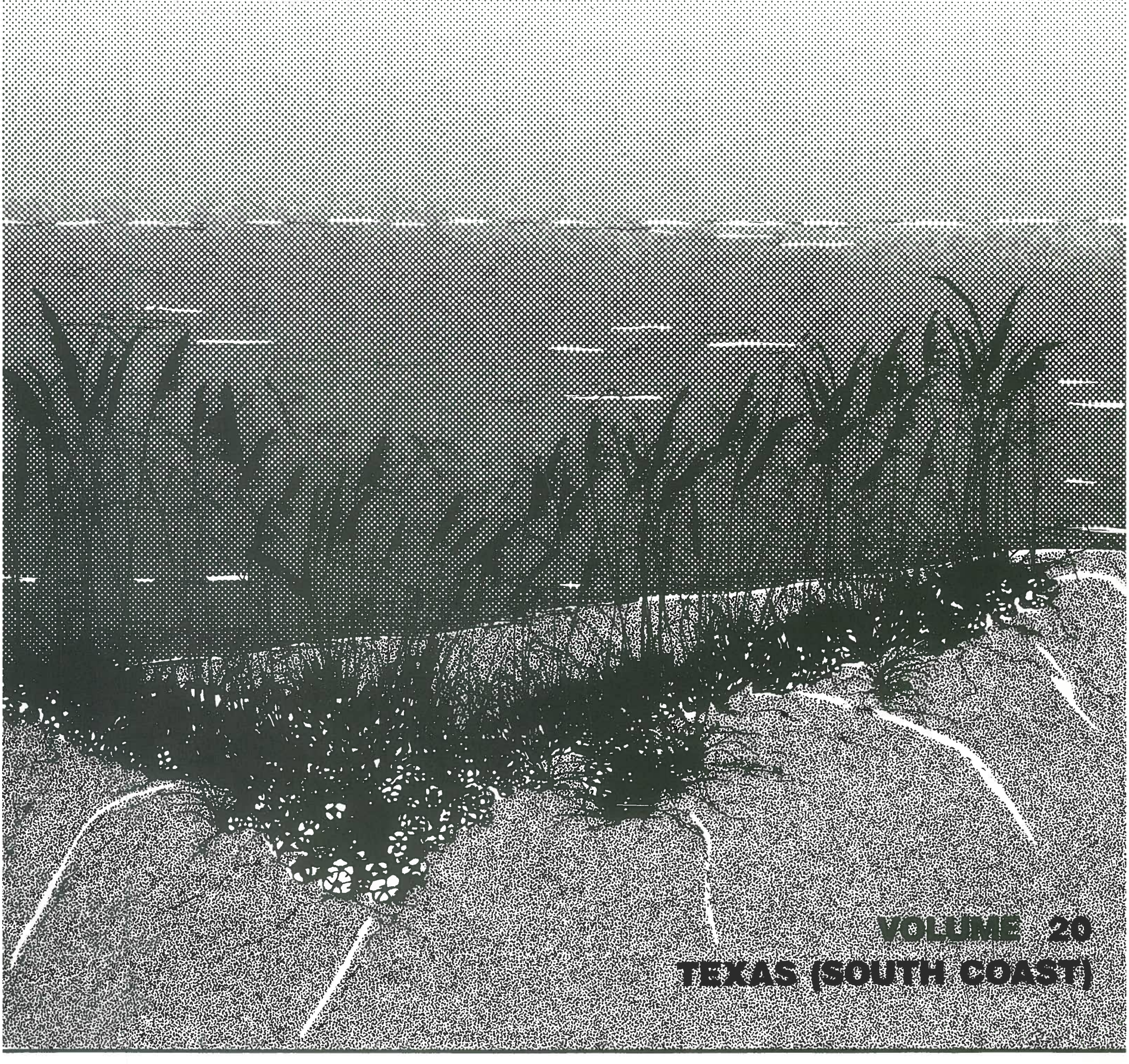
REPORT TO CONGRESS:
COASTAL BARRIER RESOURCES SYSTEM

Proposed Recommendations for Additions to or Deletions from the Coastal Barrier Resources System



VOLUME 20
TEXAS (SOUTH COAST)

U.S. Department of the Interior

February 1987

REPORT TO CONGRESS: COASTAL BARRIER RESOURCES SYSTEM

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Proposed Recommendations for Additions to or Deletions from
the Coastal Barrier Resources System

TEXAS (SOUTH COAST)

Mapped, edited, and published by the Coastal Barriers Study Group

United States Department of the Interior
William P. Horn, Assistant Secretary for Fish and Wildlife and Parks

February 1987

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TEXAS (SOUTH COAST)

INTRODUCTION

The Coastal Barrier Resources Act (CBRA) of 1982 (Public Law 97-348) established the Coastal Barrier Resources System (CBRS), a system of undeveloped coastal barriers along the Atlantic and Gulf of Mexico coasts. This atlas of coastal barriers along the south coast of Texas has been prepared in accordance with Section 10 of CBRA (16 U.S.C. 3509), which states:

> Sec. 10. Reports to Congress.
>
> (a) In General.--Before the close of the 3-year period beginning on the date of the enactment of this Act, the Secretary shall prepare and submit to the Committees a report regarding the System.
> (b) Consultation in Preparing Report.--The Secretary shall prepare the report required under subsection (a) in consultation with the Governors of the States in which System units are located and with the coastal zone management agencies of the States in which System units are located and after providing opportunity for, and considering, public comment.
> (c) Report Content.--The report required under subsection (a) shall contain--
>
> (1) recommendations for the conservation of fish, wildlife, and other natural resources of the System based on an evaluation and comparison of all management alternatives, and combinations thereof, such as State and local actions (including management plans approved under the Coastal Zone Management Act of 1972 (16 U.S.C. 1451 et seq.)), Federal actions (including acquisition for administration as part of the National Wildlife Refuge System), and initiatives by private organizations and individuals;
>
> (2) recommendations for additions to, or deletions from, the Coastal Barrier Resources System, and for modifications to the boundaries of System units;
>
> (3) a summary of the comments received from the Governors of the States, State coastal zone management agencies, other government officials, and the public regarding the System; and
>
> (4) an analysis of the effects, if any, that general revenue sharing grants made under section 102 of the State and Local Fiscal Assistance Amendments of 1972 (31 U.S.C. 1221) have had on undeveloped coastal barriers.

This atlas of the south coast of Texas includes delineations of the CBRS units designated by Congress in 1982 and delineations of proposed recommendations for additions and modifications to the CBRS that will be provided to Congress by the Department of the Interior following public review and comment.

Under the direction of the Assistant Secretary for Fish and Wildlife and Parks, this report has been prepared by the Coastal Barriers Study Group, a task force of professionals representing the National Park Service, U.S. Fish and Wildlife Service, U.S. Geological Survey, and other Departmental offices.

BACKGROUND

The Texas coast comprises 367 miles of barrier islands, spits, and deltaic shorelines. About 60 percent of this area is eroding (some of it at very rapid rates), 33 percent is essentially stable, and 7 percent is presently accreting. The accreting areas are mostly coastlines that are updrift of human-made obstacles to longshore sand transport, such as jetties and groins (McGowen et al. 1977).

Demographic studies show a rapid increase in the State's coastal population. In 1980, roughly one-third (about 4.3 million people) of the State's population lived within 50 miles of the coast (Davenport 1980). The rapid increase in development on Texas barrier islands over the last decade may be attributed both to the demand for housing by the growing population in the coastal cities and the availability of Federal flood insurance, development subsidies, and disaster relief, all of which reduced the financial risk of owning a second home on the beach.

The range of activities occurring in the Texas coastal zone includes agriculture, cattle ranching, fisheries production, oil production, shipping and transportation, heavy industry, and tourism. Balancing resource use with resource protection has proven a difficult challenge to resource managers working in the region.

COASTAL RESOURCE MANAGEMENT

Texas Coastal Resource Management

Texas coastal management began in 1937 with the establishment of a Coastal Division of the Texas Game and Fish Commission. This was also the year that the U.S. Congress passed the Pittman-Robertson Act, which established an excise tax on firearms and ammunition and earmarked the earnings for wildlife management.

The public trust doctrine forms the basis for State ownership of coastal wetlands: "All lands beneath tidal waters are held in trust for the use and benefit of the whole public." The seaward limit on State lands is the 3-league (9-mile) boundary. The landward limit, on the other hand, varies from place to place, depending on when the title was issued. The landward boundary on littoral parcels with a title issued by Spain, Mexico, or Texas prior to 1840 is mean higher high water. Since Texas adopted common law principles in 1840, titles issued after that date define the boundary as mean high tide. On many flat beaches, and particularly on the extensive wind-tidal flats of south Texas, the difference in these two elevation definitions may translate into large horizontal distances.

Texas Open Beaches Act. This Act, passed in 1959, was one of the first major pieces of Texas coastal legislation. The Act (Texas Natural Resources Code 61.001) states:

> It is declared and affirmed to be the public policy of this State that the public, individually and collectively, shall have the free and unrestricted right of ingress and egress to and from the State-owned beaches bordering on the seaward shore of the Gulf of Mexico, or if the public has acquired a right of use or easement to or over an area by prescription, dedication, or has retained a right by virtue of continuous use in the public, the public shall have the free and unrestricted right of ingress and egress to the larger area extending from the line of mean low tide to the line of vegetation bordering on the Gulf of Mexico.

Initially a declaration of the public's right to unimpeded use of the State's beaches, the Act has, in effect, become a strong management tool. Public acquisition of private property can be accomplished either by "dedication," which implies formal dedication of title or commonly accepted public usage with the consent of the owner, or by "prescription," which implies that the public may take the land from the private owner.

The issue of State acquisition of private land becomes particularly relevant after a storm-induced shoreline retreat that leaves buildings standing on the public beach, i.e., seaward of the vegetation line.

Shortly after the passage of the Texas Open Beaches Act, the State's right to such land was settled in the "Seaway Company case." The issue in the case was whether barriers could be erected by a private company (on Galveston Island) to limit access to a section of existing beach. The court found that because the beach had been used unrestrictedly by the public for more than 100 years, that use, in effect, constituted an implied dedication of an easement to the public. The humanmade barriers were found to be in violation of this principle.

Other questions concerning public usage of the "historical" beach arose in the aftermath of Hurricane Alicia. Hurricane Alicia made landfall on August 8, 1983, just west of San Luis Pass, to the southwest of Galveston Island. The maximum onshore winds, storm surge, and wave energy were concentrated to the east of landfall, along the western half of Galveston Island. In this area, the vegetation line was eroded up to 130 feet landward; the vertical down-cutting of the beach amounted to about 5 feet. One year later a lot of sand had returned to Galveston Island beaches, presumably from the nearshore bars, yet the vegetation line had not moved seaward (Dupre, pers. comm.).

Two lawsuits were filed as a result of this hurricane; one was settled in October 1984 and the other is still pending. In the first case, the State attorney general filed a suit against those homeowners on Galveston beach whose property was more than 50 percent destroyed and was located between the water and the vegetation line after the hurricane. The State argued that structures in this zone were in violation of the Texas Open Beaches Act and should not be rebuilt. The State won the case with a directed verdict in an Austin court. The homeowners have appealed.

A countersuit has been filed in a Galveston court. In this litigation the plaintiffs (homeowners) argue that the Open Beaches Act does not imply a rolling easement. Hence, when the public beach erodes, so do the public rights. The case has yet to be heard, but the plaintiffs hope that Galveston will provide a court more sympathetic to their views.

Related litigation has been tried before on Galveston Island. In 1970, property owners along the West Beach were charged with violation of the Open Beaches Act. After a delayed trial, as late as 1975, three different judgments were agreed upon by the parties. Most of the defendants (homeowners) refused to concede any public rights to the receding beach, i.e., there was no acceptance of the rolling easement concept. A few homeowners accepted a qualified rolling easement, i.e., they accepted public access to the retreating beach but maintained that the structures on the beach would continue to be used by the owner. A minority of the landowners fully accepted the concept that public rights of beach access should move landward with the receding shoreline.

Coastal Public Lands Management Act (CPLMA). This Act, passed in 1973, pertains to State-owned submerged land and State-owned islands or portions of islands. Originally, coastal public lands were sold for navigation purposes for $1 per acre. In 1969, a moratorium was put on such sales, and in 1973, CPLMA revised the laws to permit only leasing, not purchasing. Also, this Act provided for comprehensive State management of all submerged

lands. It became the State's policy to protect the most biologically sensitive coastal land areas by keeping dredging permits to a minimum and by requiring dredged material to be disposed on upland areas "to the extent practicable."

Coastal Wetlands Acquisition Act. Texas took one more step to prevent wetlands damage with the passage of this Act in 1977. It authorized the Texas Parks and Wildlife Department to acquire, by purchase or condemnation, those coastal wetlands most essential to the public interest. As of 1984, however, no money has actually been appropriated for this use.

State agencies. The regulation of coastal activities, implementation of State and federally funded programs, and studies of coastal issues are distributed among a number of State agencies, including the following.

Governor's Budget and Planning Office. This office collects information and serves as the central coordinating agency for Federal, State, and regional planning.

General Land Office (GLO). This office is responsible for management of State-owned lands, including the submerged bay bottoms. The office collects State revenues accruing from lease of such lands.

School Land Board. This agency and GLO jointly manage leases for energy extraction from State lands.

Texas Coastal and Marine Council. The council was established by the legislature to act as an information agency and to help manage joint State and Federal programs.

Parks and Wildlife Department. The department manages all wildlife resources and operates an extensive State park system.

Department of Highways and Public Transportation. This department is responsible for State funds and Federal contributions to highway construction and maintenance. With the Corps of Engineers, the department is also responsible for administration of the Gulf Intracoastal Waterway (GIWW).

The Texas Catastrophe Property Insurance Association (CATPOOL) program. This program was created by the Texas Legislature in the 1960's, after Hurricanes Carla, Celia, and Beulah hit coastal settlements on the upper, central, and lower Texas coast. This widespread hurricane impact generated legislative support for a program to protect homeowners and persons with legitimate business interests along the coast who found that they were unable to secure insurance through conventional sources. CATPOOL requires all insurance companies licensed to write property insurance in Texas to share the risk of major natural catastrophes on a formula basis. The insurance covers wind, hail, and fire damage. The State of Texas does not offer flood insurance.

There is no rate subsidy in the Texas CATPOOL program, but insurance companies are entitled to a premium tax credit if the total aggregate payment after a disaster exceeds $100 million. After Hurricane Allen (1980), this provision did not come into effect because aggregate payments were only about $14 million (Dyer 1983). It appears, however, that after Hurricane Alicia (1983), the total payments from CATPOOL may be on the order of $150 to $200 million (Schwartz 1983). This would cause the tax credit provision to go into effect.

The CATPOOL program subsidizes coastal property owners at two levels: (1) other property owners subsidize high-hazard coastal development through escalated premiums, and (2) the taxpayers of the State subsidize the program through the premium tax credit for catastrophic losses. There are liability limits on individual policies. The limit for private homes is $200,000; for commercial properties the policies may go up to $1,000,000. The total current liability for the CATPOOL program is $2.75 billion (J. Douglas, State Insurance Board; pers. comm.).

The costly impact of Hurricane Alicia has encouraged a reassessment of the CATPOOL program. Some argue that the State should follow the Federal example set by CBRA and reduce the State subsidies for insurance on coastal barriers. Others argue that the State should step in to provide the insurance coverage being withdrawn through the passage of CBRA.

Sand Dune Protection Act. In 1970, the State passed a requirement that each county commission issue permits for the removal of sand, marl, gravel, and shell within 1,500 feet of any public beach. The Sand Dune Protection Act followed this requirement in 1973. This Act authorized those counties with jurisdiction over coastal barriers to establish a dune protection line 1,000 feet landward of the mean high tide line and to require developers to obtain a permit from the county commission to disturb a dune or vegetation seaward of the line.

Adoption of this Act by the individual counties is optional. To date, Nueces, Galveston, and Matagorda Counties have adopted dune protection lines; only Nueces County has included all of the barrier island sand dunes under its dune protection scheme. If a dune area under consideration for some alteration is judged as critical to the protection of State-owned lands, then the General Land Office may comment on the proposed activities. There is no required State permit, however, nor can the Land Office comment if the county has not adopted a dune protection line.

Local Actions

A unique approach to dune protection has been taken in Port Aransas (Nueces County), where the builders together with the city government, the county, and the local water district have agreed on deed restrictions placed on development in the first row of unstabilized dunes. They have also agreed that no seawalls or bulkheads are to be constructed.

New developments along the Texas coast increasingly face the bay margins rather than the open gulf. One particular case is the Packery Point yacht facility under construction at the northern tip of Padre Island near Corpus Christi. This $150 million facility will have a 40-acre marina and 60 acres of land development. Under present plans, the marina will connect with Packery Channel and the GIWW. Its nearest connection to the Gulf of Mexico, however, is Aransas Pass, some 30 miles away.

In return for Federal and State permits for the Packery Point Marina, the developer agreed to mitigation including a commitment to raise 2 acres of State-owned submerged land to a 3-foot elevation, and to lower another 7.6 acres to 1 foot below mean sea level and plant marsh grass for waterbird habitat there.

The Texas Open Beaches Act (see earlier discussion) has traditionally been interpreted to imply that the beaches should remain accessible for vehicular traffic. Consequently, traffic congestion and, at times, serious accidents have been common summer scenes on Texas beaches. The City of Galveston closed its beaches to summertime driving in 1984 and solved the accessibility issue by providing parking facilities and access roads at less than 1-mile spacing along shore. Concurrently, the city also purchased land for a large number of "pocket beach" parks along the island.

Private Sector Initiatives

Small parcels of land owned by private conservation organizations exist all along the Texas coast. One example is Bird Island in West Bay (Galveston Bay) behind the town of Jamaica Beach. This property is owned and managed by the National Audubon Society. At present, negotiations are underway regarding donation of the western end of the Matagorda Peninsula to The Nature Conservancy.

EXISTING CBRS UNITS

The Texas CBRS units are characteristically sandy barriers with grass and shrub-covered ridges. Because of the stability of the Texas coastal area, as compared to the Mississippi Delta region of Louisiana for example, the barriers are generally older. Galveston and Matagorda Islands date back nearly 4,000 years. The other wide barriers are probably of similar age.

A brief description of each existing CBRS unit along the south coast of Texas is provided below. Each unit is identified by its number, name, and county.

T10-North Padre Island (Kleberg). This unit extends northward from the Padre Island National Seashore to the boundary of Kleberg and Nueces Counties. This county boundary marks the beginning of the "Padre Isles" development. The landward boundary of this CBRS unit cuts off the back one-third of the island, which contains blowout dune systems, salt marsh, and dredge spoil mounds.

Padre Island is a high-profile barrier with well-developed, relatively continuous foredunes that average 20 to 25 feet in elevation. A beach ridge and swale system with elevations between 5 and 10 feet lies in front of these dunes. The combination of wide beaches, high well-developed foredunes, and an abundant supply of sand makes North Padre more resilient to storm and hurricane activities. The high dune line helps dissipate breaking storm waves, preventing numerous washovers. The large supply of sand in the system replenishes the beach sands at the expense of the foredune ridge. During Hurricane Carla (1961), 150 feet of the dune line were eroded. However, strong winds built up sand in mounds in front of the eroded dune line. These incipient dunes show the island's poststorm rebuilding in the nearbeach zone. Longshore sediment transport along northern Padre Island changes direction from southerly in winter to northerly in summer. Padre Island and Mustang Island (north of this unit) have historically been accretional; however, a diminished sediment supply is probably why this trend is presently reversing. Noncritical erosion rates between 1 and 3 feet per year have been recorded for this area in the past century.

Environments toward the back of Padre Island include dunes, bay margin sand shoals, underwater grass flats, and barren, infrequently flooded wind-tidal flats. The lower elevations observed on the landward side of the barrier are frequently flooded during storm surges or by water piled against the back of the barrier during strong and persistent northerly winds.

T11-South Padre Island (Cameron and Willacy). This unit extends southward from the Mansfield Ship Channel over about 25 miles of Padre Island shoreline to the beginning of State Highway 100; the unit covers the entire width of the island. Padre Island is separated from the mainland by Laguna Madre. Prior to deauthorization in 1978, the northern part of this unit was included in Padre Island National Seashore.

Southern Padre Island exhibits a moderate profile in comparison to the 20- to 25-foot foredunes of middle and northern Padre Island. The southern part of the island is marked by a discontinuous dune line with elevations in the 10- to 15-foot range. These dunes are breached in numerous places by old and recent washover channels. Southern Padre Island is susceptible to washover because of both its low profile and relatively narrow width (Morton and Pieper 1975a). Storms in 1933 and 1967 (Beulah) produced surges approaching 12 feet which caused extensive salt marsh flooding and substantial retreat of the existing foredune ridge. Hurricane Carla (1961) caused as much as 150 feet of foredune retreat on southern Padre (Hayes 1967). Hurricane Allen (1980) completely inundated most of South Padre Island, changing its morphology to that of a washover terrace (Nummedal 1982).

The southern Texas coast was built by northerly directed longshore sediment transport. The source of this coarse sediment was primarily older delta deposits of the Rio Grande. The accretionary phase of Padre

CBRS UNITS IN TEXAS ESTABLISHED BY CONGRESS, 1982

Unit Name	Unit ID Code	County	Shoreline Length (miles)	Area (acres)
North Padre Island	T10	Kleberg	6.4	5,132.3
South Padre Island	T11	Willacy Cameron	25.8	46,162.9
Boca Chica	T12	Cameron	5.3	2,522.4
Totals:			37.5	53,817.6

Island and Brazos Island has been altered to an erosional trend by decreases in sediment supply. This decrease is the result of (1) dams on the Rio Grande, (2) disruption of longshore sediment transport by jetties at the Brazos-Santiago Pass, and (3) lack of sufficient coarse sediment in nearshore innershelf deposits. Generally, net erosion on southern Padre Island has been reported in excess of 10 feet per year, except in the vicinity of the Mansfield Ship Channel jetty.

T12-Boca Chica (Cameron). This unit is contained between the jettied channel of Brazos-Santiago Pass and the mouth of the Rio Grande River. The unit is actually composed of two subunits separated by the former Brazos Island State Recreation Area. The northern subunit lies between South Bay and the Gulf of Mexico. The southern subunit fronts deltaic deposits whose origins are probably the Rio Grande.

Brazos Island is an accumulation of delta-front sands located on the flanks of the Rio Grande. Sediments from the Rio Grande were transported northward by longshore currents. The island's morphology can be described as discontinuous dunes with elevations averaging 20 feet. Extensive wash-over channels exist between the dune ridges. In general, the foredune ridge is poorly defined in this CBRS unit. An accretionary period observed at Brazos Island between 1854 and 1937 has reversed to an erosional trend. Brazos Island is presently eroding at rates between 10 and 40 feet per year. Extreme erosion occurs near Boca Chica Beach and is influenced by the migrating of the Rio Grande.

The Brazos Island shoreline has historically changed dramatically due to shifts in the Rio Grande channel. Charts between 1854 and 1937 show the outlet migrating northward over 4,000 feet. A southward movement of the Rio Grande channel (1,000 feet) was recorded between 1958 and 1960. In 1962, Hurricane Carla cut a new channel 4,000 feet to the south, near the vicinity of the outlet location originally observed in 1854. After this southerly relocation, the river mouth again began migrating northward. In 1967, Hurricane Beulah caused another southward shift of the Rio Grande. However, the cycle of northerly channel migration resumed. By 1974, the channel had moved 750 feet to the north.

PROPOSED ADDITIONS AND MODIFICATIONS

This section identifies proposed recommendations for additions to and deletions from the Coastal Barrier Resources System along the south coast of Texas. The Secretary of the Interior, as directed by Section 10 of the Coastal Barrier Resources Act, will make his final recommendations to the Congress after a 90-day public comment period. The following proposed recommendations have been developed in response to public, State and Federal agency, and Congressional comments on the Coastal Barrier Draft Inventory developed by the Study Group. The inventory maps were available for public comment between March 4, 1985, and September 30, 1985. The process and criteria used in the inventory were described on March 4, 1985, in the Federal Register (Vol. 50, No. 42).

The State of Texas reviewed these documents and is opposed to any additions to the Coastal Barrier Resources System. Several coastal counties and communities requested deletion of those units with highway access to allow development with Federal Government subsidies. Both the State and local arguments revolved around the need to offset declining oil and gas revenues with income from coastal recreational and residential development.

The Department received 682 comments (601 of which were petition signatures) from private individuals and organizations concerning the entire State of Texas. The majority of these (including all of the petitions) opposed the CBRS expansion.

The Department of the Interior proposes to recommend that all undeveloped, unprotected coastal barriers and associated aquatic habitat, including secondary barriers within major embayments, be added to the Coastal Barrier Resources System. In Texas, most coastal aquatic habitats are under the jurisdiction of the State's General Land Office. The Department has carefully examined the legal status of these lands and concludes that they do not meet the definition of "otherwise protected."

Indeed, the State argues against their addition to CBRS specifically to allow for development where it is feasible. The Department notes that if these lands are added by Congress as recommended, the State may still allow and/or subsidize development of these areas, but the State and/or developer would assume the risk.

Nueces County and and the City of Corpus Christi requested that all of CBRS unit T10, North Padre Island, be deleted from CBRS because a paved highway transects the unit.

A review of T10 indicated that there is no development in this unit. A highway without any additional infrastructure is not sufficient reason for an area to be considered developed. The Department recommends no deletion in this unit.

Cameron County requested that CBRS unit T11, South Padre Island, be deleted to allow development, and that unit T12, Boca Chica, be deleted because it is not a coastal barrier. South Padre Island, T11, is undeveloped. Congress excluded 7.5 miles of this island from CBRS in 1982. However, there is no development within this 7.5-mile area, and it is extremely susceptible to storm damage. The Department recommends that none of the present unit be removed from the CBRS and suggests that Congress may wish to reconsider the 7.5-mile area previously left out.

Considerable discussion about T12, Boca Chica, occurred within the Department and in Congressional hearings during 1981 and 1982. Congress determined that Boca Chica did qualify as an undeveloped coastal barrier and included it in CBRS. Subsequent review by the Department confirms the determination of Congress. The Department finds no rational for deletion of T12.

The State of Texas has removed the Brazos Island State Recreation Area from the jurisdiction of the State Parks Department and returned it to the jurisdiction of the General Land Office (GLO). The GLO has issued a provisional lease for possible development. Because this area no longer qualifies as otherwise protected, the Department recommends its addition to CBRS unit T12.

A table presenting the Department's current position on each unit identified in the inventory follows this discussion.

Public comment on the proposed recommendations is solicited.

Comments should be directed to:

The Coastal Barriers Study Group
Department of the Interior
National Park Service
P.O. Box 37127
Washington, DC 20013-7127.

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SUMMARY OF PROPOSED RECOMMENDATIONS FOR COASTAL BARRIERS ON THE SOUTH COAST OF TEXAS

Unit ID Code[a]	Unit Name[b]	County	Congress. Dist.[c]	Shoreline Length (miles)[d]	Area (acres)[e]	Proposed Recommendation[f]
T10	North Padre Island	Kleberg	27	6.40	10,918	Delete State/ federally (NPS) protected area from inventory. Add wetlands to existing CBRS unit
TX-18	Baffin Bay	Kleberg	27	1.65	328	Add to CBRS; no change from inventory
TX-19	Starvation Point	Kleberg	27	1.76	194	Add to CBRS; no change from inventory
TX-20	Cayo Del Infiernillo	Kleberg	27	2.45	1,860	Add to CBRS; no change from inventory
TX-21	Kleberg Point	Kleberg	27	1.42	268	Add to CBRS; no change from inventory
T11	South Padre Island	Willacy Cameron	27	25.80	105,308	Add wetlands to existing CBRS unit; no change from inventory
TX-22	Andy Bowie	Cameron	27	—	—	State protected; no further consideration
TX-23	Isla Blanca	Cameron	27	—	—	Locally protected; no further consideration
T12	Boca Chica	Cameron	27	8.57	15,802	Add wetlands and former State Recreation Area to existing CBRS unit
	Total - CBRS as Recommended			48.05	134,678	
	Existing CBRS			37.5	53,818	
	Net Change in CBRS			+10.55	+80,860	

[a]UNIT ID CODE - State initials (TX) plus a number identify a proposed new unit. An existing unit is identified by the legal code letter (T) and number established by Congress in 1982.

[b]UNIT NAME - For proposed new units, this is a provisional name based on a prominent local feature. For existing CBRS units, this is the legal name.

[c]CONGRESSIONAL DISTRICT - U.S. Congressional District in which unit is located.

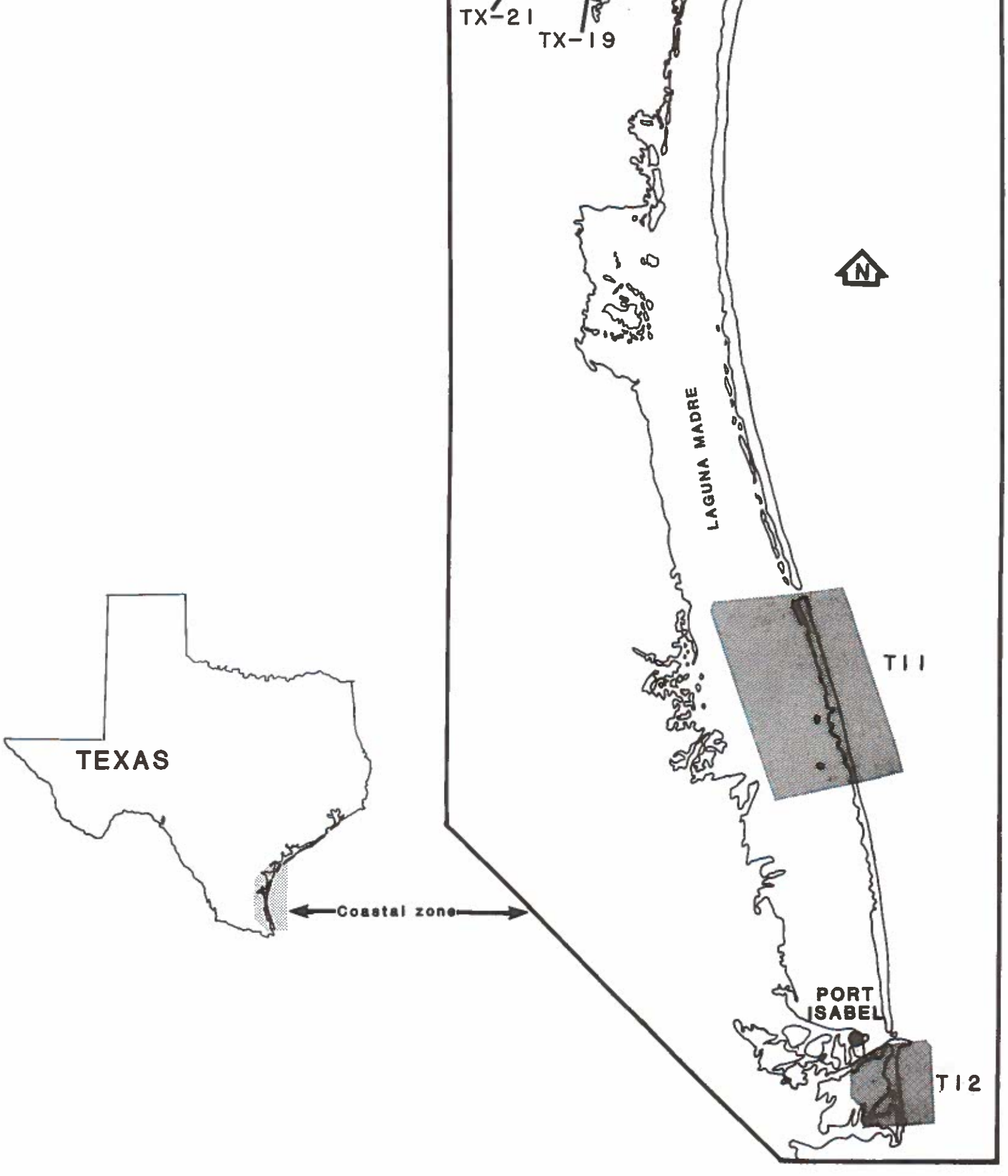
[d]SHORELINE LENGTH - For existing units with additions or deletions, this length is for the entire unit, as modified.

[e]AREA - For existing units with additions or deletions, this area is for the entire unit, as modified.

[f]PROPOSED RECOMMENDATION - A brief explanation of the differences between the 1985 inventory and the recommendations proposed in this revised inventory. For more detailed explanations, please contact the Study Group. Abbreviations: FWS = Fish and Wildlife Service, NPS = National Park Service, CBRS = Coastal Barrier Resources System. Barriers no longer under consideration are not mapped in this atlas.

INDEX TO EXISTING AND PROPOSED CBRS UNITS IN TEXAS (SOUTH COAST)

USER NOTE: To locate the map(s) of each existing and proposed CBRS unit in this volume, consult the table on the following page.

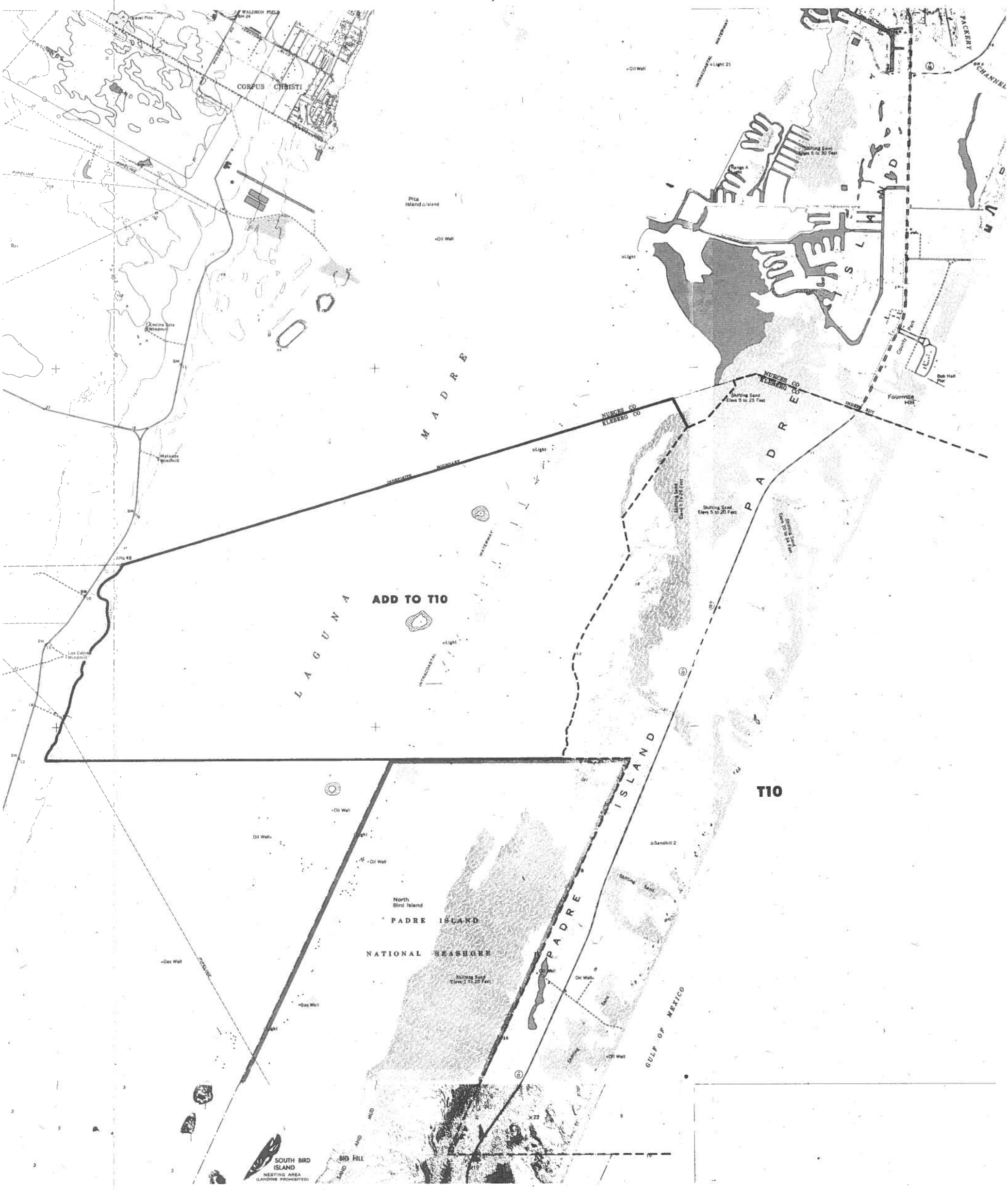


EXISTING AND PROPOSED CBRS UNITS AND THEIR LOCATION IN THIS VOLUME

Unit ID Code	Unit Name	USGS Topographic Map or Map Composite	Page
T10	North Padre Island	Pita Island	11
T11	South Padre Island	South of Potrero Lopeno SE	14
		Port Mansfield	15
		Green Island	16
		North of Port Isabel NW	17
		North of Port Isabel SW	18
		Three Islands	19
T12	Boca Chica	Port Isabel	20
TX-18	Baffin Bay	Point of Rocks	12
TX-19	Starvation Point	Kleberg Point	13
TX-20	Cayo Del Infiernillo	Kleberg Point	13
TX-21	Kleberg Point	Kleberg Point	13

MAP KEY

--------	Existing CBRS units
_____	Proposed additions to or deletions from CBRS
ADD	Area recommended for addition to a CBRS unit
DELETE	Area recommended for deletion from the CBRS
EXCLUDED	Area excluded from an existing or proposed CBRS unit because it is developed or it is otherwise protected



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11

QUADRANGLE

PITA ISLAND

TEXAS

SCALE

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

North

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12

QUADRANGLE

POINT OF ROCKS

TEXAS

SCALE

1 0 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

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TX-18

TX-18

ALAZAN BAY

BAFFIN BAY

LAGUNA MADRE

PADRE ISLAND NATIONAL SEASHORE

Point of Rocks

Pt Penascal

El Mactillo

Compuerta

Fence

Celaro Artesian Well

Sand and Mud Flats

Sand and Mud

Spoil Area

Daybeacon

Light (C)

Area

Spoil

Sand

Griffins Point

PENASCAL

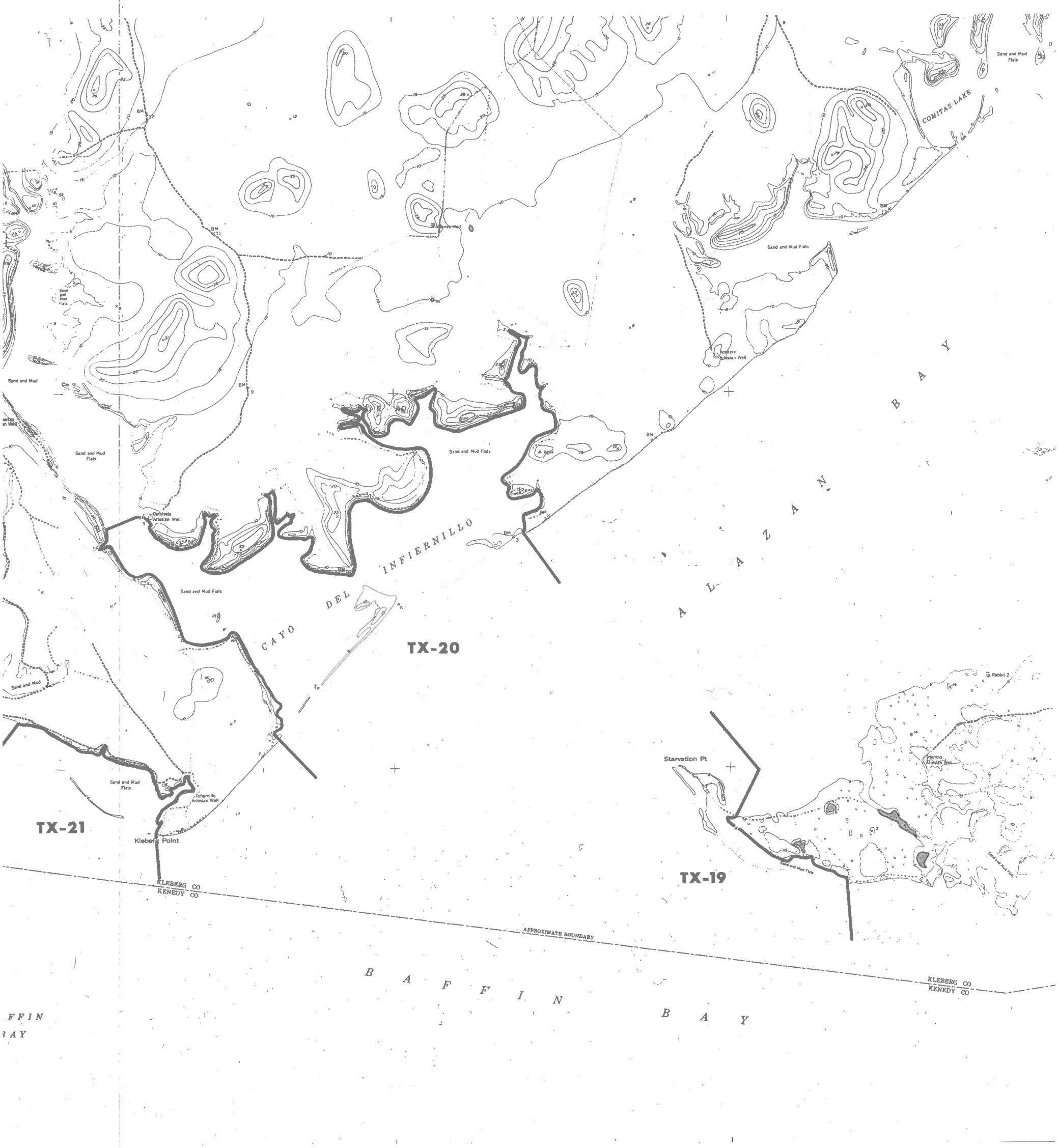
RINCON

APPROXIMATE BOUNDARY

KLEBERG CO
KENEDY CO

KLEBERG CO
KENEDY CO

Water stages in this area vary with meteorological condit
Approximate limits of occasional inundation shown by da
blue lines where mean high water is undetermined for l
of visual evidence. Dotted blue lines indicate the
approximate limits of low water



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13

QUADRANGLE

KLEBERG POINT

TEXAS

SCALE

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

North

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KENEDY CO
WILLACY CO

BOUNDARY

KENEDY CO
WILLACY CO

SAND AND MUD FLATS

Desert

Sand and Mud Flats

SHIFTING SAND DUNES

PADRE ISLAND NATIONAL SEASHORE

Sand and Mud Flats

Sand and Mud Flats

GULF OF MEXICO

LAGUNA MADRE

PORT MANSFIELD CHANNEL

Water stages in this area vary with meteorological conditions
Approximate limits of occasional inundation shown by dashed blue lines when mean high water is undetermined for lack of visual evidence
Dotted blue lines indicate the approximate limits of low water

ADD TO T11

SAND AND MUD FLATS

T11

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14

QUADRANGLE
SOUTH OF POTRERO LOPENO SE
TEXAS

North

SCALE
1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 5 0 1 KILOMETER

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15

QUADRANGLE

PORT MANSFIELD

TEXAS

SCALE

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

.1 5 0 1 KILOMETER

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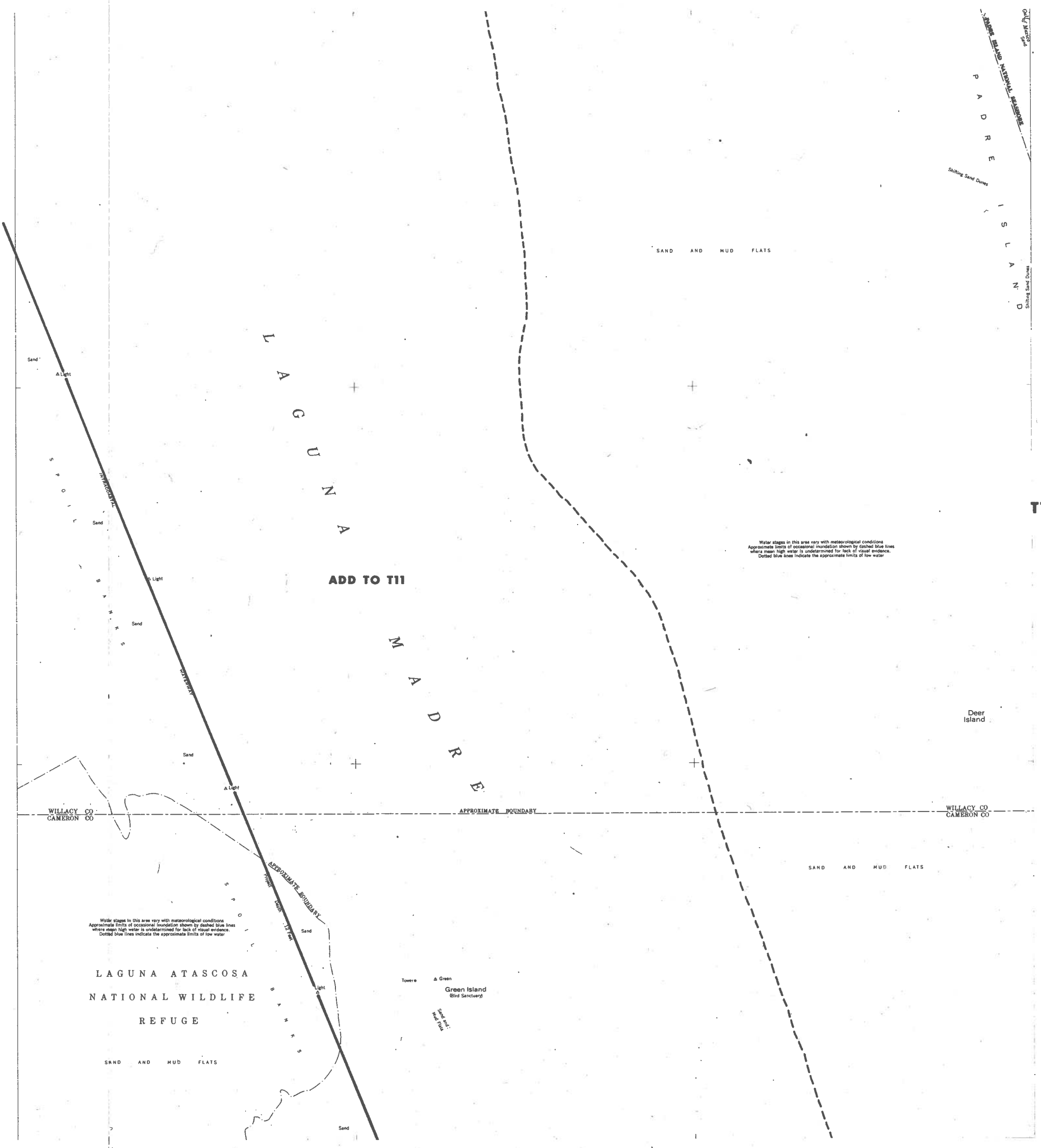
ADD TO T11



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16

QUADRANGLE

GREEN ISLAND

TEXAS

SCALE

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

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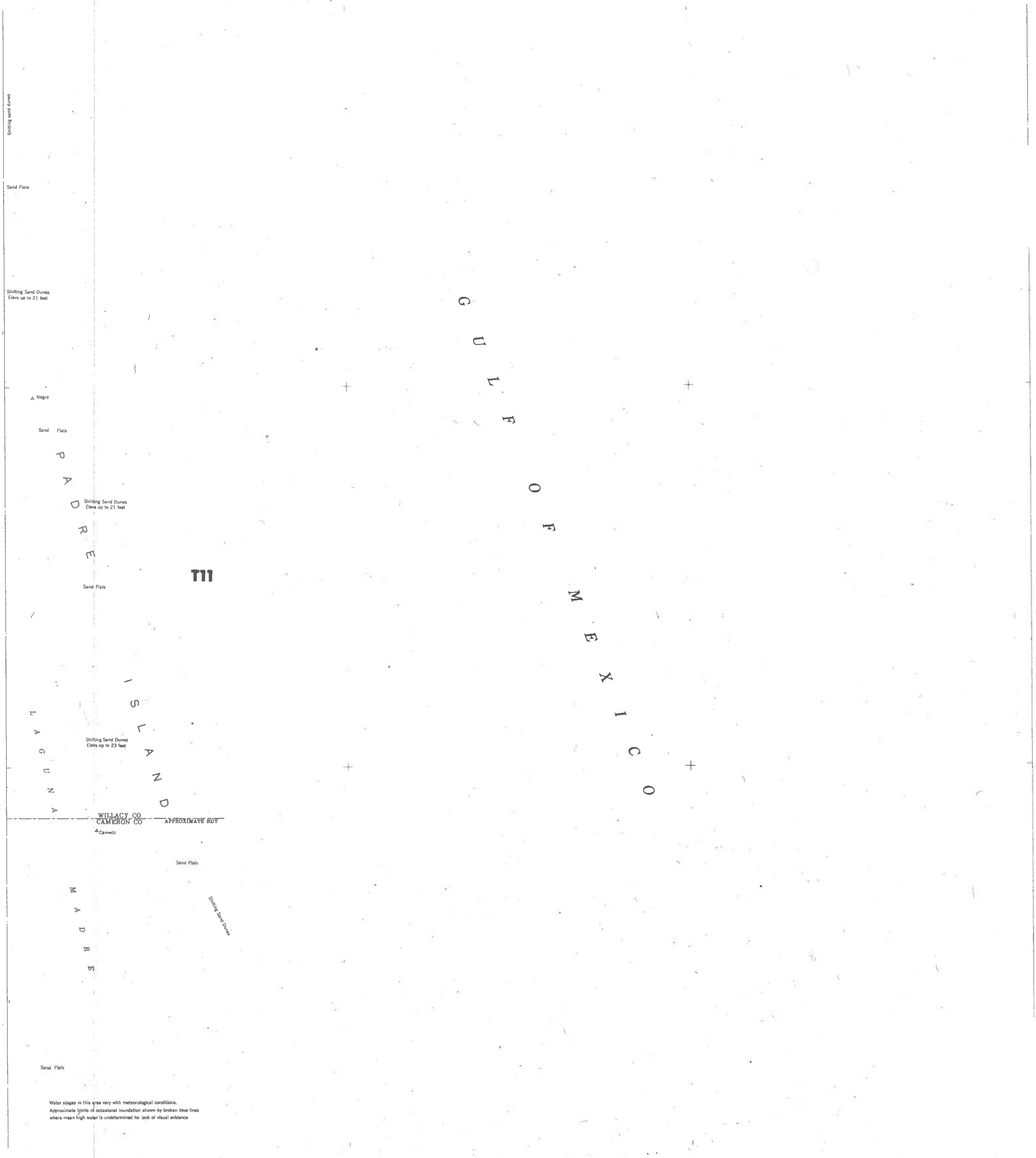

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17

North

QUADRANGLE

NORTH OF PORT ISABEL NW

TEXAS

SCALE

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

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18

QUADRANGLE

NORTH OF PORT ISABEL SW

TEXAS

North

SCALE

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

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T11

ADD TO T11

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19

QUADRANGLE

THREE ISLANDS

TEXAS

SCALE

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

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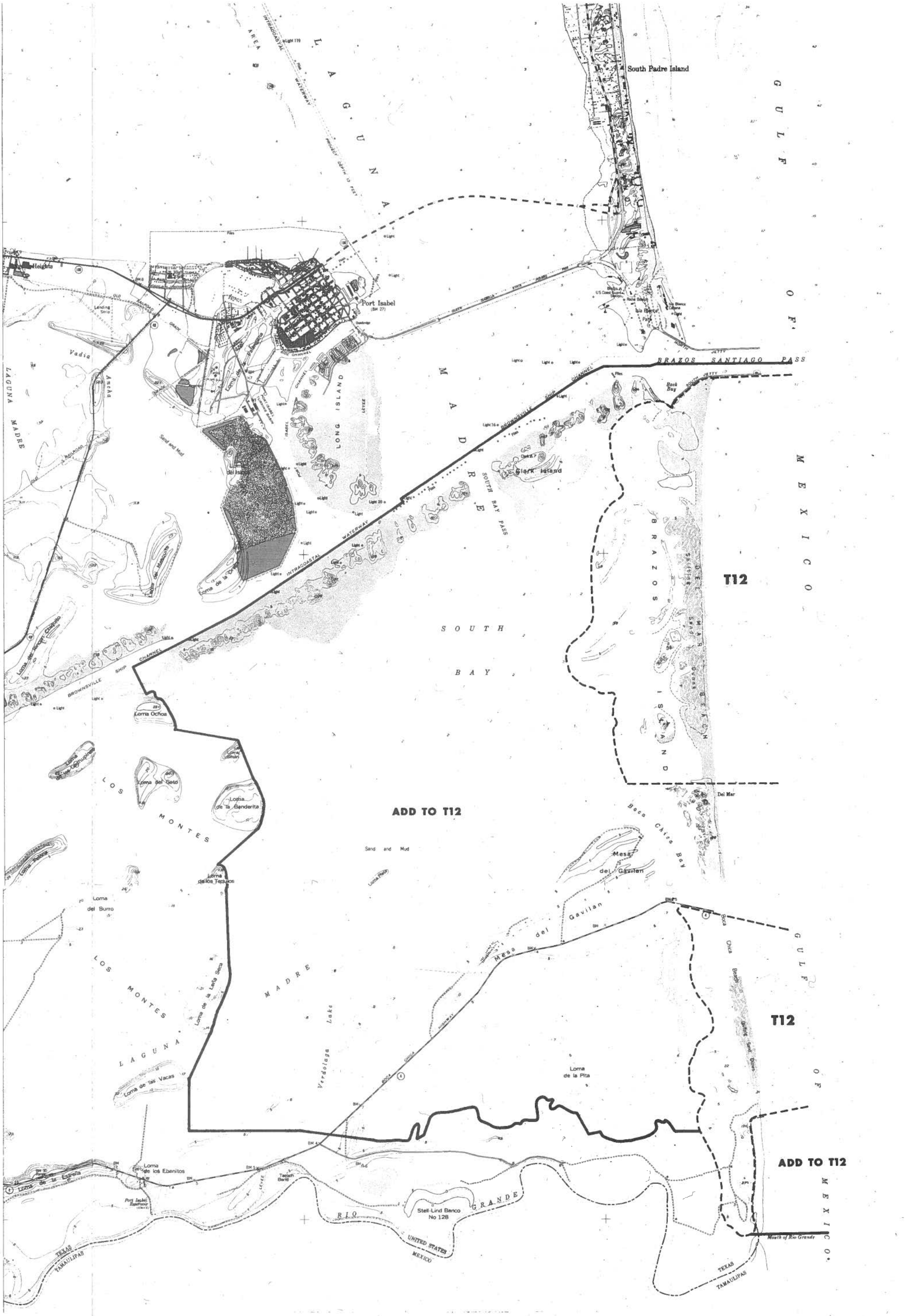

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20

QUADRANGLE

PORT ISABEL

TEXAS

SCALE

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

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