Ecological site TX150B01X730
Sandy Bay Bottom

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General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

MLRA notes

Major Land Resource Area (MLRA): 150B–Gulf Coast Saline Prairies

MLRA 150B is in the West Gulf Coastal Plain Section of the Coastal Plain Province of the Atlantic Plain and entirely in Texas. It makes up about 3,420 square miles. It is characterized by nearly level to gently sloping coastal lowland plains dissected by rivers and streams that flow toward the gulf. Barrier islands and coastal beaches are included. The lowest parts of the area are covered by high tides, and the rest are periodically covered by storm tides. Parts of the area have been worked by wind, and the sandy areas have gently undulating to irregular topography because of low mounds or dunes. Broad, shallow flood plains are along streams flowing into the bays. Elevation generally ranges from sea level to about 10 feet, but it is as much as 25 feet on some of the dunes. Local relief is mainly less than 3 feet. The towns of Groves, Texas City, Galveston, Lake Jackson, and Freeport are in the northern half of this area. The towns of South Padre Island, Loyola Beach, Corpus Christi, and Port Lavaca are in the southern half. Interstate 37 terminates in Corpus Christi, and Interstate 45 terminates in Galveston.

Classification relationships

USDA-Natural Resources Conservation Service, 2006. -Major Land Resource Area (MLRA) 150B

Ecological site concept

The Sandy Bay Bottoms are continuously inundated by saline water on flood-tidal delta flats and washover-fan flats of lagoons. They were formed from sandy lagoonal deposits and sometimes include dredge spoils. Greater water clarity and shallow depths provide favorable conditions for subaquatic vegetation. The presence and type of vegetation within these sandy sites are dictated by soil and water characteristics, specifically disturbance, salinity, and turbidity.

Associated sites

TX150B01X732	**Turbid Bay Bottom** This site has higher turbidity and limited vegetation coverage.

Similar sites

TX150B01X732	**Turbid Bay Bottom** This site has higher turbidity and limited vegetation coverage.
R150BY728TX	**Subaqueous Grassflat** This site has higher salinity and turbidity with a more southern geographic location.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) *Ruppia maritima*

Legacy ID

R150BY730TX

Physiographic features

The sites are found on dredge-deposit shoals, flood-tidal flats, washover-fan flats, and slopes of lagoons on the coastal plain. This nearly level site's elevation ranges from -6 to 0 feet. These soils are permanently inundated and range in water depth from 0 to 6.6 feet (0 to 2.0 meters).

Table 2. Representative physiographic features

Landforms	(1) Lagoon > Flood-tidal delta flat (2) Lagoon > Washover-fan flat
Flooding duration	Very long (more than 30 days)
Flooding frequency	Very frequent
Slope	0 %
Water table depth	0 – 200 cm
Aspect	Aspect is not a significant factor

Climatic features

The climate is predominately maritime, controlled by the warm and very moist air masses from the gulf. The climate along the upper coast of the barrier islands is subtropical subhumid and the climate on the lower coast of Padre Island is subtropical semiarid (due to high evaporation rates that exceed precipitation).

Almost constant sea breezes moderate the summer heat along the coast. Winters are generally warm and are occasionally interrupted by incursions of cool air from the north. Spring is mild and damaging wind and rain may occur during spring and summer months. Tropical cyclones or hurricanes can occur with wind speeds of greater than 74 miles per hour and have the potential to cause flooding from torrential rainstorms. Despite the threat of tropical storms, the storms are rare.

Throughout the year, the prevailing winds are from the southeast to south-southeast. The average annual representative precipitation is 36 to 46 inches in this area. Rainfall typically peaks during the spring, summer, and fall months, yet is generally uniform through out the year. The average annual air temperature is 69 to 71 degrees Fahrenheit.

Table 3 Representative climatic features

Frost-free period (characteristic range)	
Freeze-free period (characteristic range)	
Precipitation total (characteristic range)	910-1,170 mm
Frost-free period (actual range)	
Freeze-free period (actual range)	
Precipitation total (actual range)	890-1,270 mm
Frost-free period (average)	
Freeze-free period (average)	
Precipitation total (average)	1,070 mm

- (1) CORPUS CHRISTI NAS [USW00012926], Corpus Christi, TX
- (2) GALVESTON [USW00012944], Galveston, TX
- (3) GALVESTON SCHOLES FLD [USW00012923], Galveston, TX
- (4) MATAGORDA NO 2 [USC00415659], Matagorda, TX
- (5) PORT O'CONNOR [USC00417186], Port O Connor, TX

Influencing water features

These soils are continuously inundated and are located in gulf-side subtidal areas. Sites are polyhaline with typical water salinity ranges of 25 to 35 parts per thousand. Ambient water temperature follows the same pattern as air temperature, averaging 0.8 to 3.0 degrees Fahrenheit warmer. From 2018 to 2023, the monthly average annual water temperature from four nearby buoys was: 56.5, 58.5, 67.0, 72.0, 80.5, 85.8, 87.5, 88.0, 84.4, 76.0, 64.8, and 60.7 degrees Fahrenheit. Stations used include: LUIT2, EPTT2, GRRT2, and GTOT2 from NOAA's National Data Buoy Center.

Wetland description

Classification System: Cowardin
System: Estuarine
Subsystem: Subtidal
Class: Aquatic Beds

Soil features

The ecological site consists of very deep, subaqueous soils that formed in sandy lagoonal sediments and/or anthropogenic dredge deposits. Surface textures range from loamy fine sand to loam. Dredge spoils may have gravelly sandy clay loam textures. Soils are hyperthermic with some portions of the site containing dredge spoils. Dredge spoils are defined as unconsolidated, randomly mixed sediments composed of rock, soil, and/or shell materials extracted and deposited during dredging and dumping activities. Dredge spoils lie unconformably upon natural, undisturbed soil or regolith and can form anthropogenic landforms. Soil Series correlated to this site include: Basford (human-altered soil), Bastropbay, Hoeckers (human-altered soil), and Westbay.

Table 4. Representative soil features

Parent material	(1) Lagoonal deposits (2) Dredge spoils
Surface texture	(1) Loamy fine sand (2) Loam (3) Gravelly sandy clay loam
Drainage class	Subaqueous
Soil depth	200 cm
Surface fragment cover <=3"	0 – 30 %
Surface fragment cover >3"	Not specified
Calcium carbonate equivalent (0-203.2cm)	0 – 10 %
Clay content (0-203.2cm)	10 – 20 %
Electrical conductivity (0-203.2cm)	10 – 30 mmhos/cm
Sodium adsorption ratio (0-203.2cm)	10 – 60
Soil reaction (1:1 water) (0-203.2cm)	6.6 – 10

Ecological dynamics

Interwoven through tidal flats, lagoons, estuaries, and bay bottoms adjacent to the barrier islands reside the Sandy Bay Bottom ecological sites. Protected from the harsh oceanside shorelines, these hyperthermic subaqueous bottoms contain predominately widgeongrass. Soils are continuously inundated, displaying iron and sulfate chemical reductions, indicating soils have decreased oxygen availability. Despite their fragile nature, subaqueous soils are nursery grounds for a variety of plants and animals. Subaqueous soils protect shorelines from storm impacts, sequester carbon, and filter water of pollutants. Sandy Bay Bottom sites may be affected by anthropogenic factors including dredging and coastal development, as well as natural forces such as hurricanes.

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Table 6. Community 1.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Table 7. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Inventory data references

The provisional concepts listed are based on observations from soil survey staff during the associated subaqueous soil mapping project, as well as, literature review and professional consensus. As more data is collected, the concepts will continue to be tested and refined.

Other references

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Contributors

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Approval

Jamin Johanson, 6/13/2025

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	09/15/2026
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

   _____

2. **Presence of water flow patterns:**

   _____

3. **Number and height of erosional pedestals or terracettes:**

   _____

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

   _____

5. **Number of gullies and erosion associated with gullies:**

   _____

6. **Extent of wind scoured, blowouts and/or depositional areas:**

   _____

7. **Amount of litter movement (describe size and distance expected to travel):**

   _____

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

   _____

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

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12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant:

    Sub-dominant:

    Other:

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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14. **Average percent litter cover (%) and depth (in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**

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17. **Perennial plant reproductive capability:**
