

**ALTERNATIVES ANALYSIS**  
for  
TGS Cedar Port Partners, L.P.  
Proposed Cedar Port Barge Dock & Barge Fleeting Area  
Chambers County, Texas  
November 10, 2020

## **1.0 INTRODUCTION**

The TGS Cedar Port Partners, L.P. (TGS) proposes to construct and operate a new barge marine facility in Chambers County, Texas in Galveston Bay near Cedar Bayou. The proposed project involves a new dock and fleeting area to accommodate the increasing business demands for waterborne commerce and barge fleeting capacity.

This document addresses the Clean Water Act (CWA) Section 404(b)(1) guidelines Practicable Alternatives Analysis for the TGS Cedar Port Barge Dock & Barge Fleeting Area Project. TGS proposes to construct and operate the proposed project. The contents herein are intended to provide the U.S. Army Corps of Engineers (USACE) and applicable reviewers the data necessary to determine that the proposed project is the Least Environmentally Damaging Practicable Alternative (LEDPA) and to meet the responsibilities imposed by the 404(b)(1) guidelines.

The proposed project, TGS Cedar Port Barge Dock & Barge Fleeting Area Project, involves a new dock and fleeting area to accommodate the increasing business demands for waterborne commerce and barge fleeting capacity within the Houston Ship Channel vicinity.

TGS evaluated a no-action alternative as well as several offsite and onsite site alternatives to determine the most feasible design that would meet the project purpose and need while representing the LEDPA. The no-action alternatives as well as the offsite and onsite alternatives are discussed below, along with justification for selection of the preferred alternative.

## **2.0 PROJECT PURPOSE AND NEED**

The purpose of the project is to provide new infrastructure that will allow for the transfer of bulk products by barge to various facilities along the Houston Ship Channel, Cedar Bayou and throughout the Texas Gulf Coast. The proposed facility needs to accommodate a minimum of eight (8) 200-foot long by 35-foot wide barges at the dock, provide space for a roll-on/roll-off heavy cargo dock and to be able to simultaneously store a minimum of one hundred (100) barges in the fleeting area in a logistically safe and efficient manner. The working space for the handling of bulk products will require a minimum of 20 acres of land. Adequate space and close proximity for a dredged material placement area is needed.

### 3.0 SITING CRITERIA

Several factors were considered when selecting a site for the proposed project. The following siting criteria are necessary to achieve the stated purpose and need. Siting criteria established as the basis for this alternatives analysis are applied equally to each alternative being considered.

The following siting criteria were utilized when considering project alternatives:

- Use of existing property owned by TGS.
- Vessel access to the Cedar Bayou waterway.
- Adequate docking space for eight (8) barges (200' long x 35' wide each) & a Roll on/Roll off dock.
- Provide a dedicated barge fleeting area for a minimum of 100 barges.
- Minimum available project area on land of approximately 20 acres adjacent to barge dock for industrial development for cargo storage and transfers.
- Vehicular access to the site.
- Adequate space and close proximity to a dredge material placement area.
- Minimal environmental impacts.
- Accommodations for operations to be conducted within a safe and efficient manner.

### 4.0 ANALYSIS OF ALTERNATIVES

TGS considered and evaluated several alternatives in accordance to the siting criteria listed in Section 3.0 of this report and in accordance with Section 404(b)(1) as outlined in Section 4.1 below. The following alternatives were considered for this project:

- No-Action Alternative
- Offsite Alternatives
- Onsite Alternative 1
- Onsite Alternative 2
- Onsite Alternative 3
- Onsite Alternative 4 (Preferred Alternative)

Several maps have been included to depict the onsite alternatives as well as an annotated copy of the National Wetlands Inventory Map for this area to show the offsite alternatives (See Exhibits A & B).

Where provided, commentary on environmental impacts provided by Belaire Environmental, Inc.

#### 4.1 Section 404(b)(1) Guidelines and Requirements

The applicant must demonstrate that they have chosen the LEDPA and that no practicable alternative would have a less-adverse impact on waters of the United States and/or special aquatic sites. “An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes” (40 CFR 230.10 (a)(2)).

Further, 40 CFR 230.10 (a)(3) guidelines state, “Where the activity associated with a discharge which is proposed for a special aquatic site (as defined in subpart E) does not require access or proximity to or siting within the special aquatic site in question to fulfill its basic purpose (i.e., is not “water dependent”), practicable alternatives that do not involve special aquatic sites are presumed to be available, unless clearly demonstrated otherwise.” As defined, the project proposes to construct maritime infrastructure including barge docks and a barge fleeting area and is therefore, inherently water dependent.

#### 4.2 Preliminary Alternatives

TGS considered and evaluated a no-action alternative, off-site alternatives, and onsite alternatives as described in the sections below.

##### 4.2.1. No-Action Alternative

The No Action Alternative does not result in the construction of the proposed TGS Cedar Port Barge Dock & Barge Fleeting Area Project. Therefore, this alternative avoids all impacts to waters of the United States and does not involve any environmental impacts. However, the No Action Alternative does not achieve the applicant’s purpose and need for the project. The No Action Alternative does not provide TGS the opportunity to provide the required maritime infrastructure and capacity to meet the increasing demands of their existing and committed future customer base. If the proposed project is not constructed, TGS would not be taking advantage of reasonable use of its property and the opportunity for economic expansion. This project is crucial to meeting growing customer demand and to support domestic commerce. This adverse economic effect would additionally impact the local economy by eliminating new job opportunities, support services growth, and local tax revenues. The no-action alternative would not meet the purpose and need of the project. Therefore, this alternative was dismissed from further consideration.

##### 4.2.2 Offsite Alternatives

Based upon the siting criteria outlined above, TGS has been unable to locate an offsite location with appropriate zoning, sufficient waterfront footage, and adjacent water depths to accommodate the proposed project components even when cost factors are not considered. Certain offsite alternatives – those without proximity to existing deep-water access routes, without close proximity to the Houston Ship Channel & Cedar Bayou waterway, without vessel access to the Cedar Bayou waterway, and without additional required siting criteria as listed above, were not considered or were rejected as not practicable. A National Wetlands Inventory map has been annotated to identify the offsite alternative locations and preliminarily identifies wetland areas via U.S. Fish & Wildlife Service’s National Wetland Inventory (NWI) maps (Exhibit A).

4.2.2.1 Offsite Alternative 1

TGS evaluated an approximately 73-acre tract adjacent to the Cedar Bayou waterway. Cedar Bayou is maintained at a 12-foot water depth. This land is located north of Highway 99 and bordered by West Bay Road to the east. The City of Baytown has placed a 300-foot restriction along the waterfront that faces Cedar Bayou on this property that prohibits marine development. This alternative was rejected for the above reasons and does not represent the LEDPA.

Siting Criteria		Evaluation (YES if siting criteria is met & elaborated if not met)
1	TGS-Owned Property	NO; This property is under an easement with the City of Baytown restricting development.
2	Vessel Access to Cedar Bayou	YES
3	Dock Space	NO; The 300-foot restriction limits available dock space.
4	Barge Fleeting	NO, There is not enough space for barge fleeting.
5	Minimum Available Area of 20 Acres	YES
6	Vehicular Access to the Site	YES; Site is located within 0.5 miles of Highway 99. This alternative would require a new access road to be developed.
7	Space/Proximity to Dredge Material Placement Area	NO; No current dredge material placement areas nearby.
8	Minimize Environmental Impacts	Environmental impact was not assessed because the property is not available for development.

**Table 1:** Siting Criteria Evaluation for Offsite Alternative 1



4.2.2.2 Offsite Alternative 2

This alternative involves approximately 154 acres located in Baytown, Texas off Tri-City Beach Road. This property is bordered by Galveston Bay to the southwest, an electrical and pipeline transmission corridor and a new residential development to the north, and undeveloped land to the southeast. This offsite alternative is located northwest of the proposed onsite alternative. The City of Baytown has indicated that this site is not available for industrial development. This alternative was rejected because it is not available for development.

Siting Criteria		Evaluation (YES if siting criteria is met & elaborated if not met)
1	TGS-Owned Property	NO; The City of Baytown has indicated this property is not available for industrial development.
2	Vessel Access to Cedar Bayou	YES
3	Dock Space	NO; the restriction on industrial development limits available dock space.
4	Barge Fleeting	YES
5	Minimum Available Area of 20 Acres	YES
6	Vehicular Access to the Site	YES
7	Space/Proximity to Dredge Material Placement Area	NO; No current dredge material placement areas nearby.
8	Minimize Environmental Impacts	Environmental impact was not assessed because the property is not available for development.

**Table 2:** Siting Criteria Evaluation for Offsite Alternative 2

**4.2.2.3 Offsite Alternative 3**

This offsite alternative involves approximately 26 acres located in Chambers County, TX off FM 1405. This property is located adjacent to Cedar Bayou and upstream of the proposed preferred onsite alternative. There is sufficient space for barge docks and for creation of a barge fleeting area. This alternative does not have room to place dredge material and would require additional investigation to determine practical disposal methods. This property is located inside the USACE/Cedar Bayou Navigation District Ijams Lake Dredge Placement Area and is part of the Cedar Bayou expansion project that has been approved by the USACE. This alternative was rejected because it is part of an approved USACE project and therefore is not available.

Siting Criteria		Evaluation (YES if siting criteria is met & elaborated if not met)
1	TGS-Owned Property	NO; This property is part of an approved USACE project and is not available.
2	Vessel Access to Cedar Bayou	YES
3	Dock Space	YES
4	Barge Fleeting	YES
5	Minimum Available Area of 20 Acres	YES
6	Vehicular Access to the Site	YES
7	Space/Proximity to Dredge Material Placement Area	NO; No current dredge material placement areas nearby.
8	Minimize Environmental Impacts	Environmental impact was not assessed because the property is not available for development.

**Table 3:** Siting Criteria Evaluation for Offsite Alternative 3

**4.2.3 Onsite Alternatives**

An analysis of the four onsite alternatives evaluated for the proposed project is included below. **Exhibit B** includes maps of each Onsite Alternative evaluated.

**4.2.3.1 Onsite Alternative 1**

Onsite Alternative 1 involves adequate waterfront dock space to safely accommodate eight barges and a roll-on/roll-off dock adjacent to a 30-acre open storage lot for industrial development for cargo storage and transfers. This alternative also meets criteria requiring vessel access and adequate fleeting area for a minimum of 100 barges. Onsite alternative 1 involves the greatest environmental impacts of the onsite alternatives considered. Although this alternative would provide for maximum usage of TGS’s property, the associated fill impacts to wetlands, smooth cordgrass, and open water involve approximately 16.17 acres. Additionally, this proposed layout involves the excavation of 1.94 acres of wetlands and 0.44 acres of smooth cordgrass. Although the excavation impacts would not result in a total loss of aquatic function as the wetlands and smooth cordgrass areas would be converted to open water habitat, this alternative was ultimately not selected as it involves the greatest environmental impacts associated with this site location. Therefore, onsite alternative 1 does not represent the least environmentally damaging practicable alternative.

Siting Criteria		Evaluation (YES if siting criteria is met & elaborated if not met)
1	TGS-Owned Property	YES
2	Vessel Access to Cedar Bayou	YES
3	Dock Space	YES
4	Barge Fleeting	YES
5	Minimum Available Area of 20 Acres	YES
6	Vehicular Access to the Site	YES
7	Space/Proximity to Dredge Material Placement Area	YES
8	Minimize Environmental Impacts	NO Fill Impacts: 16.17 acres total (wetland 7.72 acres, <i>Spartina alterniflora</i> 0.84 acres, open water 7.61 acres); Excavation Impacts: 2.38 acres total (wetland 1.94 acres, <i>Spartina alterniflora</i> 0.44 acres)

**Table 4:** Siting Criteria Evaluation for Onsite Alternative 1

4.2.3.2 Onsite Alternative 2

Onsite Alternative 2 includes construction of an approximately 450-ft waterfront docking space that can accommodate up to four barges adjacent to an overall 20-acre open storage lot for industrial development for cargo storage and transfers. While the dimensions of the 20-acre lot avoid most fill impacts to the existing estuarine wetland, this layout is not practicable as it does not meeting the project criteria of providing adequate docking space for eight barges and a roll-on/roll-off dock adjacent to the 20-acre cargo storage and transfer lot. Onsite alternative 2 involves the least environmental impacts associated with evaluated onsite alternatives. Although this alternative has the least environmental impacts, the site layout does not accommodate the necessary space required to operate the barge dock at required capacity. Only four barges could be staged at the barge dock due to limiting the barge dock waterfront footprint to avoid wetland impacts. This alternative was rejected because it is not practicable.

Siting Criteria		Evaluation (YES if siting criteria is met & elaborated if not met)
1	TGS-Owned Property	YES
2	Vessel Access to Cedar Bayou	YES
3	Dock Space	NO; There is only enough dock space for four barges.
4	Barge Fleeting	YES
5	Minimum Available Area of 20 Acres	YES
6	Vehicular Access to the Site	YES
7	Space/Proximity to Dredge Material Placement Area	YES
8	Minimize Environmental Impacts	YES; Fill Impacts: 0.52 acres total (wetland 0.52 acres); Excavation Impacts: 7.1 acres total (wetland 6.20 acres, <i>Spartina alterniflora</i> 0.9acres)

**Table 5:** Siting Criteria Evaluation for Onsite Alternative2

4.2.3.3 Onsite Alternative 3

This alternative meets the applicant’s criteria for safely operating the proposed barge dock and fleeting area and is practicable. Onsite Alternatives 3 & 4 represents the least environmentally damaging practicable alternatives in regards to fill impacts. However, through further coordination, the applicant determined that the access channel could be reconfigured to further minimize impacts to wetlands due to excavation. Therefore, although practicable, this alternative is not the least environmentally damaging alternative. The applicant rejected onsite alternative 3 and instead prefers onsite alternative 4.

Siting Criteria		Evaluation (YES if siting criteria is met & elaborated if not met)
1	TGS-Owned Property	YES
2	Vessel Access to Cedar Bayou	YES
3	Dock Space	YES
4	Barge Fleeting	YES
5	Minimum Available Area of 20 Acres	YES
6	Vehicular Access to the Site	YES
7	Space/Proximity to Dredge Material Placement Area	YES
8	Minimize Environmental Impacts	NO; Fill Impacts: 5.83 acres total (wetland 3.88 acres, <i>Spartina alterniflora</i> 0.06 acres, open water 1.89 acres) Excavation Impacts: 6.74 acres total (wetland 5.9 acres, <i>Spartina alterniflora</i> 0.84 acres)

**Table 6:** Siting Criteria Evaluation for Onsite Alternative 3

4.2.3.4 Onsite Alternative 4 (Preferred Alternative)

This alternative is practicable, and involves minimal impacts to special aquatic sites. As discussed in onsite alternative 3, above, the applicant determined that by shifting the proposed access channel, excavation impacts to an existing wetland could be reduced by approximately 0.91 acres. Therefore, although the fill footprint is similar to onsite alternative 3, this alternative involves the least environmental impacts as the avoidance of 0.91 acres of excavation of wetland habitat was implemented. Therefore, onsite alternative 4 represents the least environmentally damaging practicable alternative (LEDPA).

Siting Criteria		Evaluation (YES if siting criteria is met & elaborated if not met)
1	TGS-Owned Property	YES
2	Vessel Access to Cedar Bayou	YES
3	Dock Space	YES
4	Barge Fleeting	YES
5	Minimum Available Area of 20 Acres	YES
6	Vehicular Access to the Site	YES
7	Space/Proximity to Dredge Material Placement Area	YES
8	Minimize Environmental Impacts	YES; Fill Impacts: 5.83 acres total (wetland 3.88 acres, <i>Spartina alterniflora</i> 0.06 acres, open water 1.89 acres) Excavation Impacts: 4.88 acres total (wetland 5.9 acres, <i>Spartina alterniflora</i> 0.84 acres)

**Table 7:** Siting Criteria Evaluation for Onsite Alternative 4 (preferred alternative)

**5.0 SUMMARY**

As outlined above, the applicant considered numerous project alternatives in order to identify a project design that was the LEDPA that also fulfilled the project’s purpose and need. A summary of those findings is included in **Table 8**, below. Alternatives analyzed by the applicant included a no-action alternative and both onsite and offsite project alternatives. Through the above described analysis, the applicant determined that Onsite Alternative 4 is the preferred and Least Environmentally Damaging Practicable Alternative.

When evaluating each siting criteria for each alternative, “YES” indicates that the siting criteria is met for this alternative and “NO” indicates that the siting criteria has not been met and additional information is provided.

Siting Criteria	Offsite Alternative #1	Offsite Alternative #2	Offsite Alternative #3	Onsite Alternative #1	Onsite Alternative #2	Onsite Alternative #3	Onsite Alternative #4 (Proposed)
1 <b>TGS-Owned Property</b>	NO; This property is under an easement with the City of Baytown restricting development.	NO; The City of Baytown has indicated this property is not available for industrial development.	NO; This property is part of an approved USACE project and is not available.	YES	YES	YES	YES
2 <b>Vessel Access to Cedar Bayou</b>	YES	YES	YES	YES	YES	YES	YES
3 <b>Dock Space</b>	NO; The 300-foot restriction limits available dock space.	NO; the restriction on industrial development limits available dock space.	YES	YES	NO; There is only enough dock space for four barges.	YES	YES
4 <b>Barge Fleeting</b>	NO, There is not enough space for barge fleeting.	YES	YES	YES	YES	YES	YES
5 <b>Minimum Available Area of 20 Acres</b>	YES	YES	YES	YES	YES	YES	YES
6 <b>Vehicular Access to the Site</b>	YES; Site is located within 0.5 miles of Highway 99. This alternative would require a new access road to be developed.	YES	YES	YES	YES	YES	YES
7 <b>Space/Proximity to Dredge Material Placement Area</b>	NO; No current dredge material placement areas nearby.	NO; No current dredge material placement areas nearby.	NO; No current dredge material placement areas nearby.	YES	YES	YES	YES
8 <b>Minimize Environmental Impacts</b>	Environmental impact was not assessed because the property is not available for development.	Environmental impact was not assessed because the property is not available for development.	Environmental impact was not assessed because the property is not available for development.	NO: Fill Impacts: 16.17 acres total (wetland 7.72 acres, <i>Spartina alterniflora</i> 0.84 acres, open water 7.61 acres); Excavation Impacts: 2.38 acres total (wetland 1.94 acres, <i>Spartina alterniflora</i> 0.44 acres)	YES; Fill Impacts: 0.52 acres total (wetland 0.52 acres); Excavation Impacts: 7.1 acres total (wetland 6.20 acres, <i>Spartina alterniflora</i> 0.9 acres)	NO; Fill Impacts: 5.83 acres total (wetland 3.88 acres, <i>Spartina alterniflora</i> 0.06 acres, open water 1.89 acres) Excavation Impacts: 6.74 acres total (wetland 5.9 acres, <i>Spartina alterniflora</i> 0.84 acres)	YES; Fill Impacts: 5.83 acres total (wetland 3.88 acres, <i>Spartina alterniflora</i> 0.06 acres, open water 1.89 acres) Excavation Impacts: 4.88 acres total (wetland 5.9 acres, <i>Spartina alterniflora</i> 0.84 acres)

Table 8: Summary of Siting Criteria Evaluation for Alternatives

EXHIBIT A  
OFFSITE ALTERNATIVES



# Offsite Alternatives Proposed Cedar Port Barge Dock Chambers County, Texas

### Notes:

- Prepared by Belaire Environmental, Inc., Nov. 10, 2020 (LMF)
- Base map source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, USFWS NWI Map.
- For planning purposes only, not for construction.



**Offsite Alternative 1**  
Approx. 73 Acres  
23.25 Acres Wetland per NWI map

**Offsite Alternative 2**  
Approx. 154 Acres  
27.20 Acres Wetland per NWI map

**Offsite Alternative 3**  
Approx. 26 Acres  
9.80 Wetlands per NWI map

**Onsite Alternatives Location**  
Approx. 20 Acres

Hwy 99

Trinity Bay

Galveston Bay

Houston Ship Channel

FM 2354

### Legend

#### CCID1 Boundary

CCID1 Boundary

#### National Wetland Inventory

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

EXHIBIT B  
ONSITE ALTERNATIVES



## Onsite Alternative 1 Proposed Cedar Port Barge Dock Chambers County, Texas

Notes:  
 -Prepared by Belaire Environmental, Inc., Nov. 10, 2020 (LMF)  
 -Base map source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community  
 -For planning purposes only, not for construction.

0      250      500      1,000  
 Feet



Proposed Excavation  
Wetlands

Property Boundary

Proposed 30 Ac  
Open Storage Lot  
& Work Area

Proposed Fill  
Wetlands

Proposed Excavation  
*Spartina alterniflora*

Proposed Fill  
Open Water

Proposed Fill  
*Spartina alterniflora*

Proposed Excavation  
*Spartina alterniflora*

Galveston Bay

**Legend**

**Alt 1 Fill Impacts**

- Open Water
- Spartina alterniflora*
- Wetland

**Alt 1 Excavation Impacts**

- Spartina alter*
- Wetland
- Approximate Property Boundary
- Spartina alterniflora*
- Wetlands
- Limit of 100-Year Floodplain
- Annual High Tide Line (AHTL, +2.64 ft NAVD88)
- Mean High Water Line (MHW, +1.13 ft NAVD88)

Onsite Alternative 1 Impacts		
	Fill (Ac)	Excavation (Ac)
Wetland	7.72	1.94
<i>Spartina alterniflora</i>	0.84	0.44
Open Water	7.61	
<b>Totals</b>	<b>16.17</b>	<b>2.38</b>

## Onsite Alternative 2 Proposed Cedar Port Barge Dock Chambers County, Texas

Notes:  
 -Prepared by Belaire Environmental, Inc., Nov. 10, 2020 (LMF)  
 -Survey area adjusted to include estuarine wetlands.  
 -Base map source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community  
 -For planning purposes only, not for construction.



Proposed Excavation Wetlands

Property Boundary

Proposed 20 Ac Open Storage Lot & Work Area

Proposed Fill Wetlands

Proposed Excavation Wetlands

Proposed Excavation *Spartina alterniflora*

Proposed Excavation *Spartina alterniflora*

### Legend

#### Alt 2 Fill Impacts

Wetland

#### Alt 2 Excavation Impacts

*Spartina alterniflora*

Wetland

Approximate Property Boundary

*Spartina alterniflora*

Wetlands

Annual High Tide Line (AHTL, +2.64 ft NAVD88)

Mean High Water Line (MHW, +1.13 ft NAVD88)

Galveston Bay

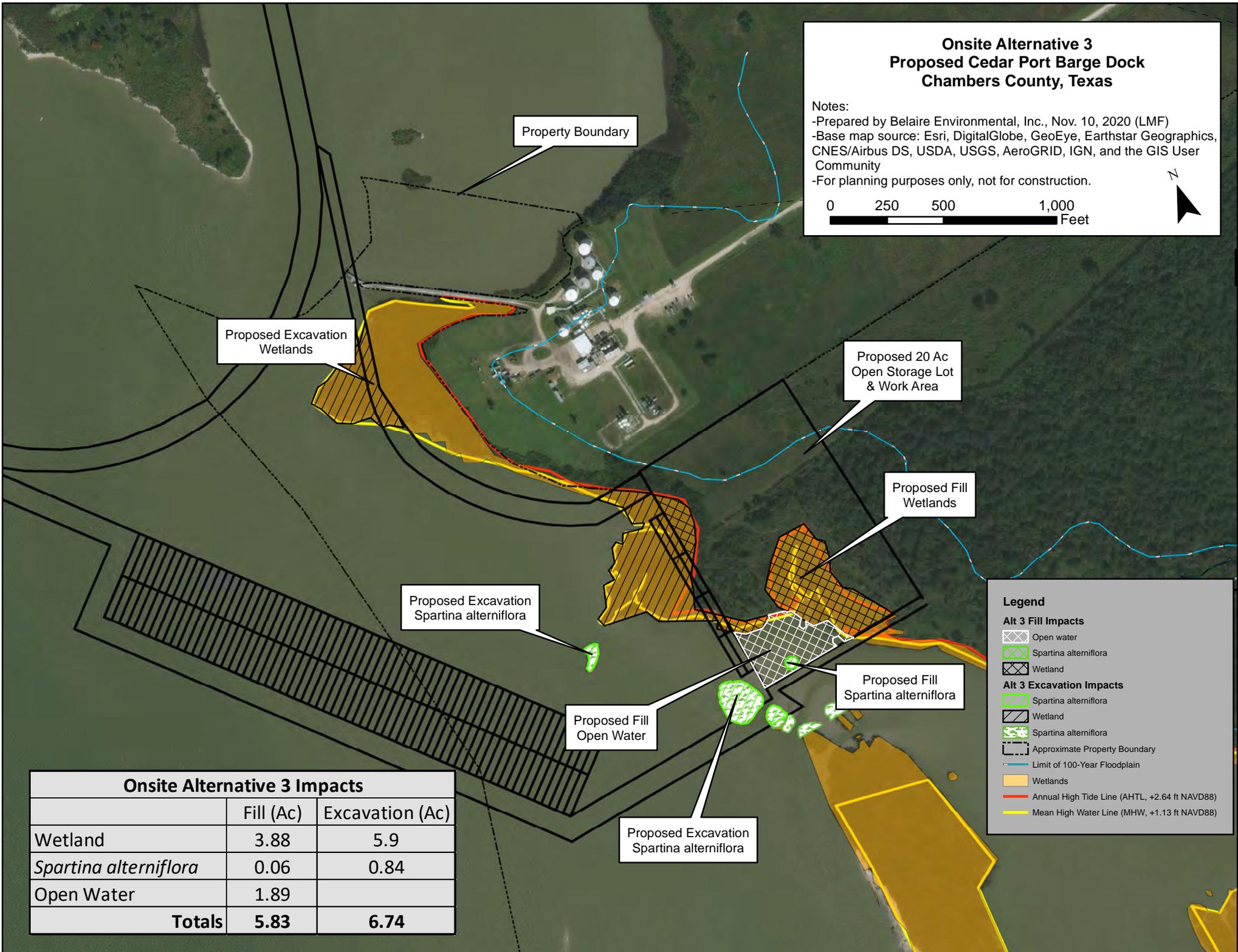
Onsite Alternative 2 Impacts		
	Fill (Ac)	Excavation (Ac)
Wetland	0.52	6.2
<i>Spartina alterniflora</i>		0.9
Open Water		
<b>Totals</b>	<b>0.52</b>	<b>7.1</b>

### Onsite Alternative 3 Proposed Cedar Port Barge Dock Chambers County, Texas

**Notes:**

- Prepared by Belaire Environmental, Inc., Nov. 10, 2020 (LMF)
- Base map source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
- For planning purposes only, not for construction.

0 250 500 1,000  
Feet



**Legend**

**Alt 3 Fill Impacts**

- Open water
- Spartina alterniflora
- Wetland

**Alt 3 Excavation Impacts**

- Spartina alterniflora
- Wetland
- Spartina alterniflora

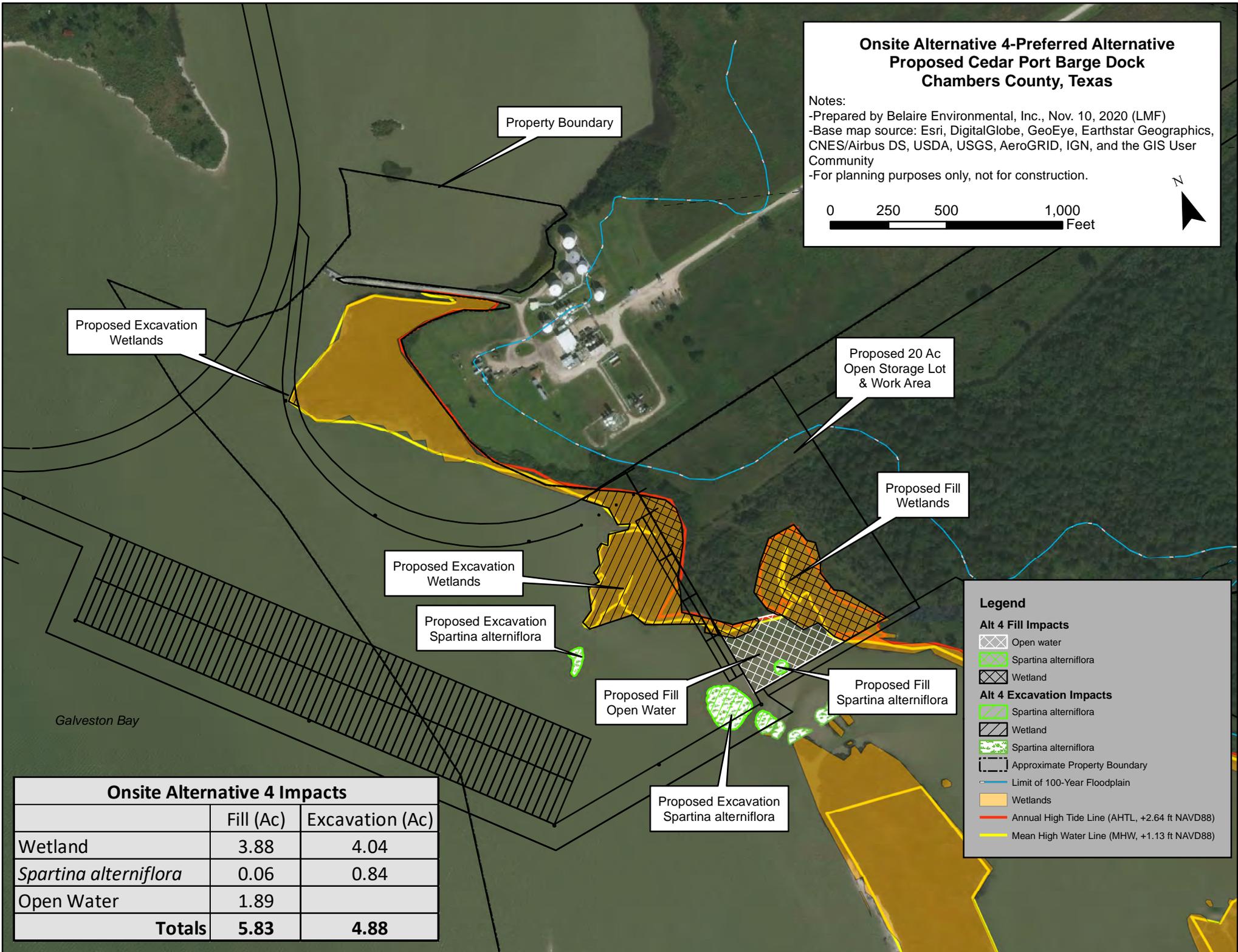
- Approximate Property Boundary
- Limit of 100-Year Floodplain
- Wetlands
- Annual High Tide Line (AHTL, +2.64 ft NAVD88)
- Mean High Water Line (MHW, +1.13 ft NAVD88)

Onsite Alternative 3 Impacts		
	Fill (Ac)	Excavation (Ac)
Wetland	3.88	5.9
<i>Spartina alterniflora</i>	0.06	0.84
Open Water	1.89	
<b>Totals</b>	<b>5.83</b>	<b>6.74</b>

## Onsite Alternative 4-Preferred Alternative Proposed Cedar Port Barge Dock Chambers County, Texas

Notes:  
 -Prepared by Belaire Environmental, Inc., Nov. 10, 2020 (LMF)  
 -Base map source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community  
 -For planning purposes only, not for construction.

0      250      500      1,000  
 Feet



Proposed Excavation Wetlands

Property Boundary

Proposed 20 Ac Open Storage Lot & Work Area

Proposed Fill Wetlands

Proposed Excavation Wetlands

Proposed Excavation *Spartina alterniflora*

Proposed Fill Open Water

Proposed Fill *Spartina alterniflora*

Proposed Excavation *Spartina alterniflora*

Galveston Bay

**Legend**

**Alt 4 Fill Impacts**

- Open water
- Spartina alterniflora*
- Wetland

**Alt 4 Excavation Impacts**

- Spartina alterniflora*
- Wetland
- Spartina alterniflora*

Approximate Property Boundary

Limit of 100-Year Floodplain

Wetlands

Annual High Tide Line (AHTL, +2.64 ft NAVD88)

Mean High Water Line (MHW, +1.13 ft NAVD88)

Onsite Alternative 4 Impacts		
	Fill (Ac)	Excavation (Ac)
Wetland	3.88	4.04
<i>Spartina alterniflora</i>	0.06	0.84
Open Water	1.89	
<b>Totals</b>	<b>5.83</b>	<b>4.88</b>