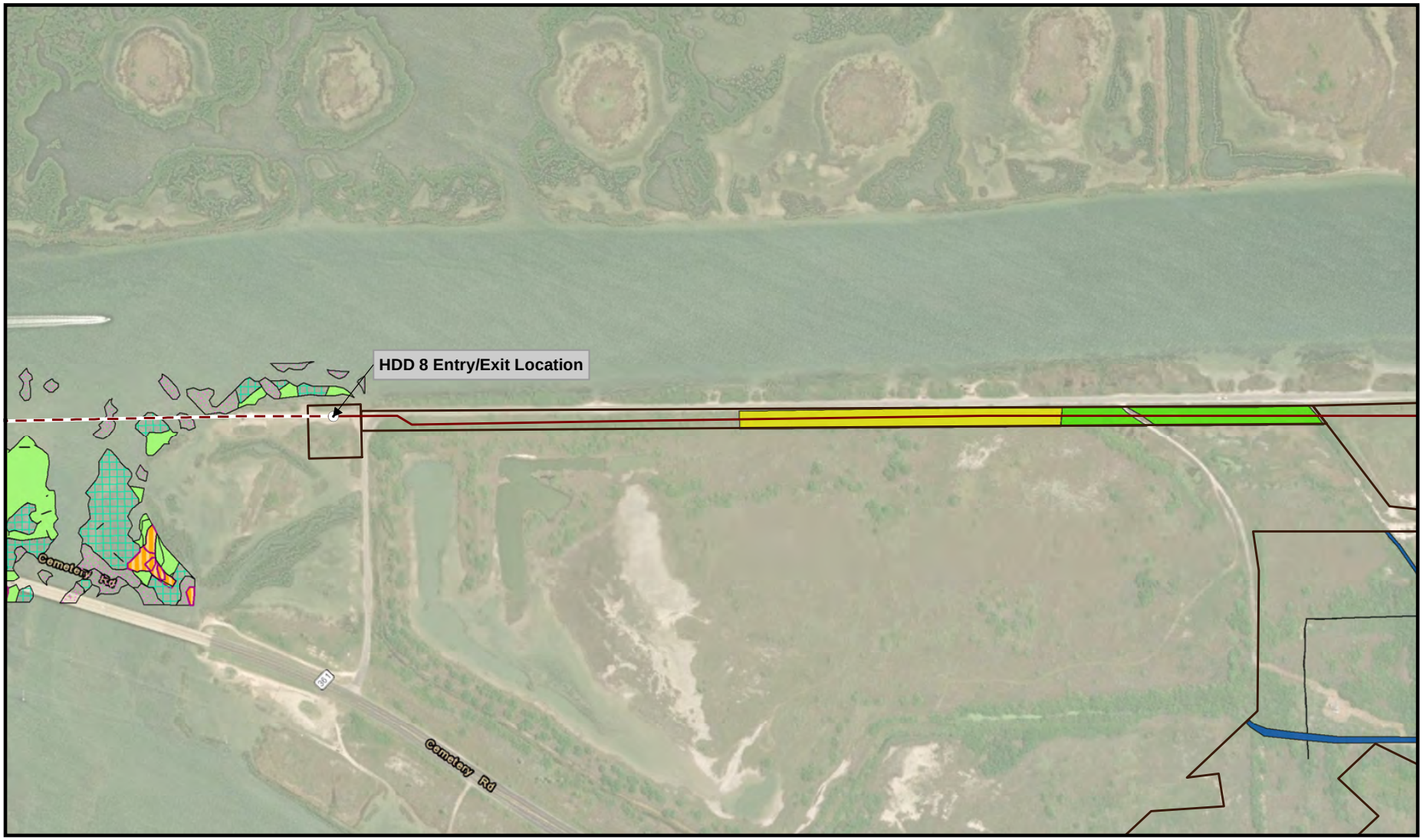
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

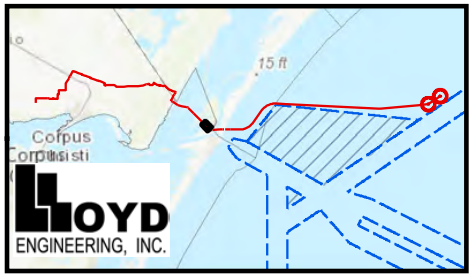
Figure **29**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map





Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

Aquatic Resources

- Algae Bed
- Intertidal Marsh
- Scattered Oyster Shell
- Seagrass
- Shell Hash

1 inch = 500 feet

0 250 500

Feet

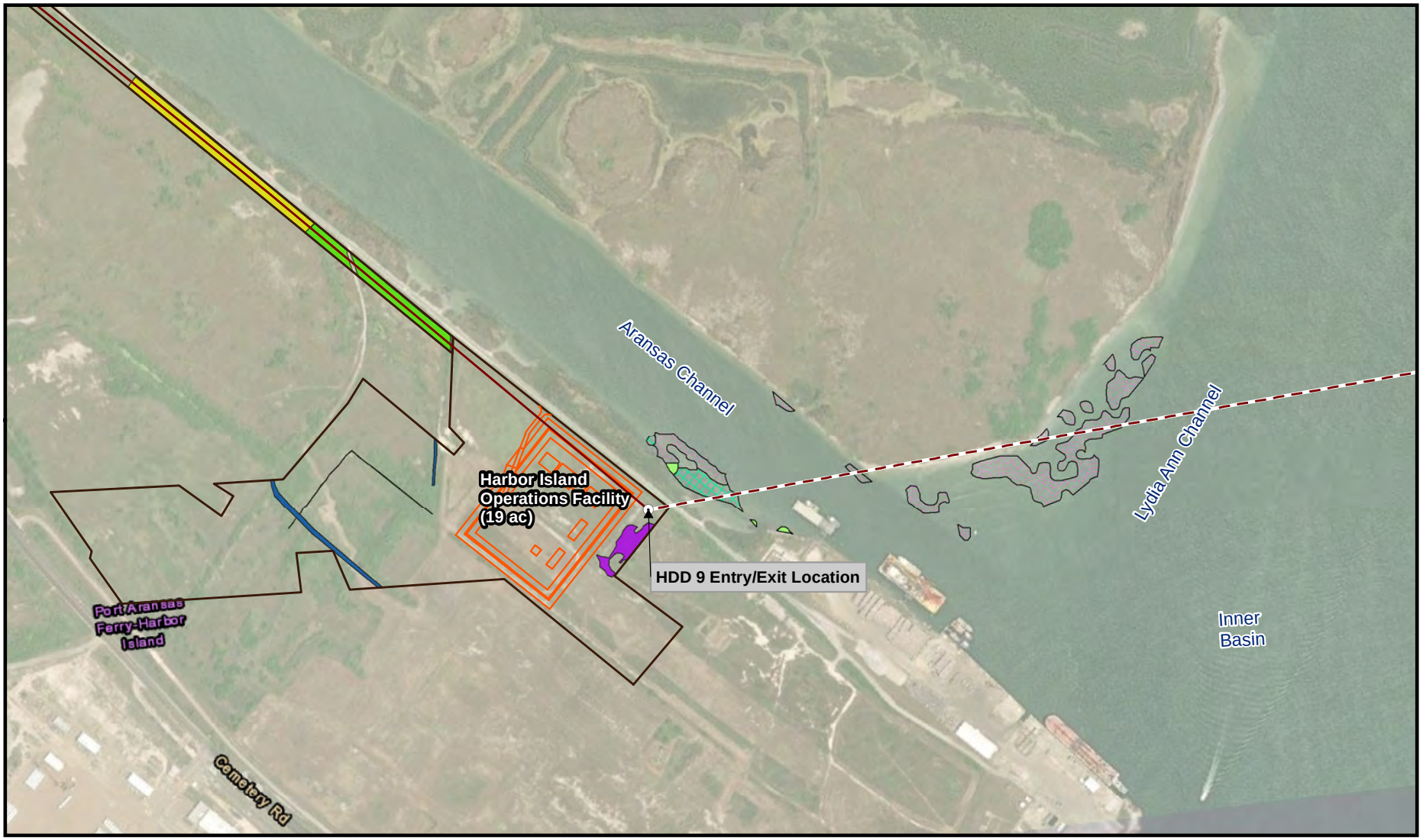
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

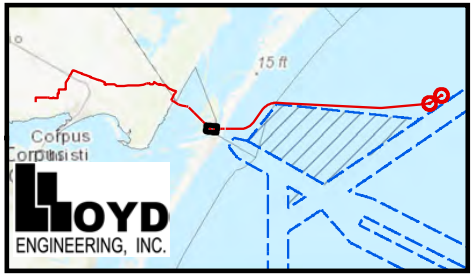
Figure **30**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.





Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Operations Facility
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

Aquatic Resources

- Algae Bed
- Intertidal Marsh
- Scattered Oyster Shell
- Seagrass
- Shell Hash

1 inch = 700 feet

0 350 700

Feet

N

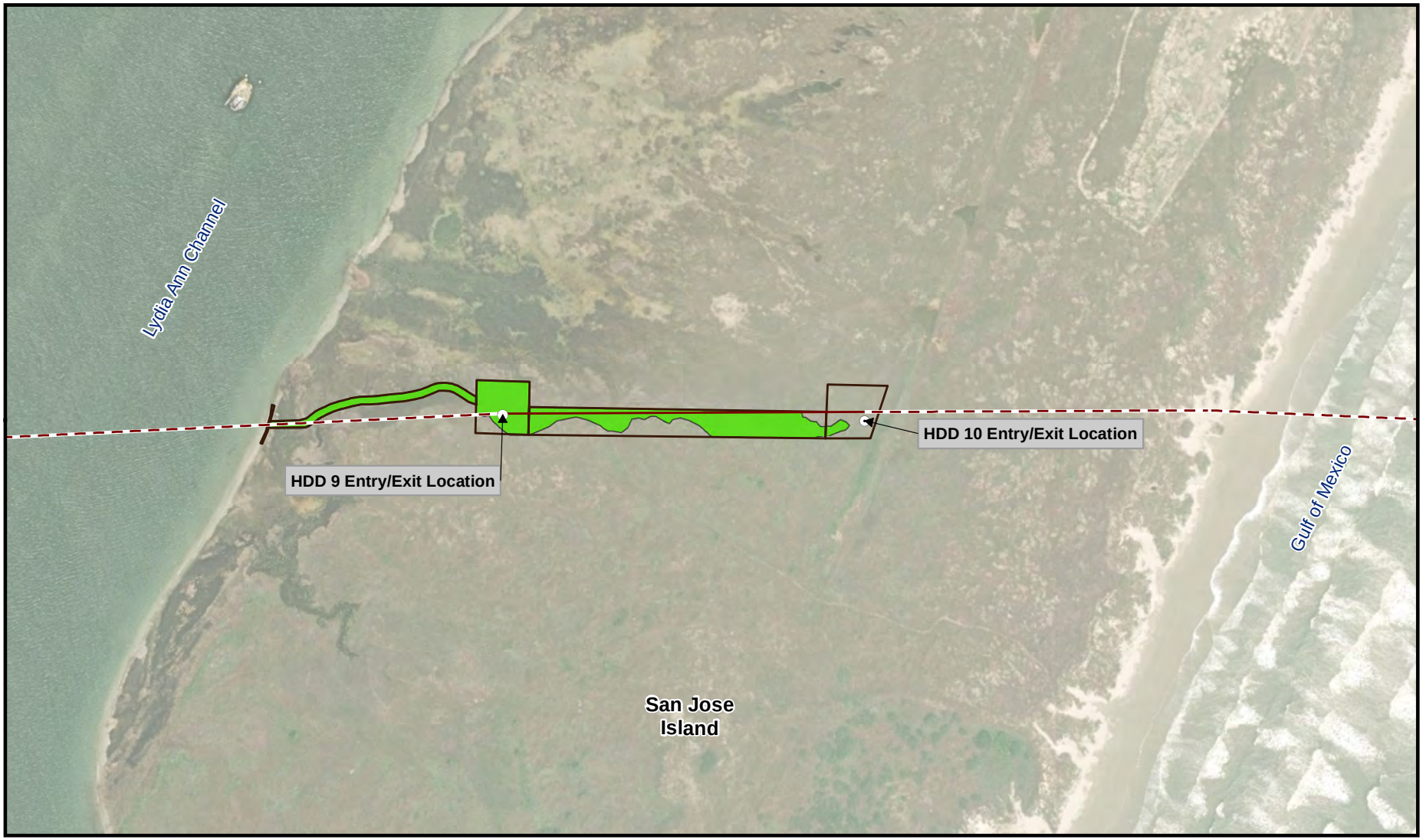
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

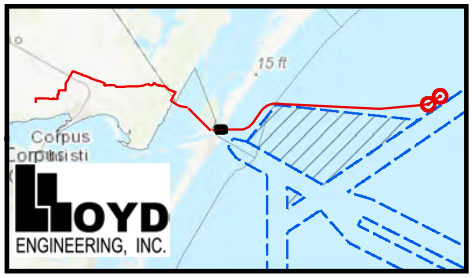
Figure **31**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.





Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

Aquatic Resources

- Algae Bed
- Intertidal Marsh
- Scattered Oyster Shell
- Seagrass
- Shell Hash

1 inch = 500 feet

0 250 500

Feet

N

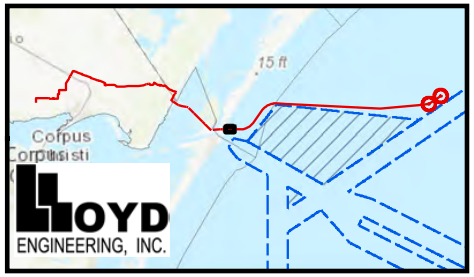
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

Figure **32**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text description of map.



Map Details

- HDD Entry/Exit Points
- Pipeline Centerline
- HDD Pipeline Centerline
- Construction Workspace

Wetlands and Waterbodies

- PEM Wetland
- PSS Wetland
- PUB Pond
- Waterbody
- E2EM Wetland
- E2SS Wetland
- E2USP Area
- M1UB Area

Aquatic Resources

- Algae Bed
- Intertidal Marsh
- Scattered Oyster Shell
- Seagrass
- Shell Hash

1 inch = 500 feet

0 250 500

Feet

N

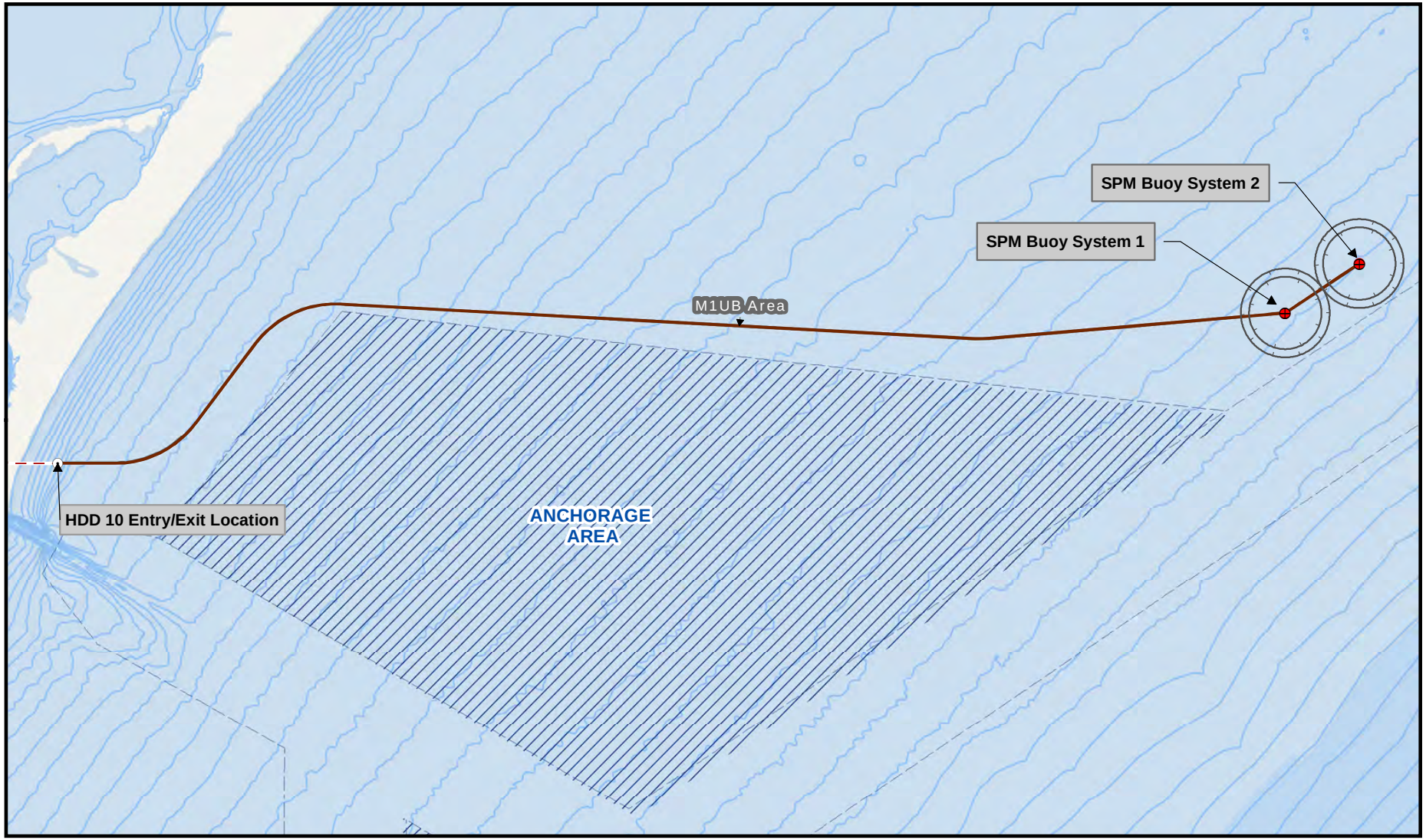
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

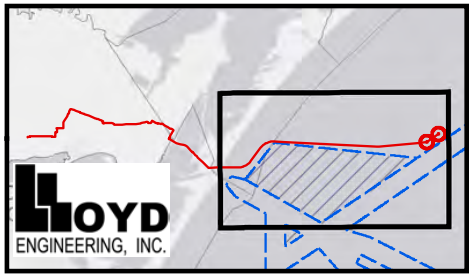
Figure **33**
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View text descriptions of map.





LOYD ENGINEERING, INC.

Map Details

- SPM Buoy System
- SPM Buoy ATBA and Safety Zones
- HDD Entry/Exit Points
- Construction Workspace
- Pipeline Centerline
- HDD Pipeline Centerline
- Navigational Fairways
- Anchorage Areas
- Bathymetry Contours (m)

Impacted WOUS

- M1UB Area

1 inch = 2.5 miles

0 1.25 2.5

Miles

N W E S

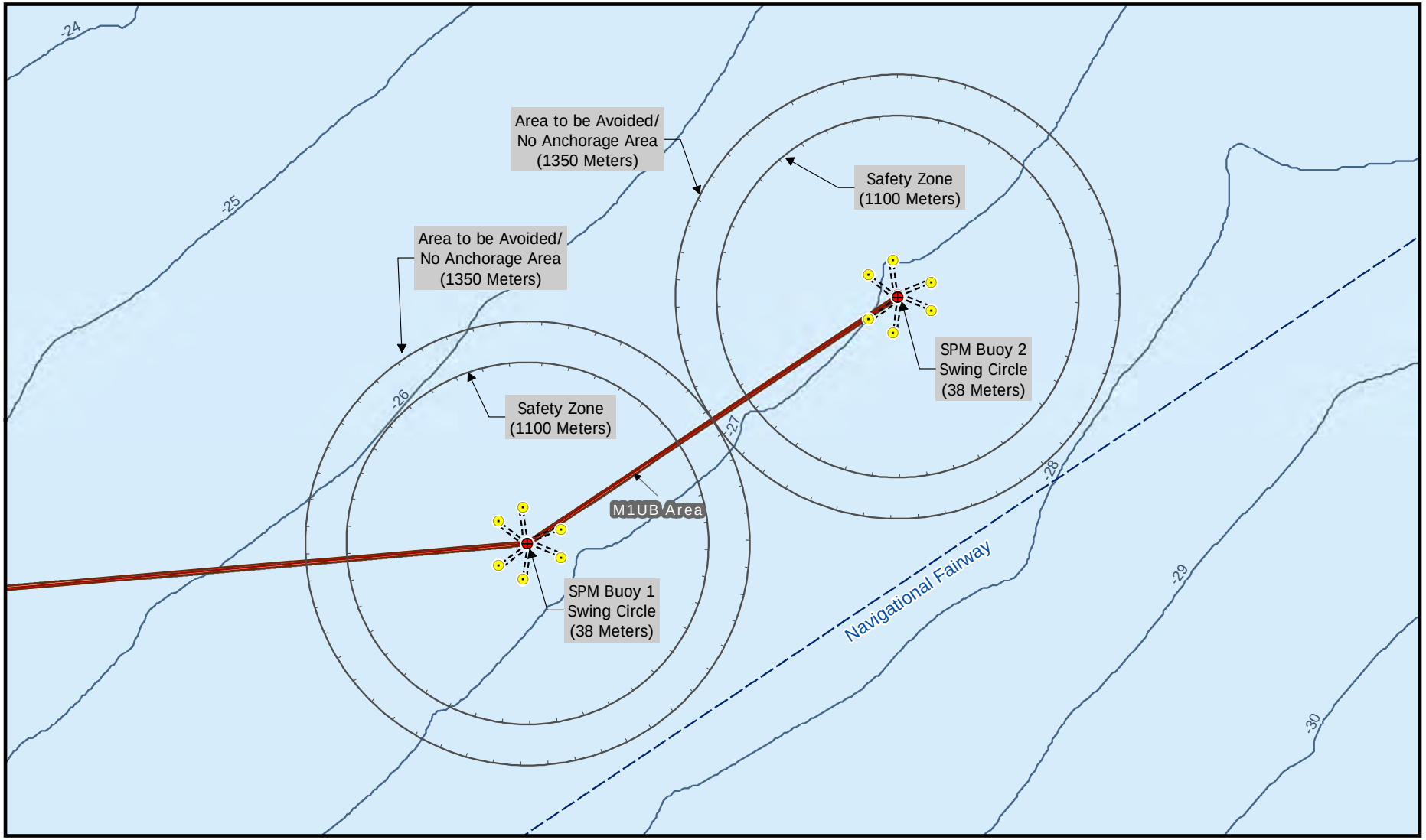
Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

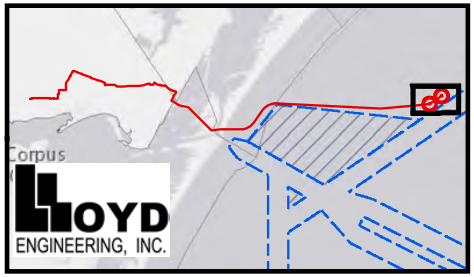
Figure 34
Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

View the text description of map.





Map Details

- SPM Buoy System
- CALM Anchor Pile Location
- CALM Anchor Chain
- SPM Buoy ATBA and Safety Zones
- Pipeline Centerline
- Construction Workspace
- Navigational Fairways
- Bathymetry Contours (m)

Impacted WOUS

- M1UB Area

1 inch = 0.5 miles

0 0.25 0.5

Miles

N W E S

Coordinate System: NAD 1983 2011 StatePlane Texas South FIPS 4205 Ft US
Projection: Lambert Conformal Conic
Datum: NAD 1983 2011
Units: Foot US

Figure 35
Proposed Project Detail Map

Bluewater SPM Project
Bluewater Texas Terminal, LLC

Date: Aug 04, 2021

Appendix G – Best Management Practices Plan

Project Figures and Construction Workspace Maps 508 Description

Page 47; Figure 1: Vicinity map depicting the proposed project components located on the coast of Texas within San Patricio, Nueces, and Aransas Counties and the Gulf of Mexico. The proposed project components begin in San Patricio County and extend eastward across Nueces and Aransas Counties before extending into the Gulf of Mexico, around an anchorage area, and terminating before reaching the navigational fairway

Page 48; Figure 2: Project component map depicting the various components of the proposed project including the Onshore Pipelines, Inshore Pipelines, Offshore Pipelines, Harbor Island Operations Facility, Single Point Mooring Buoy System 1, and Single Point Mooring Buoy System 2 in relation to the existing navigational channels, fairways, and anchorage areas. The Onshore Pipelines begin south of the city of Taft and extend north and east, around the city of Gregory, to Aransas Pass. The inshore pipelines extend from Aransas Pass, across Redfish Bay to Harbor Island and across the ship channel to San Jose Island. The offshore pipelines begin at the beach of San Jose Island and extend into the Gulf of Mexico to the Single Point Mooring Buoys, which are located parallel to the navigational fairways, north of the Anchorage Area. The Harbor Island Operations Facility is located on Harbor Island, just north of Port Aransas.

Page 49; Figure 3: Figure index map depicting the view extent of the proposed project components in Figures 4 through 35. Figure 4 begins a the western terminus of the Onshore pipelines. The component figures show consecutive view extents along the proposed pipeline, ending with Figure 33 at the beginning of the offshore pipeline segment at the Gulf of Mexico. Figure 34 shows the full extent of the offshore pipelines and the SPM Buoys. Figure 35 shows the extent of the SPM Buoy Systems.

Page 50; Figure 4: Project detail map depicting the start of the proposed onshore pipeline at the Planned Multi-Use Terminal, associated construction workspaces, and wetlands and waterbodies located within the proposed construction workspaces. The Pipeline Centerline extends north from the Planned Multi Use Terminal location before turning east along County Road 2004. The aerial imagery shows agricultural land and county roads.

Page 51; Figure 5: Project detail map depicting the proposed onshore pipeline alignment, associated construction workspaces, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the onshore pipeline centerline continues east, parallel to County Road 2004, and crosses County Road 3365. The aerial imagery shows agricultural land, two wind turbines, and county roads.

Page 52; Figure 6: Project detail map depicting the proposed onshore pipeline alignment, associated construction workspaces, HDD entry and exit points, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the onshore pipeline centerline continues east, parallel to County Road 2004, and crosses Gum Hollow and County Road 3463. HDD 1 Entry/Exit locations are shown with the proposed HDD Pipeline centerline crossing Gum Hollow and County Road 3463. The aerial imagery shows agricultural land, one wind turbine, Gum Hollow stream, and county roads.

Page 53; Figure 7: Project detail map depicting the proposed onshore pipeline alignment, associated construction workspaces, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the onshore pipeline centerline continues east, parallel to County Road 2004,

and then turns north parallel to County Road 3567. Three waterbody crossings are shown in the construction workspace. The aerial imagery shows agricultural land, and county roads.

Page 54; Figure 8: Project detail map depicting the proposed onshore pipeline alignment, associated construction workspaces, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the onshore pipeline centerline continues north and then turns east parallel to County Road 1906 before turning north again along County Road 3677. The aerial imagery shows agricultural land, 2 wind turbines, residences, and county roads.

Page 55; Figure 9: Project detail map depicting the proposed onshore pipeline alignment, associated construction workspaces, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the onshore pipeline centerline continues north/northeast parallel to County Road 3677 before turning north again along County Road 3677. The construction workspace crosses one waterbody feature, a ditch, and County Road 1612. The aerial imagery shows agricultural land, 2 wind turbines, and county roads.

Page 56; Figure 10: Project detail map depicting the proposed onshore pipeline alignment, associated construction workspaces, HDD entry and exit points, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the onshore pipeline centerline continues north/northeast, parallel to County Road 3667, and crosses Highway 181 with an HDD Pipeline. HDD 2 Entry/Exit locations are shown with the proposed HDD Pipeline centerline crossing Highway 181. The aerial imagery shows agricultural land, Highway 181, and county roads.

Page 57; Figure 11: Project detail map depicting the proposed onshore pipeline alignment, associated construction workspaces, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the onshore pipeline centerline continues north/northeast before turning east. The construction workspace crosses one waterbody feature, a ditch, and a private road. The aerial imagery shows agricultural land, and private roads.

Page 58; Figure 12: Project detail map depicting the proposed onshore pipeline alignment, associated construction workspaces, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the onshore pipeline centerline continues east to parallel County Road 1722. The construction workspace crosses one waterbody feature, a ditch, and County Road 3865. The aerial imagery shows agricultural land, two wind turbines and county roads.

Page 59; Figure 13: Project detail map depicting the proposed onshore pipeline alignment, associated construction workspaces, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the onshore pipeline centerline continues east parallel to County Road 1722. The construction workspace crosses one waterbody feature, a ditch, and private roads. The aerial imagery shows agricultural land, a wind turbine and county roads.

Page 60; Figure 14: Project detail map depicting the proposed onshore pipeline alignment, associated construction workspaces, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the onshore pipeline centerline continues east parallel to County Road 1722. The construction workspace crosses two waterbody features, ditches, and FM 3284. The aerial imagery shows agricultural land, three wind turbines and county roads.

Page 61; Figure 15: Project detail map depicting the proposed onshore pipeline alignment, associated construction workspaces, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the onshore pipeline centerline continues east parallel to County Road 1722 before jogging south to cross two waterbody features and FM 136 and then continuing east. The construction workspace crosses two waterbody features, ditches, and FM 136. The aerial imagery shows agricultural land, ponds, and county roads.

Page 62; Figure 16: Project detail map depicting the proposed onshore pipeline alignment, associated construction workspaces, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the onshore pipeline centerline continues east and crosses County Road 4195 and County Road 4241 before turning slightly south to closely parallel Highway 35 headed east. The aerial imagery shows agricultural land, and county roads.

Page 63; Figure 17: Project detail map depicting the proposed onshore pipeline alignment, associated construction workspaces, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the onshore pipeline centerline continues east closely parallel to Highway and crosses County Road 4343. The aerial imagery shows agricultural land, and county roads.

Page 64; Figure 18: Project detail map depicting the proposed onshore pipeline alignment, associated construction workspaces, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the onshore pipeline centerline continues east closely parallel to Highway and crosses County Road 4439. The construction workspace also crosses through two small palustrine emergent (PEM) Wetland areas. The aerial imagery shows agricultural land, ponds, and county roads.

Page 65; Figure 19: Project detail map depicting the proposed onshore pipeline alignment, associated construction workspaces, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the onshore pipeline centerline continues east closely parallel to Highway and crosses County Road 4491. The construction workspace also crosses through five small palustrine emergent (PEM) Wetland areas and two waterbody features which are ditches. The aerial imagery shows agricultural land, and county roads.

Page 66; Figure 20: Project detail map depicting the proposed onshore pipeline alignment, associated construction workspaces, HDD entry and exit points, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the onshore pipeline centerline continues east parallel to Highway 35, and crosses McCullough Slough with an HDD Pipeline. HDD 3 Entry/Exit locations are shown with the proposed HDD Pipeline centerline crossing McCullough Slough and surrounding greenspace/wetlands. The construction workspace also crosses through six palustrine emergent (PEM) Wetland areas and two estuarine emergent (E2EM) wetland areas. The aerial imagery shows agricultural land, natural wetland surrounding McCullough Slough, and county roads.

Page 67; Figure 21: Project detail map depicting the proposed onshore pipeline alignment, associated construction workspaces, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the onshore pipeline centerline continues east before jogging north slightly to cross FM 1069 and then continuing east through residential area near the outskirts of the city of Aransas Pass. The construction workspace crosses eight palustrine emergent (PEM) Wetland areas and fringe of a pond located on the west side of the frame. The aerial imagery shows agricultural land, a pond, residences, and county roads.

Page 68; Figure 22: Project detail map depicting the proposed onshore pipeline alignment, associated construction workspaces, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the onshore pipeline centerline continues eastward to cross TX-35 Bypass, Ave A. The construction workspace crosses seven palustrine emergent (PEM) Wetland areas, one shrub (PSS) wetland, two small ponds, and one waterbody (roadside ditch). The aerial imagery shows agricultural land, ponds, residences, and county roads.

Page 69; Figure 23: Project detail map depicting the proposed onshore pipeline alignment, associated construction workspaces, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the onshore pipeline centerline continues eastward and passes residential area of Aransas Pass near Dump Rd and King Ave. The construction workspace crosses two palustrine emergent (PEM) wetland areas, and one shrub (PSS) wetland area. The aerial imagery shows agricultural land, ponds, residences, and county roads.

Page 70; Figure 24: Project detail map depicting the proposed onshore pipeline alignment, associated construction workspaces, HDD entry and exit points, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the onshore pipeline centerline continues east to cross N Commercial St (TX-35 bypass) and then turn south at the start of an HDD Pipeline segment that crosses a canal and wetland area. HDD 4 Entry/Exit locations are shown with the proposed HDD Pipeline centerline crossing a canal and surrounding greenspace/wetlands. The construction workspace also crosses through two palustrine emergent (PEM) Wetland areas, one scrub-shrub wetland (PSS), one pond area, one waterbody feature and one estuarine emergent (E2EM) wetland areas. The aerial imagery shows estuarine wetlands, residential area, and Conn Brown Harbor.

Page 71; Figure 25: Project detail map depicting the proposed onshore pipeline alignment, associated construction workspaces, HDD entry and exit points, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the onshore pipeline centerline continues south through Aransas pass, parallel to Conn Brown Harbor shoreline until E Wilson Ave. The pipeline then turns east parallel to E Wilson Ave to the HDD 5 Entry/Exit location. The HDD Pipeline segment begins the inshore pipeline segment at the shoreline of Redfish Bay (shown as Conn Brown Harbor and the Gulf Intracoastal Waterway). The HDD segment crosses below the Gulf Intracoastal Waterway and parallels Highway 361, avoiding impacts to aquatic resources shown as seagrass, intertidal marsh, and some scattered oyster shell areas. The aerial imagery shows residential area and aquatic area.

Page 72; Figure 26: Project detail map depicting the proposed inshore pipeline alignment, associated construction workspaces, HDD entry and exit points, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the inshore pipeline begins on land at the HDD 5 Entry/Exit location east/southeast parallel to Aransas Channel and TX Highway 361. The construction workspace crosses through several estuarine emergent (E2EM) and scrub shrub (E2SS) wetland areas on the north side of Highway 361. The aerial imagery shows aquatic area and land mass surrounding Highway 361.

Page 73; Figure 27: Project detail map depicting the proposed inshore pipeline alignment, associated construction workspaces, HDD entry and exit points, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the inshore pipeline continues east along Highway 361 and crosses an aquatic area with an HDD pipeline segment which begins and ends at the shown HDD 6 Entry/Exit locations. HDD 7 Entry/Exit is co-located within the same workspace as the HDD 6 Exit and

begins another HDD Pipeline segment that continues in a southerly direction parallel to Aransas Channel and Highway 361. The HDD pipeline crosses under an aquatic channel and avoids impacts to shown intertidal marsh, seagrass, and shell hash areas. The aerial imagery shows aquatic area of Redfish Bay, the Highway 361 bridge, and land mass surrounding Highway 361.

Page 74; Figure 28: Project detail map depicting the proposed inshore pipeline alignment, associated construction workspaces, HDD entry and exit points, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the inshore pipeline begins on land at the HDD 7 Entry/Exit location and continues southeast parallel to Aransas Channel and TX Highway 361. The construction workspace crosses through several estuarine emergent (E2EM) and pond areas on the north side of Highway 361. The aerial imagery shows residences with docks, aquatic area and land mass surrounding Highway 361.

Page 75; Figure 29: Project detail map depicting the proposed inshore pipeline alignment, associated construction workspaces, HDD entry and exit points, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the inshore pipeline continues southeast parallel to Aransas Channel and TX Highway 361 and begins an HDD Pipeline segment at the shown HDD 8 Entry/Exit Location prior to beginning to cross under an aquatic area. The construction workspace crosses through one estuarine emergent (E2EM) wetland area on north side of Highway 361 and the HDD segment shows avoidance of some shell hash, intertidal marsh, seagrass, and scattered oyster shell areas. The aerial imagery shows aquatic area and land mass surrounding Highway 361.

Page 76; Figure 30: Project detail map depicting the proposed inshore pipeline alignment, associated construction workspaces, HDD entry and exit points, and wetlands and waterbodies located within the proposed construction workspaces. This segment of the inshore pipeline continues southeast parallel to Aransas Channel and emerges from the HDD Pipeline segment onto Harbor Island at the HDD 8 Entry/Exit Location. The construction workspace crosses through one palustrine scrub shrub (PSS) and palustrine emergent (PEM) wetland area on Harbor Island, and the HDD segment shows avoidance of some shell hash, intertidal marsh, seagrass, and scattered oyster shell areas. The aerial imagery shows aquatic area and Harbor Island undeveloped land.

Page 77; Figure 31: Project detail map depicting the Harbor Island Operations Facility and inshore pipeline segment, construction workspaces, HDD entry and exit points, wetlands and waterbodies located within the proposed construction workspaces, and identified wetlands, waterbodies, and aquatic resources. The Harbor Island Operations Facility is a 19-acre area located within a larger construction workspace footprint that shows 3 waterbody features and one estuarine wetland (E2EM). HDD 9 Entry Exit Location is shown on the south eastern corner of the Harbor Island Operations Facility and the HDD pipeline segment crosses eastwardly under Aransas Channel and Lydia Ann Channel. There are some shell hash and seagrass areas shown to be avoided by the HDD pipeline. The aerial imagery shows Harbor Island, industrial developments, and aquatic areas.

Page 78; Figure 32: Project detail map depicting the terminus of the inshore pipeline segment located on San Jose Island and the associated construction workspaces, HDD entry and exit points, wetlands and waterbodies located within the proposed construction workspaces, and identified aquatic resources (i.e., algae bed, intertidal marsh, scattered oyster shell, seagrass, and shell has) within the vicinity of the proposed project. The HDD segment crosses Lydia Ann Channel and emerges on San Jose Island at the labeled HDD 9 Entry/Exit Location. The construction workspace intersects palustrine emergent (PEM)

wetland areas and then begins another HDD segment at HDD 10 Entry/Exit Location prior to extending the HDD pipeline centerline east across the shoreline of San Jose Island and the Gulf of Mexico. Aerial imagery shows undeveloped land of San Jose Island and aquatic area of Lydia Ann Channel to the west and Gulf of Mexico to the east.

Page 79; Figure 33: Project detail map depicting the offshore pipeline segment located within the Gulf of Mexico and the associated construction workspaces and HDD entry and exit points. The HDD segment extends off the beach of San Jose Island into the Gulf of Mexico. HDD 10 Entry/Exit Location is shown and begins a construction workspace area that covers marine unconsolidated bottom (M1UB).

Page 80; Figure 34: Project detail map that shows the full extent of the offshore pipeline alignment and SPM Buoy Systems. The offshore pipeline is shown extending eastward from San Jose Island, turning north to avoid the anchorage area, and then extending east again to SPM Buoy System 1 and SPM Buoy System 2. The figure also depicts the SPM Buoy ATBA and Safety Zone rings. The SPM Buoy Systems are adjacent to, but not intersecting, the navigational fairway. The background image shows bathymetry contours of the Gulf of Mexico.

Page 81; Figure 35: Project detail map that shows the extent of the area containing the SPM Buoy System 1 and SPM Buoy System 2. The pipeline centerline is shown with construction workspace and impacted marine bottom area (M1UB). The figure also depicts the SPM Buoy Area to be Avoided (ATBA) at 1350 Meter radius, and Safety Zone rings at the 1100-meter radius from the buoy locations. The SPM Buoy 1 and 2 location are shown with the CALM anchor chain alignment 6 anchor pile locations surrounding each of the two buoy location. The SPM Buoy Systems are adjacent to, but not intersecting, the navigational fairway. The background image shows bathymetry contours of the Gulf of Mexico from -24 meters to -30 meters.