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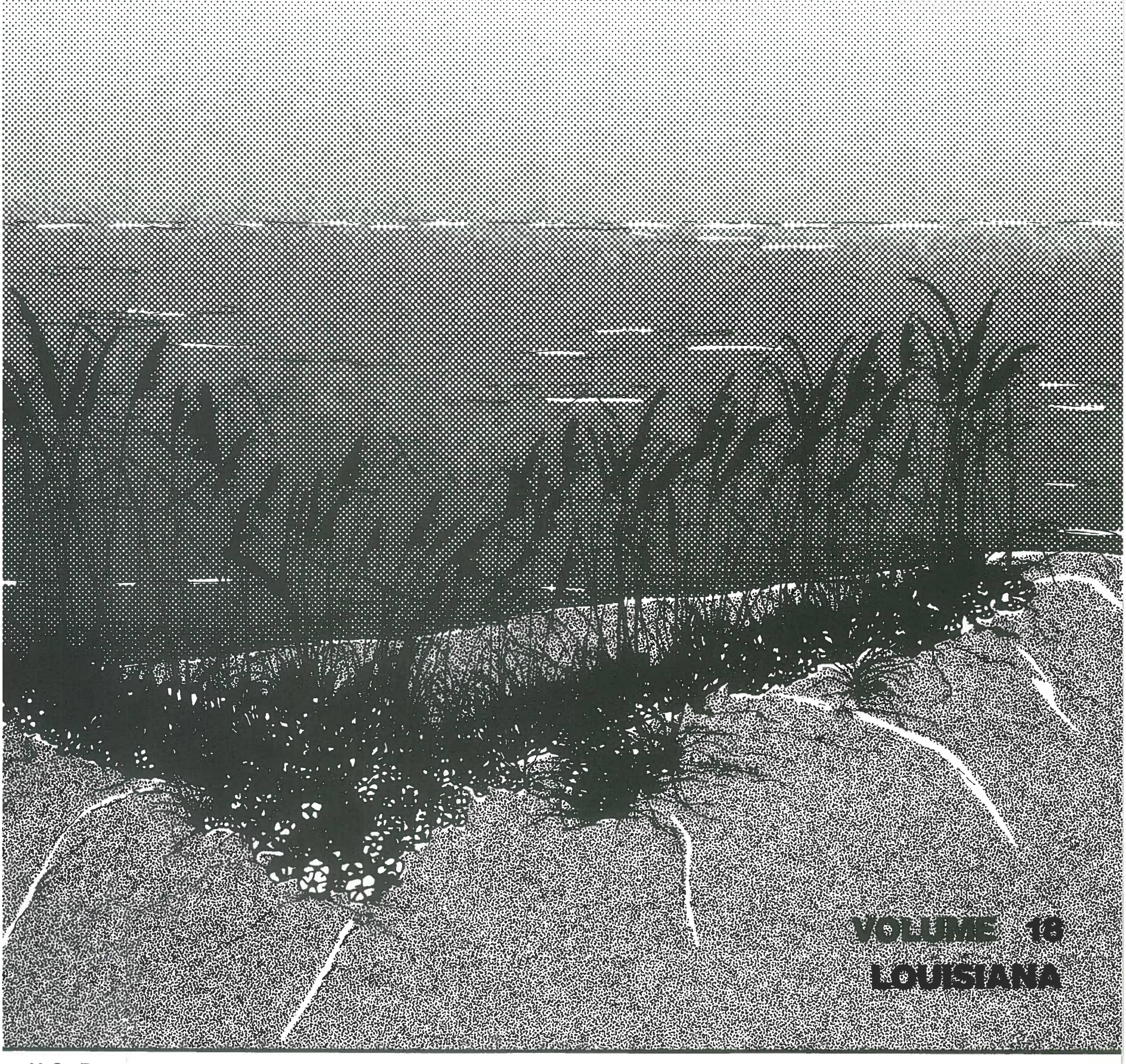
REPORT TO CONGRESS: COASTAL BARRIER RESOURCES SYSTEM

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



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LOUISIANA

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REPORT TO CONGRESS: COASTAL BARRIER RESOURCES SYSTEM

VOLUME 18

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

LOUISIANA

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

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LOUISIANA

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 in Louisiana 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 Louisiana 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 primary coastal concern of Louisiana government, private industry, and knowledgeable citizens is coastal land loss. At present, the State is losing in excess of 40 square miles of coastal land per year. The cumulative loss since 1940 has been estimated at 500 square miles, an area equal to half of the entire State of Rhode Island. Land loss is largely a human-made problem directly tied to two coastal management and utilization practices: the prevention of Mississippi River flooding and extensive canal dredging for navigation and wetlands oil field access. A brief review of the practices which have led to wetlands deterioration follows.

Louisiana was first settled by the French in 1699. Less than 20 years later, LaBlond de la Tour constructed the first levee along the Mississippi River for the protection of New Orleans. By 1828 a continuous levee, extending from above Baton Rouge to below New Orleans, had been completed and direct "management" of the Louisiana coastal wetlands had begun. The levees were enlarged and strengthened continuously during the subsequent century such that, since the catastrophic flood of 1927, no significant levee breaches have occurred. While everyone favored flood control and improved navigation, the State was slow to recognize that levees also have a major detrimental

side-effect: the sediment-laden, nutrient-rich freshwater which nurtured the Louisiana coastal wetlands by annual flooding had been effectively cut off. Concurrently, increased dredging of industrial canals to serve inland ports and barge canals to access wetland oil and gas installations served to alter water-flow patterns in the marshes. The breakdown of the natural flow patterns allowed salt-water to intrude further inland, changing the plant communities in the coastal marsh and accelerating the rate of conversion of coastal wetlands into open bays and sounds (Boesch et al. 1983).

Subsidence, the sinking of the land surface, also contributes to the conversion of Louisiana's coastal lands into open water. Because of the soft and easily compactible nature of Mississippi delta muds, the coastal wetlands subside rapidly under their own weight. In addition, the large-scale extraction of oil and gas from relatively shallow subsurface reservoirs is a likely contributing factor to subsidence. Although no one, as yet, has quantified the effects of oil and gas extraction, there is strong circumstantial evidence that it has a major impact. Well-documented studies have shown that oil and gas extraction has caused tens of feet of subsidence in some California oil fields. A time-series analysis of tidal gauge data along the gulf coast found that a rapid rise in local sea level correlated with the onset of full-scale production of oil and gas off the Louisiana coast (Swanson and Thurlow 1973).

Regardless of the relative magnitude of natural and human causes of subsidence, all data indicate that the current average rate of local sea level rise on the Louisiana coast is about 1.2 cm per year. Of this, only about 1.5 mm is due to global "eustatic" change; the rest is caused by sinking of the land (Nummedal 1983). Because of the levee-ing of the Mississippi River, the average sedimentation rate in the Louisiana marsh appears to be only about 5 mm per year (Baumann 1980). The resulting deficit, a 6-mm annual lowering of the sediment surface relative to the sea, is a major cause of coastal landloss.

Not only are Louisiana's coastal wetlands turning into open water, but the frontline of natural coastal defense, the barrier spits and islands, is also rapidly deteriorating. Though deterioration is part of the natural cycle of deltaic barrier island evolution, the rate of deterioration is locally accel-erated by human interference with the long-shore sediment transport system.

Louisiana's coastal barriers derived their sediment from abandoned sandbars in the mouth of the shifting Mississippi River channel. As the waves and longshore currents of the gulf coast "mined" these sands and con-structed chains of barrier islands, such as Chandeleur and Timbalier Islands and Isles Dernieres, the abandoned delta lobe itself slowly subsided. This subsidence had two major impacts: (1) seawater began encroach-ing behind the barriers, separating them from the adjacent mainland by ever-expanding bays and sounds, and (2) the river-mouth bars, which once acted as sand sources to feed the barriers, ultimately subsided beneath the reach of the waves. Consequently, sand delivery ceased and the barrier could only rework its own finite supply of sand in response to storms and hurricanes. With time, the sand of the coastal barriers is distributed into deep migratory tidal inlet channels, some is washed into the deepening back-barrier bay, and some is carried seaward onto the Inner Continental Shelf. With these continuing losses, and no net sand supply, the barrier is ultimately entirely submerged. This is probably how Ship Shoal, off the central Louisiana coast, was formed (Nummedal et al. 1984). The Louisiana coastal barriers have retreated 2 to 3 km over the last century. At present, they continue to erode in many places at rates as high as 15 to 20 meters per year (Penland et al. 1981). According to a special report prepared for the Louisiana legislature, the total acreage of offshore barrier islands was reduced by 50 percent in the short time span of 1955 to 1978.

Total Louisiana coastal land loss appears to have increased in a geometric progression. In the Mississippi Deltaic Plain alone, the rate of land loss increased from 6.7 square miles per year in 1913 to 39.4 square miles per year in 1980. In addition, the Chenier Plain, the western Louisiana coast, lost 7.7 square miles per year in the time period of 1952 to 1974 (Gagliano et al. 1981). If these rates of land loss continue, it has been projected that Plaquemines Parish (part of the "birdfoot" Mississippi Delta) will all but disappear in the next 50 years, Terre-bonne Parish will disappear over the next 100 years, and Lafourche Parish has perhaps a 200-year life expectancy.

One exemption from the general provisions of CBRA pertains specifically to the Louisiana coast. This is contained in Section 5(a)(3), which states that no financial assistance may be made available under the authority of any Federal law to carry out any project to prevent the erosion of, or to otherwise stabilize, any inlet, shoreline, or inshore area except those in Louisiana CBRS units designated pursuant to Section 4 on maps numbered S01 through S08 and for purposes other than encouraging development. However, Section 6 also states that Federal financial assistance may be available for (1) any use or facility necessary for the exploration, extraction, or transportation of energy resources which can be carried out only on, in, or adjacent to coastal water areas because the use or facility requires access to the coastal water body; and (2) mainte-nance of existing channel improvements and related structures, such as jetties, and including the disposal of dredge materials related to such improvements.

A letter from the Governor to the Secretary of the Department of the Interior and related testimony from State agencies and consultants make it very clear that the State of Louisi-ana wants to protect and enhance its barrier islands for purposes other than development. Louisiana does not encourage residential development of its barriers, as pointed out by the Governor, because the barriers are essentially "undevelopable" because of their isolated location, foundation characteris-tics, and limited size. Also, the extensive energy development and related industrial

uses of Louisiana's coastal zone have made most of the barriers unsuited for residential or recreational types of development.

COASTAL RESOURCE MANAGEMENT

Louisiana Coastal Resource Management

Coastal management in Louisiana has to differ from that in other States because of the land loss issue. This was recognized in the CBRA and was the rationale behind the exception to the Act that applies to Louisiana (discussed in previous section).

The State's coastal zone management effort is presently carried out by the Coastal Management Division (CMD) of the Department of Natural Resources (DNR), which handles permits, and the Coastal Protection Task Force, a Governor's advisory body which is responsible for implementing a program aimed at slowing the trend of coastal land loss.

The State's coastal zone management program began as a study effort in Louisiana State University's Center for Wetland Resources in the early 1970's. This effort led to the formulation of a Louisiana Wetlands Prospectus in 1973 with recommendations for appropriate legislation. At the time, the State had no wetlands regulation.

Act 361, the State and Local Coastal Resources Management Act. In 1978, the Louisiana Legislature passed this Act. Its declared purpose was to protect, develop, and where feasible, restore or enhance the resources of the State's coastal zone. The Act established a series of regulations and guidelines and gave the authority for their implementation to the Louisiana Department of Natural Resources. The formulation, hearings, and Coastal Commission approval process for the proposed rules and regulations took 2 years. The Louisiana Coastal Zone Management Program was approved by the Governor and the Federal Office of Coastal Zone Management in late summer 1980.

Local governments, which have the authority under Act 361 to establish their own Local Coastal Management Programs (LCMP's), have, with one exception, failed to get State approval for their programs. Only Lafourche Parish has an approved LCMP.

Guidelines and regulations in the Louisiana Coastal Management Program of specific relevance to the CBRS units include the following.

Guideline 3.7. Linear facilities (e.g., pipelines) involving dredging shall not transverse or adversely affect any barrier island.

Guideline 3.8. Linear facilities involving dredging shall not transverse beaches, tidal passes, protective reefs, or other natural gulf shoreline unless no other alternative exists. If a beach, tidal pass, reef, or other natural gulf shoreline must be transversed for a nonnavigation canal, they shall be restored at least to their natural condition immediately upon completion of construction. Tidal passes shall not be permanently widened or deepened except when necessary to conduct the permitted activity.

Guideline 3.11. All nonnavigation canals, channels, and ditches which connect more saline areas with fresher areas shall be plugged at all waterway crossings and at intervals between crossings in order to compartmentalize them. The plugs shall be properly maintained.

Guideline 5.1. Nonstructural methods of shoreline protection shall be used to the maximum extent practicable.

Guideline 5.6. Marinas and similar commercial and recreational developments shall, to the maximum extent practicable, not be located so as to result in adverse impacts on open productive oyster beds or submersed grass beds.

Act 41. Passed in 1981, this Act established a $35 million Coastal Protection Trust Fund that is to be used to enhance and restore coastal wetlands and barriers. The Coastal Protection Task Force was created a year later to oversee the implementation of this enhancement and restoration program.

The legislative report accompanying Act 41 recommended that the State initiate construction activities to restore three coastal barrier areas subject to critical erosion, and initiate pilot projects aimed at creating land in the Mississippi Delta region by breaking holes in the levee to form new subdeltas. Also, plans have been proposed to siphon freshwater from the Mississippi across the levees to improve the water quality in some of the coastal marshes subject to increased saltwater encroachment.

The initial research component of the Act 41 barrier restoration program is essentially complete. The three affected areas include CBRS units. The barrier areas chosen for restoration are (1) the Grand Ronquille area, (2) the eastern part of Isles Dernieres, and (3) the Holly Beach-Peveto Beach area. In all three areas, the plan is to construct an "anchor" structure and then nourish the beach with sand to be dredged from offshore deposits.

EXISTING CBRS UNITS

Except for Cheniere au Tigre, all Louisiana CBRS units are grass-covered barriers with some black mangrove and other shrubs. This chenier, however, has a well-developed coastal climax forest composed of live oaks (the French word for oak is "chene," hence, chenier) and palmetto. Furthermore, all the barriers in the system are young, a few hundred to about two thousand years old, and very low in topographic profile. Many are beachridge barriers, but the ridges are not associated with any significant dune fields to enhance their relief. Their young age and rapid migration probably in part account for this.

A brief description of each existing CBRS unit in Louisiana is provided below. Each unit is identified by its number, name, and the parish (county) in which it is located.

CBRS UNITS IN LOUISIANA ESTABLISHED BY CONGRESS, 1982

Unit Name	Unit ID Code	Parish	Shoreline Length (miles)	Area (acres)
Bastian Bay Complex	S01	Plaquemines	6.0	1,660.9
Bay Joe Wise Complex	S01A	Plaquemines	5.4	1,081.0
Grande Terre Islands	S02	Plaquemines	1.9	1,040.1
Caminada	S03	Jefferson and Lafourche	2.8	726.1
Bay Champagne	S04	Lafourche	6.8	2,553.4
Timbalier Island	S05	Lafourche	11.3	8,151.7
Isles Dernieres	S06	Terrebonne	17.6	13,773.1
Point au Fer	S07	Terrebonne	14.5	14,010.6
Cheniere au Tigre	S08	Vermilion	1.6	620.9
Rollover	S09	Vermilion	1.0	122.1
Mermentau River	S10	Cameron	13.4	9,773.8
Sabine	S11	Cameron	9.4	5,729.6
Totals:			91.7	59,243.3

S01-Bastian Bay Complex (Plaquemines). This unit is separated into two subunits. The southeasternmost subunit includes the eastern portion of Pelican Island between the jetties of Bayou Fontanelle and Scofield Bayou. Scofield Bayou and the beach 1.3 miles to the east are also included in this unit. The western subunit consists of Bastian Island and the western remnant of Lanaux Island. This subunit separates Bastian Bay from the Gulf of Mexico. The landward boundary of this subunit extends into and includes a portion of the Bastian and Shell Island Bay bottoms.

The Bastian Bay Complex comprises deteriorating and subsiding marshlands fronted by a narrow, low-elevation beach. It is part of the Plaquemines Delta system, which formed within the last 600 years. The beach material is predominantly fragmented oyster shells. The recurved spit bounding the eastern side of Grand Bayou Pass has ridges that attain elevations of 6 to 7 feet and are made entirely of oyster shells. The predominance of narrow, shell-dominated beaches fronting this complex indicates that there is a lack of sandy sediments in the vicinity (McGowen et al. 1977). The relative youth of this region of coastal Louisiana is shown by the marshes which still connect the mainland to Pelican and Lanaux Islands. These marshes are subsiding quickly because of the compacting of the deltaic sediments.

This region is frequently flooded because of its very low elevation. Dominant longshore sediment transport is toward the northwest. The erosion downdrift of the jettied channel has resulted in the deterioration of Lanaux Island. An open channel, Lanaux Pass, now persists where there once was a narrow tongue of beach fronting Shell Island Bay.

S01A-Bay Joe Wise Complex (Plaquemines). This unit extends from the west side of the channel at Grand Bayou Pass westward to an oil field access channel which cuts Bay La Mer in two. Bayou Chaland flows to the gulf through Bay Chaland near the middle of the unit. The landward boundary of the unit has been drawn where pipeline canals meet, forming a narrow but continuous line of open water in the back bay.

The beaches fronting Bay Joe Wise are narrow with high shell content, similar to those of Bastian Bay Complex. They are low in elevation and overwashed during abnormally high tides and mild storm-wave activity. Longshore transport directions can vary between east and west. However, there is no local sediment supply to feed the longshore currents. Erosion rates along this portion of the coastline range between 15 and 30 feet per year. Beach sediments are sand and shell. The marsh region behind the beach is crisscrossed with dredged pipeline and petroleum installation channels. Access is limited to boat and air transportation.

S02-Grande Terre Islands (Jefferson). This unit covers the eastern portion of the island between the Louisiana Department of Wildlife and Fisheries' camp airstrip to the west and the Plaquemines/Jefferson Parish boundary, which runs through Pass Abel Channel, on the east. The barrier island is one of a small chain of islands that separate Barataria Bay from the Gulf of Mexico. It is separated from the mainland by Barataria Pass on the west and Pass Abel on the east. West of the Louisiana Department of Wildlife and Fisheries' camp and bordering Barataria Pass are the remnants of Fort Livingston, built during the Civil War period.

Beach ridges observed in aerial photographs of Grande Terre indicate it was formed from the east when longshore currents were directed westward. Sediments for this island are thought to have come from earlier Mississippi River Delta lobes to the east. Although the beach ridges in the island's interior were built by westward drift, the present beach sands originate from the Caminada-Moreau headland to the west. The beaches of Grande Terre are composed of fine to medium size sand with some shell material. They are narrow away from the ends of the

island. At the eastern end of the island, the beach widens into an extensive recurved spit this recurved spit does not appear to be migrating into Pass Abel.

Grande Terre's beachfront is eroding at an estimated rate in excess of 30 feet per year (Penland and Boyd 1981). In addition to erosion, the island's low elevation makes it susceptible to flooding during storm surge. The interior of the island is densely vegetated with scrub brush and grass. The dense vegetation is used as grazing land for a local population of cattle, horses, and some goats. There are very few trees. The portion of the island within the unit is incised by pipeline canals and access channels. The borders of these channels are sought as oyster-rearing sites.

S03-Caminada (Jefferson and Lafourche). This unit is bordered by the middle of Caminada Pass on the east. It extends westward to the point where the spit connects to the Caminada-Moreau headland. Landward, the CBRS unit boundary runs down the middle of the narrow bay behind the spit and along a pipeline canal which parallels the coast along the headland.

This unit is a flanking barrier spit growing eastward. Sediments derived from the headland are moved along the spit by the prevailing easterly longshore currents. The frequency with which this spit is overwashed is reflected in its form--the back beach area is essentially a washover terrace. The beach itself is very narrow with elevations not exceeding 5 feet. Erosion rates on the beach vary from 15 feet per year at the western end to no erosion at the distal end of the spit. Narrow salt marshes are present on the bay side of the beach. Marsh material also underlies the beach and is frequently exposed on the beach face. The eastern end of the spit bordering Caminada Pass may be fragmented during wave attacks accompanying storm surge.

Access to Caminada Spit is through unimproved roads on Elmers Island. The spit is used frequently for recreational camping, fishing, and hunting.

S04-Bay Champagne (Lafourche). This unit is broken into two subunits. The eastern subunit lies between the Winner Wildlife Area to the east and the truncated channel of Pass Fourchon to the west. The landward boundary runs along a pipeline canal east of Bay Champagne, then skirts the bay where it picks up an open channel that joins the Pass Fourchon waterway. The western subunit extends westward from the centerline of the channel at Belle Pass to the west side of Raccoon Pass. The landward boundary runs along a wide, natural channel which connects Timbalier Bay and a dredged access channel located about two-thirds of a mile in back of the jettied channel of Belle Pass. The line drawn landward of Raccoon Pass indicates that a portion of Timbalier Bay bottoms are included in this unit.

The eastern subunit is a flat and wide strandplain beach. Its low elevation allows frequent flooding and washover. The narrow portion of the barrier in front of Champagne Bay is breached annually. The tidal pass that is created quickly closes as sediment transported from updrift sources to the west fills the channel.

The east jetties of Belle Pass have blocked the longshore sediment movement of the western unit. The updrift accumulation has caused accretion on the shore east of the channel and extensive erosion downdrift within the CBRS unit. Sediment starvation to the eastern portion of east Timbalier Island has caused the island to narrow and breach. Erosion rates in this vicinity are in excess of 40 feet per year (Penland and Boyd 1981).

S05-Timbalier Island (Lafourche). This unit is located between the east side of Little Pass Timbalier and Wine Island Pass to the west. Remnant intertidal shoals derived from the westward end of East Timbalier also are included in this unit. The landward border skirts the landwardmost extent of marsh which dominates the bayside of the island. East Timbalier Island is not included in the unit.

Timbalier Island originally formed as a flanking spit which grew west from the Caminada-Moreau headland. The spit became a barrier island when it detached from the headland. The western end of the island is accreting at the expense of its eastern and central portions. Erosion rates of 50 feet per year on the eastern end are matched by accretion rates of 50 feet per year to the west where a spit is growing into Wine Island Pass (Penland and Boyd 1981). The lack of sediment supply to the island results from jetties and revetments to the east which prevent sand from entering the longshore drift. East Timbalier Island has been reveted with boulder size stones since 1964, and the updrift jetty of Belle Pass has redirected beach sediments in an offshore direction.

S06-Isles Dernieres (Terrebonne). This unit contains the Isles Dernieres barrier island arc system in its entirety. The eastern boundary is Wine Island Pass, and the western line is approximately one-half mile west of Raccoon Point. The landward boundary is drawn nearly east-west along the open water of the narrow lagoon behind the island. This boundary bisects both Old Camp Pass and Caillou Boca.

Historical charts dating back to 1853 show that the Isles Dernieres were once part of the headland of an earlier lobe of the Mississippi River. The arc system was formed when the deltaic sediments underlying the marshy headland subsided, forming Big Pelto and Pelto Bay. The size of the back bay has enlarged during the past hundred plus years, forming Lake Pelto, which now separates the Isles Dernieres from the mainland by several kilometers. During this time, the island has also eroded over a kilometer and has been fragmented into five smaller islands. The headland which once supplied sediment to the barrier system is no longer a viable source of sand. Predominantly southerly waves transport what sand is left in the system from the central Isles Dernieres to both east and west flanks, eroding the central portion of the island at a faster rate than the ends (Penland and Boyd 1981).

The Isles Dernieres are a very fragile environment with narrow, eroding beaches of limited elevation. The beach morphology has been described as a continuous washover terrace. The limited marsh area on the bay side of the island is rapidly drowning. Toward the central portion of the island, the marsh is cut by a remnant channel of Trinity Bayou and some pipeline and petroleum installation access canals. Access to the islands is limited to boat or helicopter.

S07-Point au Fer (Terrebonne). This unit is made up of two subunits. The eastern unit runs approximately 2 miles along the coastline east of the midchannel line of Oyster Bayou. The landward boundary runs along a very minor, meandering tributary of Oyster Bayou, which bisects two pond-size water bodies. The western subunit, which constitutes the bulk of this CBRS unit, begins about a half mile west of a dammed pipeline canal and includes the remainder of Point au Fer Island to Point au Fer. The landward boundary includes a small portion of the Atchafalaya Bay Bottoms (which are also protected as part of the Atchafalaya Delta Wildlife Management Area) and runs along Locust Bayou. At the Point au Fer oil field, the boundary shifts to the east, and then southeast along a pipeline canal.

The unit shoreline is dominated by marsh and fronted by largely unvegetated mudflats. Shell reefs fringe the landward side of Point au Fer. The majority of this unit is salt marsh exhibiting little variability in topography. The low elevation makes it especially susceptible to flooding. Pipeline canals and installations associated with the petroleum industry are the only forms of development in this area.

S08-Cheniere au Tigre (Vermilion). This unit is a very small area of coastline that connects two larger, otherwise-protected areas. To the north and east of the unit boundaries is the Paul J. Rainey Wildlife Sanctuary, while to the west the land is owned by the Louisiana Department of Culture, Recreation, and Tourism.

This unit lies at the seaward and easternmost extent of an ancient beach ridge known as Cheniere au Tigre. It is vegetated by grass and scrub oaks. Supplies of muddy sediment from the Atchafalaya River separated the ridge from the shoreline by forming seaward-growing mudflats. The area of Cheniere au Tigre in this unit has a narrow, steep, shell hash sand beach where the sediments of the chenier ridge itself are eroded onto the beach.

S09-Rollover (Vermilion). This unit is a corridor of coastline extending to the east of the Rockefeller Wildlife Refuge. The landward boundary runs along the open water of a pipeline canal less than a half mile from the coast.

The coastline fronting this unit is a largely unvegetated mudflat. The sand and shell content of the fluid mud is generally less than 5 percent (Wells and Kemp 1981). The source of the mud is offshore and to the east from the Atchafalaya River (Wells and Kemp 1981). This mudflat has been building westward from the coastline near Marsh Island since 1954 (Adams et al. 1978) when the Atchafalaya Delta also began building. According to Wells and Kemp (1981), this mudflat growth may be temporary and could be quickly eroded.

S10-Mermentau River (Cameron). This unit is a lengthy coastal barrier stretching from Beach Prong west to the opening of the Mermentau River into the Gulf of Mexico. Unlike the irregular coastline east of Marsh Island, in the western part of this unit the shoreline has been straightened by incident and storm wave attack. This unit has no outside source of sediment to nourish its eroding shoreline. According to figures cited by Morgan and Larimore (1957), this region is retreating at rates approaching 16 feet per year. What beaches occur along this shoreline are constructed from material derived from within the system. Along Hackberry Beach, the shoreline has eroded into old beach ridges. The sand is mined, reworked, and added to the retreating beach face. East of Hackberry Beach, beach material overlies older marsh material which frequently is exposed on the beach (Wells and Kemp 1981). Longshore sediment transport in this region is westerly; however, the minimal sediment moving along this coastline is illustrated by lack of accretion or erosion on the updrift or downdrift sides of the jettied channel to Lower Mud Lake.

Human-made structures found in the marsh-dominated area landward of the shoreline include pipeline channels, access channels, oil transfer stations, and other installations related to petroleum extraction. Hog Bayou Oil and Gas Field and Crab Lake Gas Field are located within this CBRS unit.

S11-Sabine (Cameron). This unit is a long stretch of cheniers and marshes fronting Blue Buck Ridge. Like Mermentau River, sediments are mined, reworked, and transported only within the immediate local area. Longshore sediment transport is westerly but minimal.

PROPOSED ADDITIONS AND MODIFICATIONS

This section identifies proposed recommendations for additions to and deletions from the Coastal Barrier Resources System in Louisiana. 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 Louisiana reviewed these documents and, with the exception of some minor deletions for development, supports the addition of all units in the inventory.

The Department received one comment opposing the CBRS expansion in Louisiana.

The Department of the Interior proposes to recommend that all undeveloped, unprotected coastal barriers and associated aquatic habitat identified in the inventory be added to the Coastal Barrier Resources System. The Department concurs with the State-recommended deletions of developed areas. 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 IN LOUISIANA

Unit ID Code[a]	Unit Name[b]	Parish	Congress. Dist.[c]	Shoreline Length (miles)[d]	Area (acres)[e]	Proposed Recommendation[f]
LA-01	Isle au Pitre	St. Bernard	1	4.03	5,950	Add to CBRS; no change from inventory
LA-02	Grand Island	St. Bernard	1	3.31	6,272	Add to CBRS; no change from inventory
LA-03	Chandeleur Islands	St. Bernard Plaquemines	1	—	—	Federally protected (FWS); no further consideration
LA-04	Freemason Island	St. Bernard	1	—	—	Federally protected (FWS); no further consideration

(continued)

SUMMARY OF PROPOSED RECOMMENDATIONS FOR COASTAL BARRIERS IN LOUISIANA (CONTINUED)

Unit ID Code[a]	Unit Name[b]	Parish	Congress. Dist.[c]	Shoreline Length[d] (miles)	Area (acres)[e]	Proposed Recommendation[f]
S01	Bastian Bay Complex	Plaquemines	1	13.15	13,711	Add new area to existing CBRS unit; no change from inventory
S01A	Bay Joe Wise Complex	Plaquemines	1	8.61	5,581	Add new area to existing CBRS unit; no change from inventory
S02	Grande Terre Islands	Plaquemines	3 1	6.15	9,164	Delete State-protected segment; add balance of new area to existing CBRS unit
LA-05	Grand Isle	Jefferson	3	—	—	State-protected; no further consideration
S03	Caminada	Jefferson Lafourche	3	7.45	26,286	Add new area to existing CBRS unit; no change from inventory
S04	Bay Champagne	Lafourche	3	7.05	20,074	Add new area to existing CBRS unit; minor deletion from inventory for development
S05	Timbalier Island	Lafourche	3	11.30	6,582	Add new area to existing CBRS unit; no change from inventory
S06	Isles Dernieres	Terrebonne	3	17.60	36,993	Add new area to existing CBRS unit; no change from inventory
S07	Point au Fer	Terrebonne St. Mary	3	30.03	142,661	Add new area to existing CBRS unit; no change from inventory
LA-06	Marsh Island	Iberia	3	—	—	State-protected; no further consideration
S08	Cheniere au Tigre	Vermilion	3	3.75	2,024	Delete State-protected area from inventory; add new area to existing CBRS unit
LA-07	Freshwater Bayou	Vermilion	7	16.32	29,551	Delete developed area; add balance to CBRS
S09	Rollover	Vermilion	7	1.00	3,412	Add new area to existing CBRS unit; no change from inventory
LA-08	Rockefeller Refuge	Vermilion Cameron	7	—	—	State-protected; no further consideration

(continued)

SUMMARY OF PROPOSED RECOMMENDATIONS FOR COASTAL BARRIERS IN LOUISIANA (CONCLUDED)

Unit ID Code[a]	Unit Name[b]	Parish	Congress. Dist.[c]	Shoreline Length[d] (miles)	Area (acres)[e]	Proposed Recommendation[f]
S10	Mermentau River	Cameron	7	19.27	26,494	Add new area to existing CBRS unit; no change from inventory
LA-09	Cameron	Cameron	7	12.51	4,460	Add to CBRS; no change from inventory
LA-10	Calcasieu Pass	Cameron	7	10.68	26,460	Add to CBRS; no change from inventory
S11	Sabine	Cameron	7	13.85	19,700	Add new area to existing CBRS unit; no change from inventory
	Totals - CBRS as Recommended			186.06	385,375	
	Existing CBRS			91.7	59,243	
	Net Change in CBRS			+94.36	+326,132	

[a]UNIT ID CODE - State initials (LA) plus a number identify a proposed new unit. An existing unit is identified by the legal code letter (S) 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.

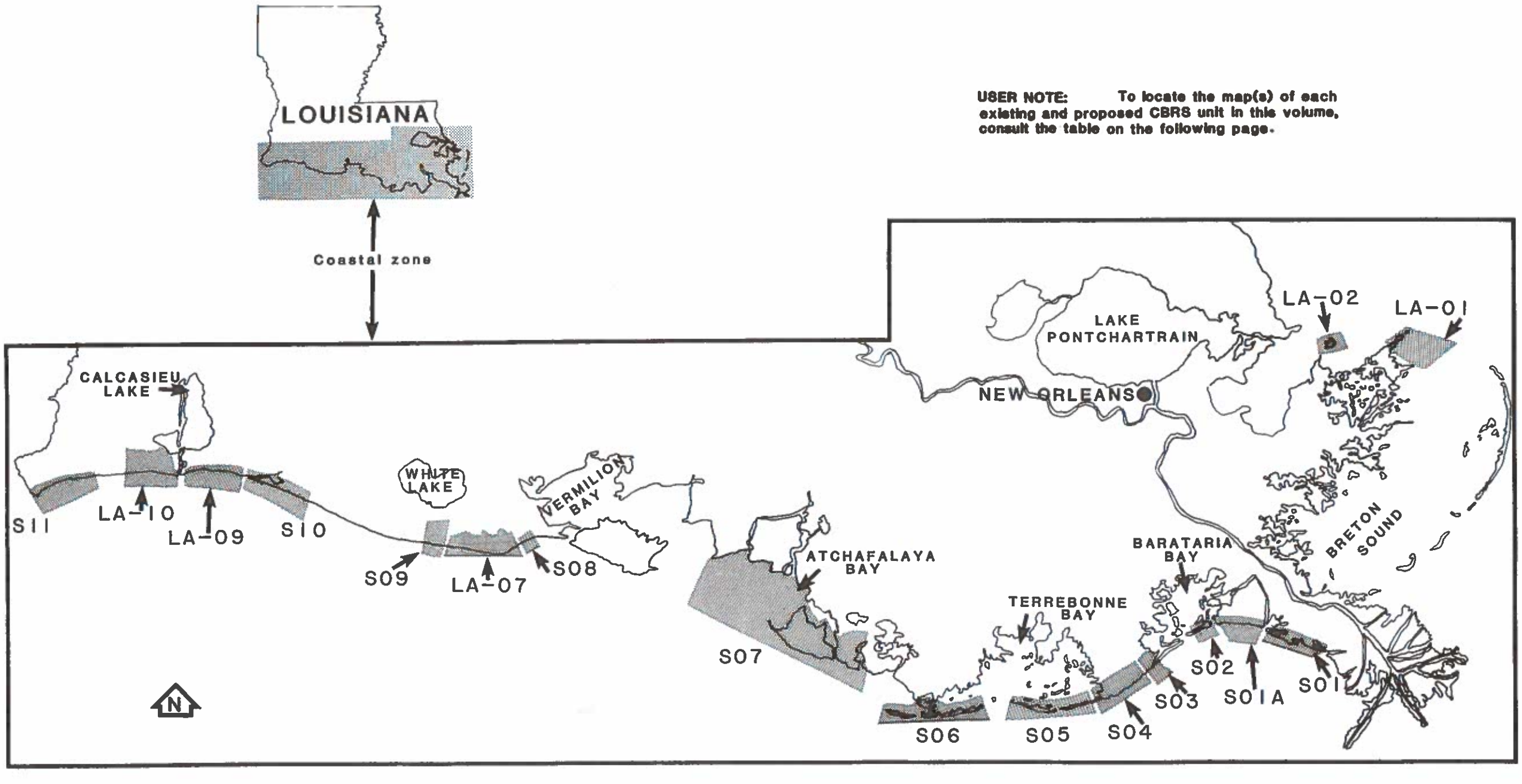
[c]CONGRESSIONAL DISTRICT - U.S. Congressional District in which unit is located.

[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 LOUISIANA



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
LA-01	Isle au Pitre	Door Point	13
LA-02	Grand Island	Grand Island Pass	14
S01	Bastian Bay Complex	Pass Tante Phine	15
		Buras	16
		Bastian Bay	17
S01A	Bay Joe Wise Complex	Bastian Bay	17
		Bay Ronquille	18
S02	Grande Terre Islands	Barataria Pass	19
		Bay Ronquille	18
S03	Caminada	Caminada Pass	20
		Leeville	21
S04	Bay Champagne	Leeville	21
		Calumet Island	22
S05	Timbalier Island	Timbalier Island	23
		Cat Island Pass	24
		Calumet Island	22
S06	Isles Dernieres	Eastern Isles Dernieres	25
		Central Isles Dernieres	26
		Western Isles Dernieres	27
S07	Point au Fer	East Bay Junop	28
		Oyster Bayou	29
		Fourleague Bay	30
		Plumb Bayou	31
		Point au Fer	32
		Point au Fer NE	33
		Belle Isle	34
		Point Chevreuil	35
LA-07	Freshwater Bayou	Cheniere au Tigre	36
		Mulberry Island East	37
		Mulberry Island West	38
S08	Cheniere au Tigre	Cheniere au Tigre	36
S09	Rollover	Rollover Lake	39
		Mulberry Island West	38
LA-09	Cameron	Grand Bayou	42
		Cameron	43
S10	Mermentau River	Hog Bayou	40
		Creole	41
		Grand Bayou	42
LA-10	Calcasieu Pass	Cameron	43
		Holly Beach	44
		Peveto Beach	45
S11	Sabine	Peveto Beach	45
		Johnsons Bayou	46
		Texas Point	47
		Port Arthur South	48

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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13

QUADRANGLE

DOOR POINT

LOUISIANA

LA-01

SCALE

1 t/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

North

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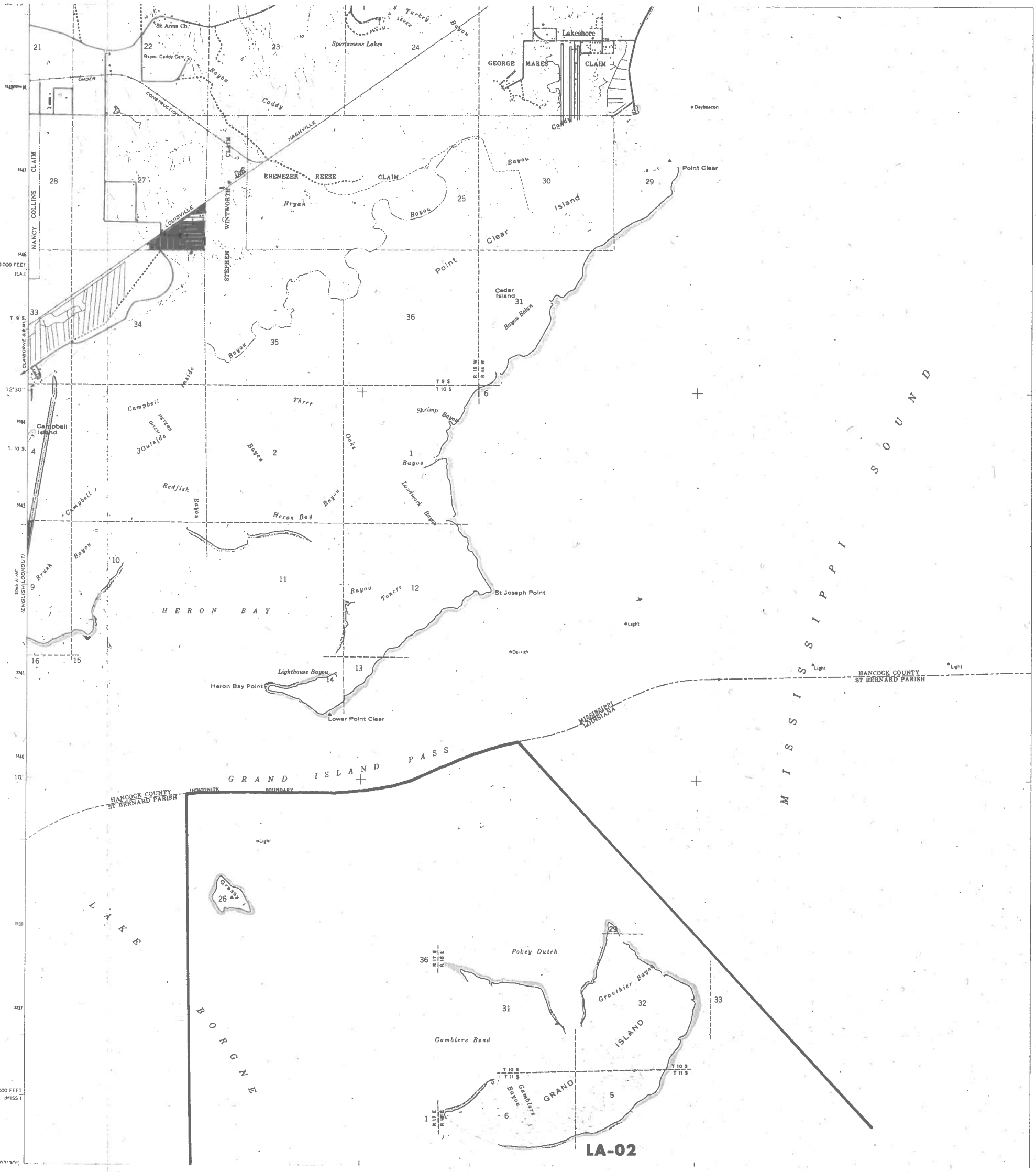
Base Map is the U.S. Geological Survey 1:24,000 scale quadrangle.



LA-02

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14

QUADRANGLE

GRAND ISLAND PASS

LOUISIANA

North

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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ADD TO S01

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15

North

QUADRANGLE

PASS TANTE PHINE

LOUISIANA

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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16

QUADRANGLE

BURAS

LOUISIANA

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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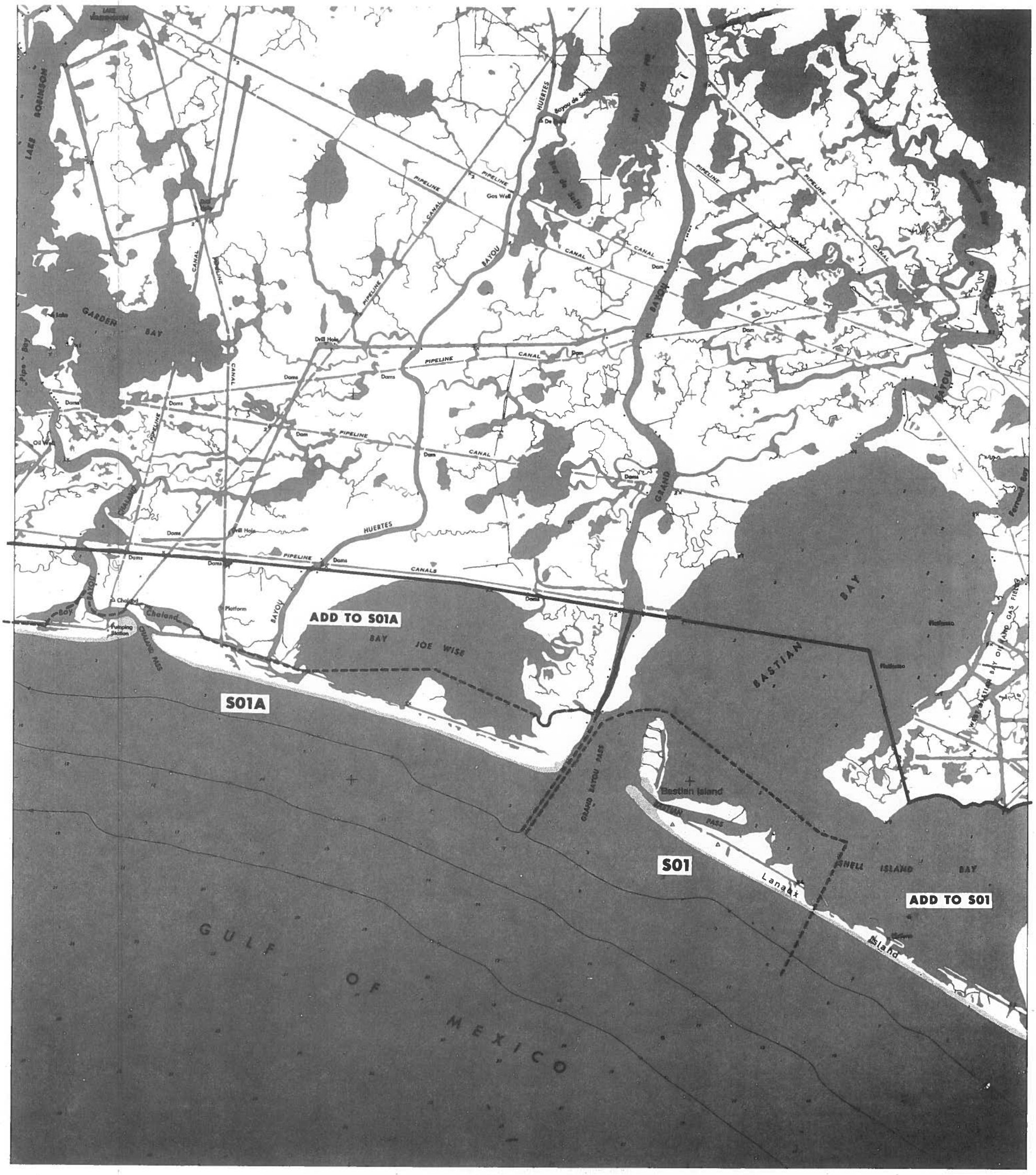

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17

North

QUADRANGLE

BASTIAN BAY

LOUISIANA

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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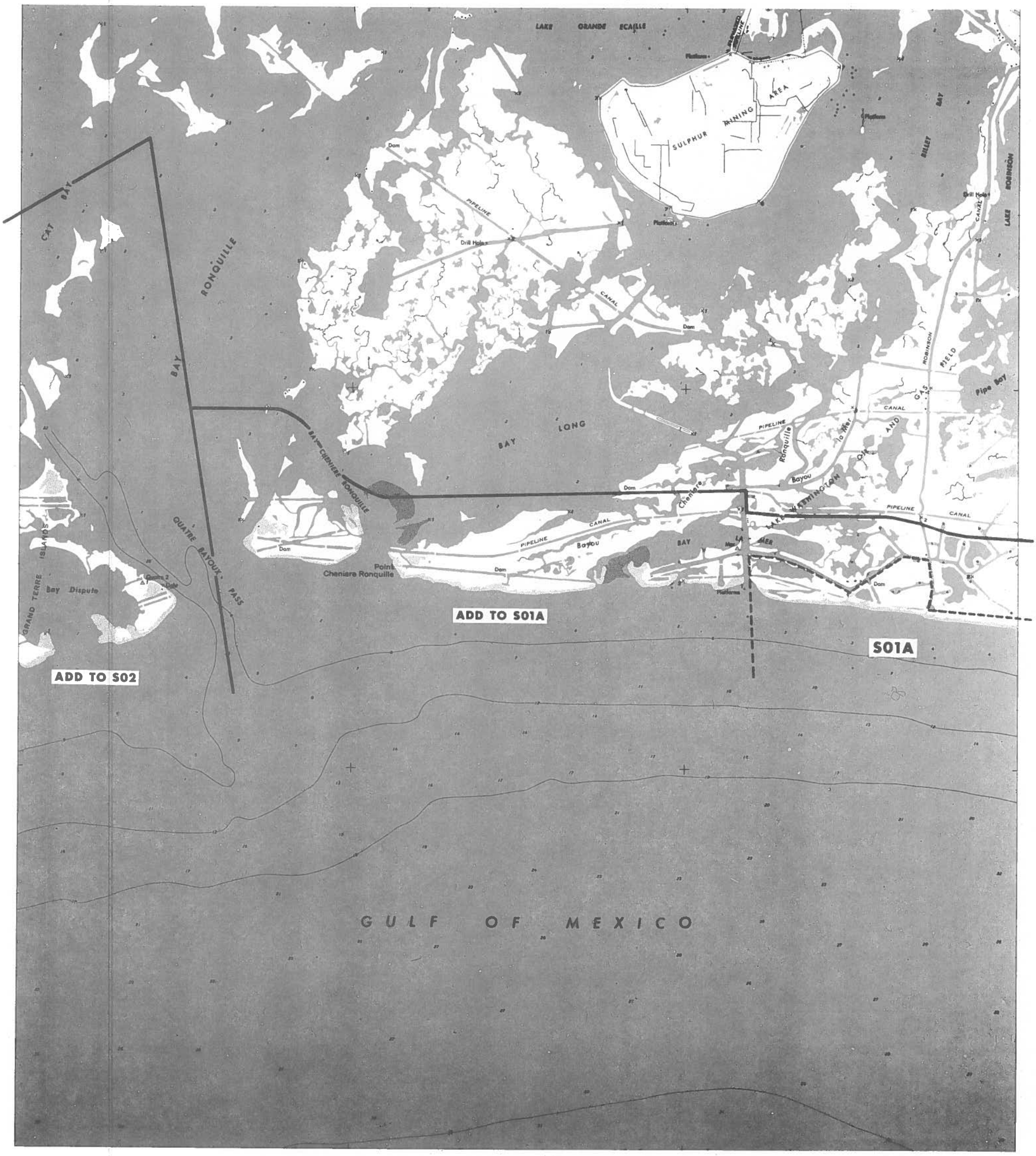

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18

North

QUADRANGLE

BAY RONQUILLE

LOUISIANA

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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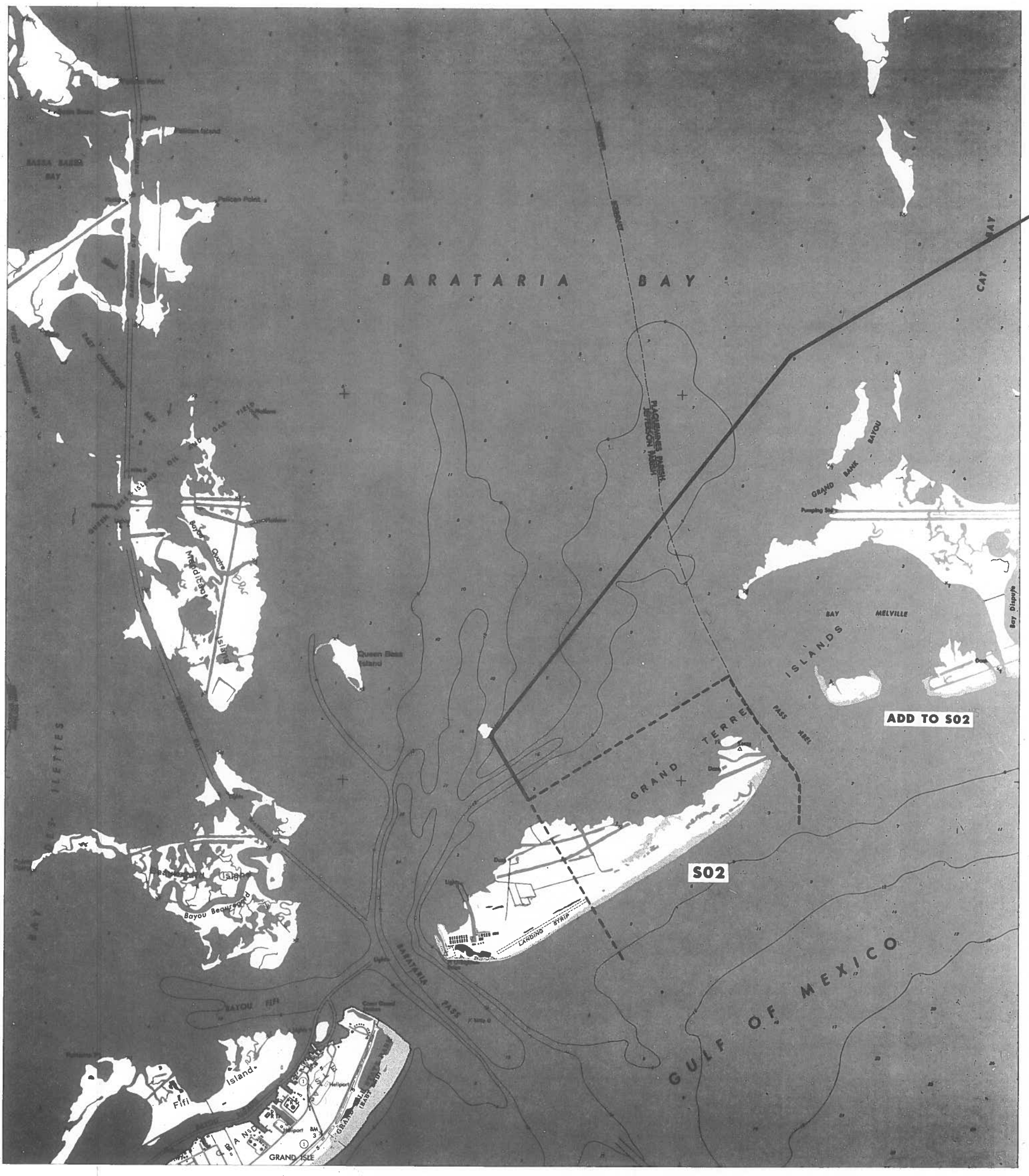

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19

North

QUADRANGLE

BARATARIA PASS

LOUISIANA

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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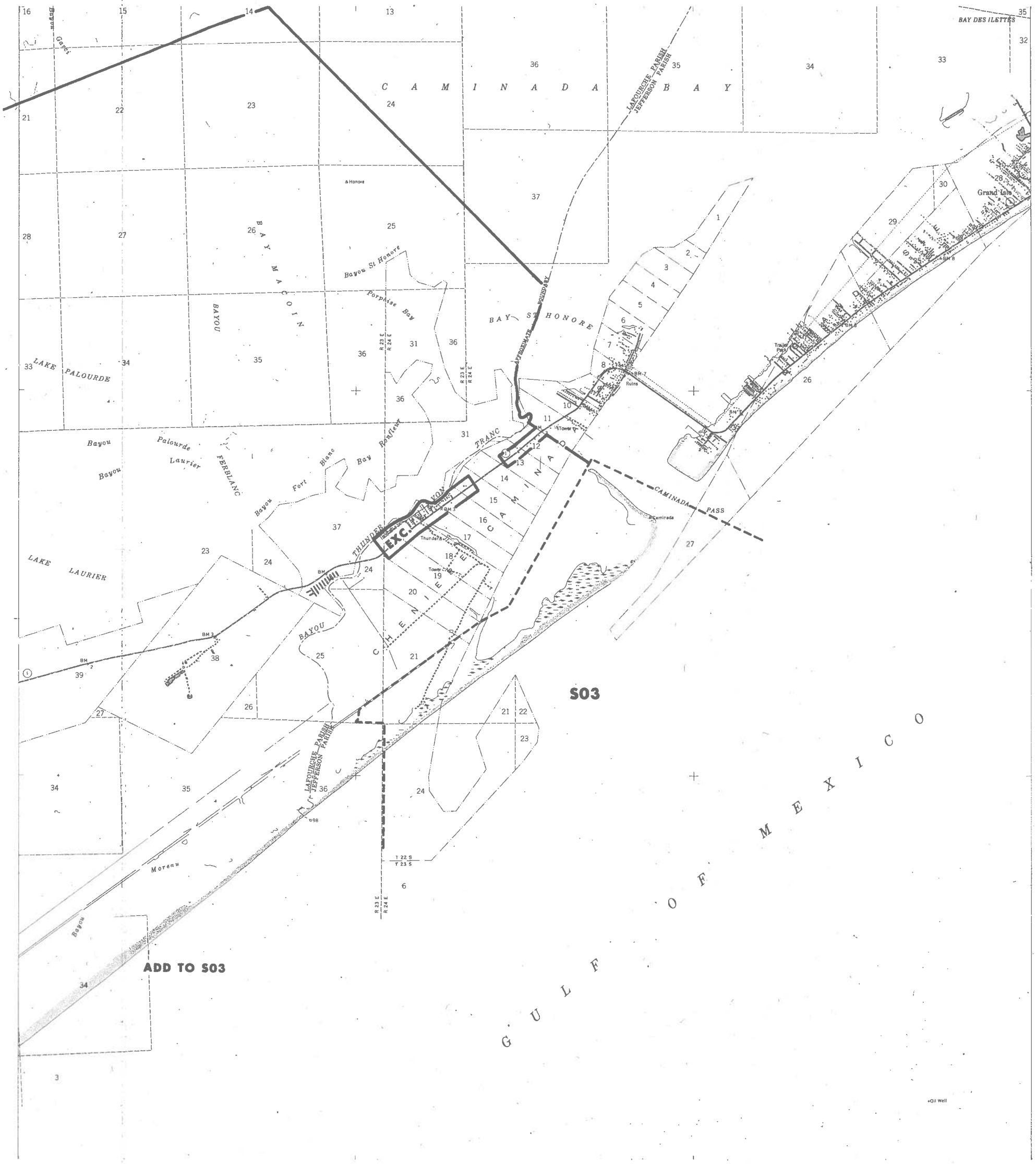

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20

QUADRANGLE

CAMINADA PASS

LOUISIANA

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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21

QUADRANGLE

LEEVILLE

LOUISIANA

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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DEVILS BAY

Devils Island

Shallow Bayou

CASSE TETE ISLAND

CASSE-TETE ISLAND

Calumet Island

BAY

TIMBALIER

TIMBALIER BAY OIL FIELD

RESERVATION BOUNDARY

SUBMERGED PIPELINE

EAST TIMBALIER ISLAND

EAST TIMBALIER ISLAND RESERVATION

ADD TO S04

S04

ADD TO S05

S05

MEXICO

GULF OF

Light

Oil Tanks

Wells

Oil Well

Cut

Platform

Daybeacon

Bunkhouse

Strike 2

East 4

16 17 18 19 20 21

7 8

15 16 17 18

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22

North

QUADRANGLE

CALUMET ISLAND

LOUISIANA

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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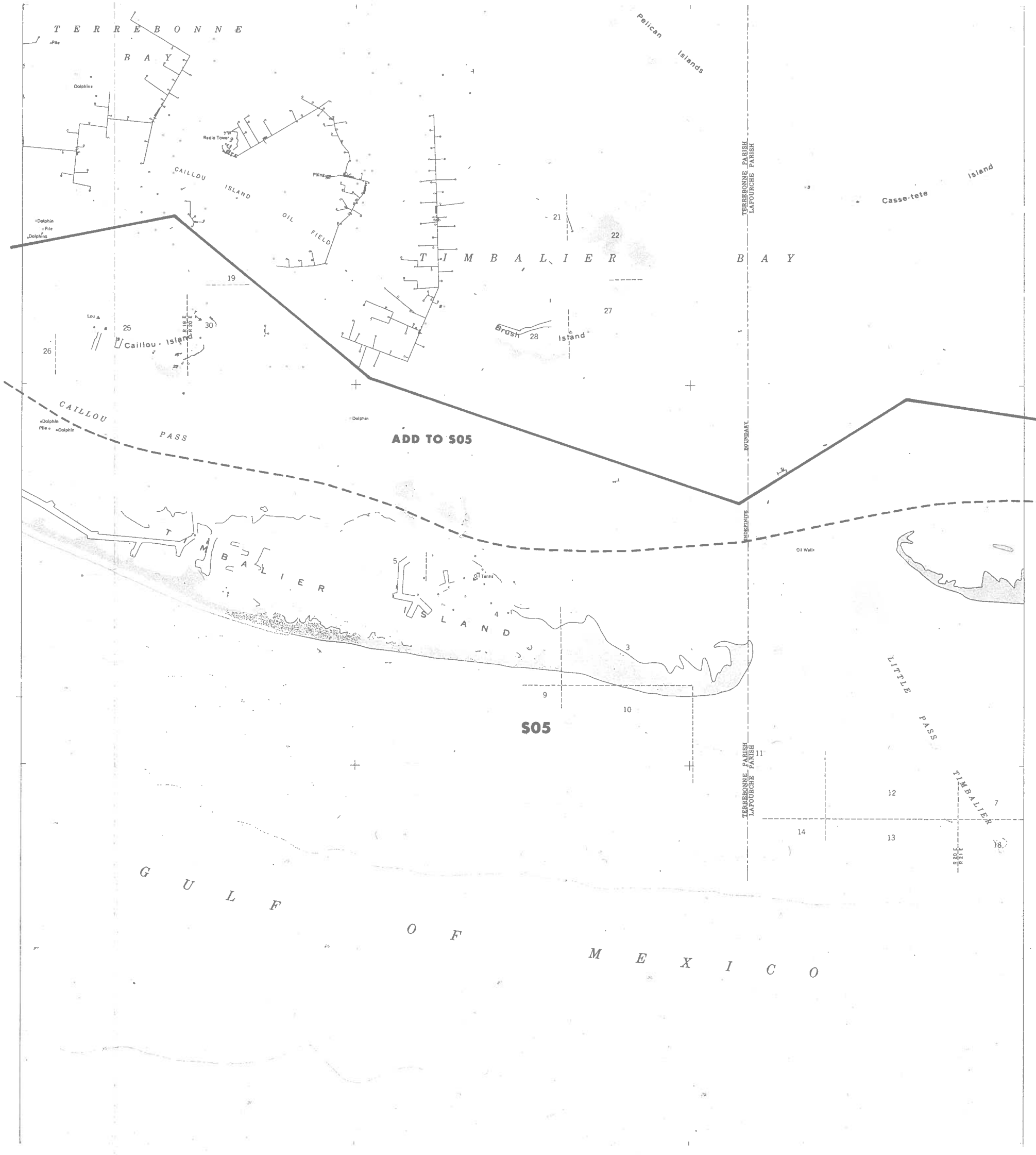

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23

North

QUADRANGLE

TIMBALIER ISLAND

LOUISIANA

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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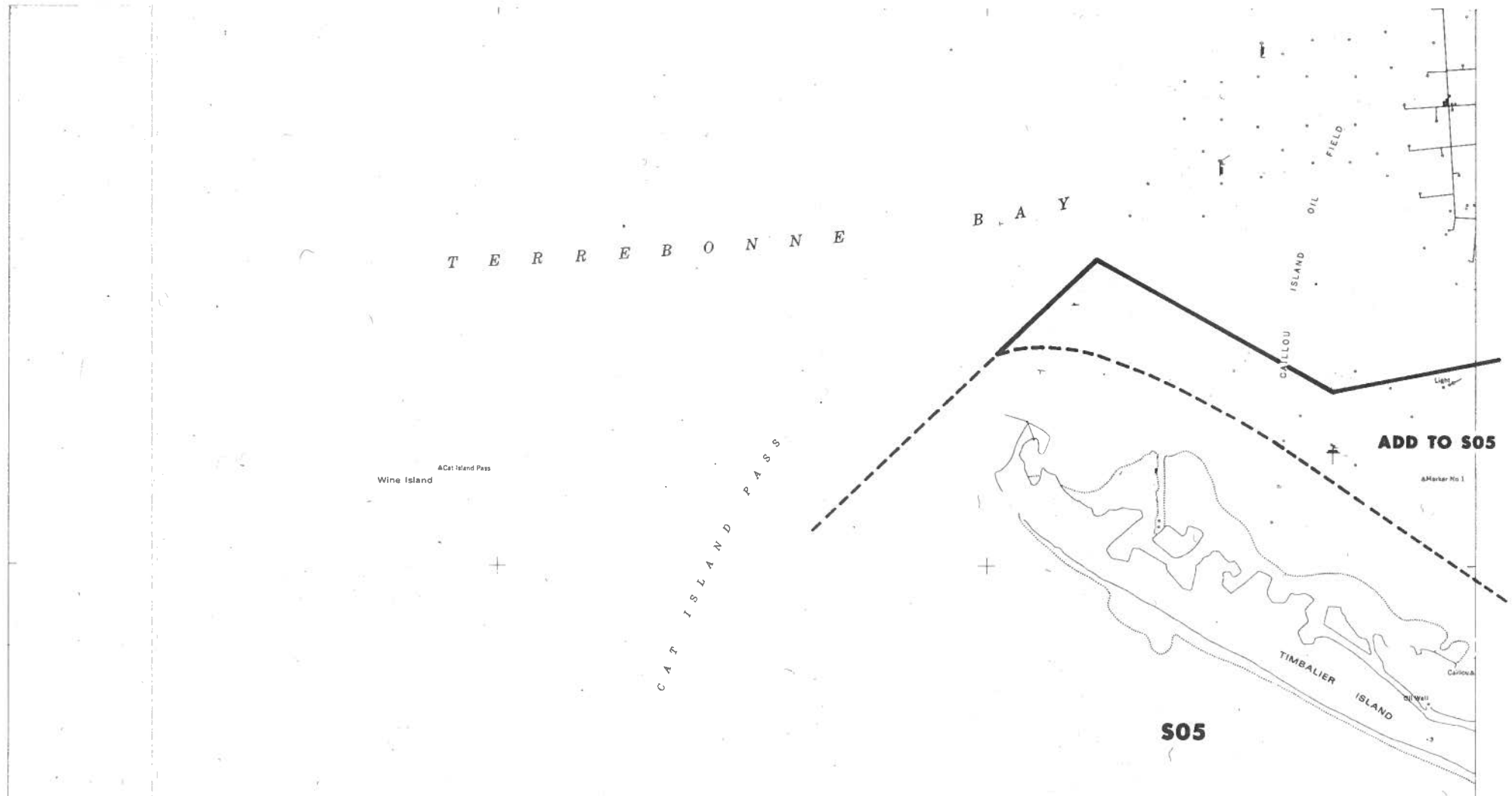

G U L F O F M E X I C O

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24

QUADRANGLE

CAT ISLAND PASS

LOUISIANA

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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BAY BLANC 34

35

36

31

32

33

Pass la Poule

34

TERREBONNE BAY

Bodwin Cutoff

Bodwin Point

L A K E

P E L T O

LAKE PELTO OIL FIELD

Radio Mast

Dolphins

Point Mast

ADD TO S06

Old Camp Pass

Wine Island Pass

Shallow Area

Shallow Area

D E R N I E R E S

I S L E S

Trinity Bay

Bayou Pelton

Trinity

S06

G U L F O F M E X I C O

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25

North

QUADRANGLE

EASTERN ISLES DERNIERES

LOUISIANA

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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Pass des Ilettes

Grand Pass des Ilettes

PELICAN BAYOU Pelican Bayou

GRAND PASS DES ILETTES

Big Misale Bayou

Little Misale Bayou

BIG MISALE BAYOU

California Bay

LITTLE MISALE BAYOU

FLAT BAYOU

PELICAN LAKE

ADD TO S06

Bay Wilson

Shallow Area

Pass Wilson

CAILLOU BAY

BAY ROUND

LAKE PELTO

CAILLOU BOCA

Light

COUPE NOUVELLE

Whiskey Island

ISLES DERNIERES

WHISKEY PASS

S06

GULF OF MEXICO

Oil Well

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26

North

QUADRANGLE

CENTRAL ISLES DERNIERES

LOUISIANA

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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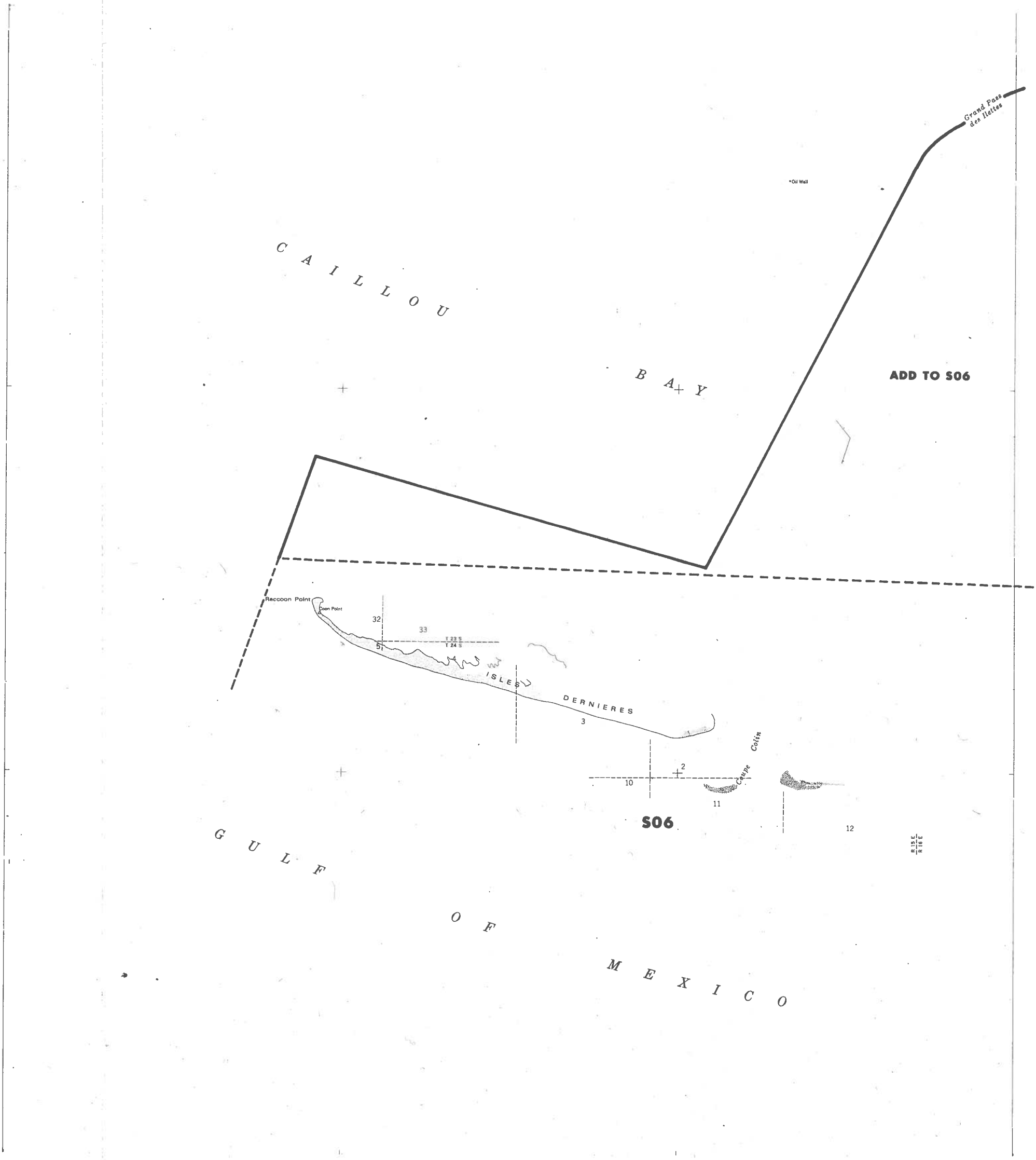

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27

QUADRANGLE

WESTERN ISLES DERNIERES

LOUISIANA

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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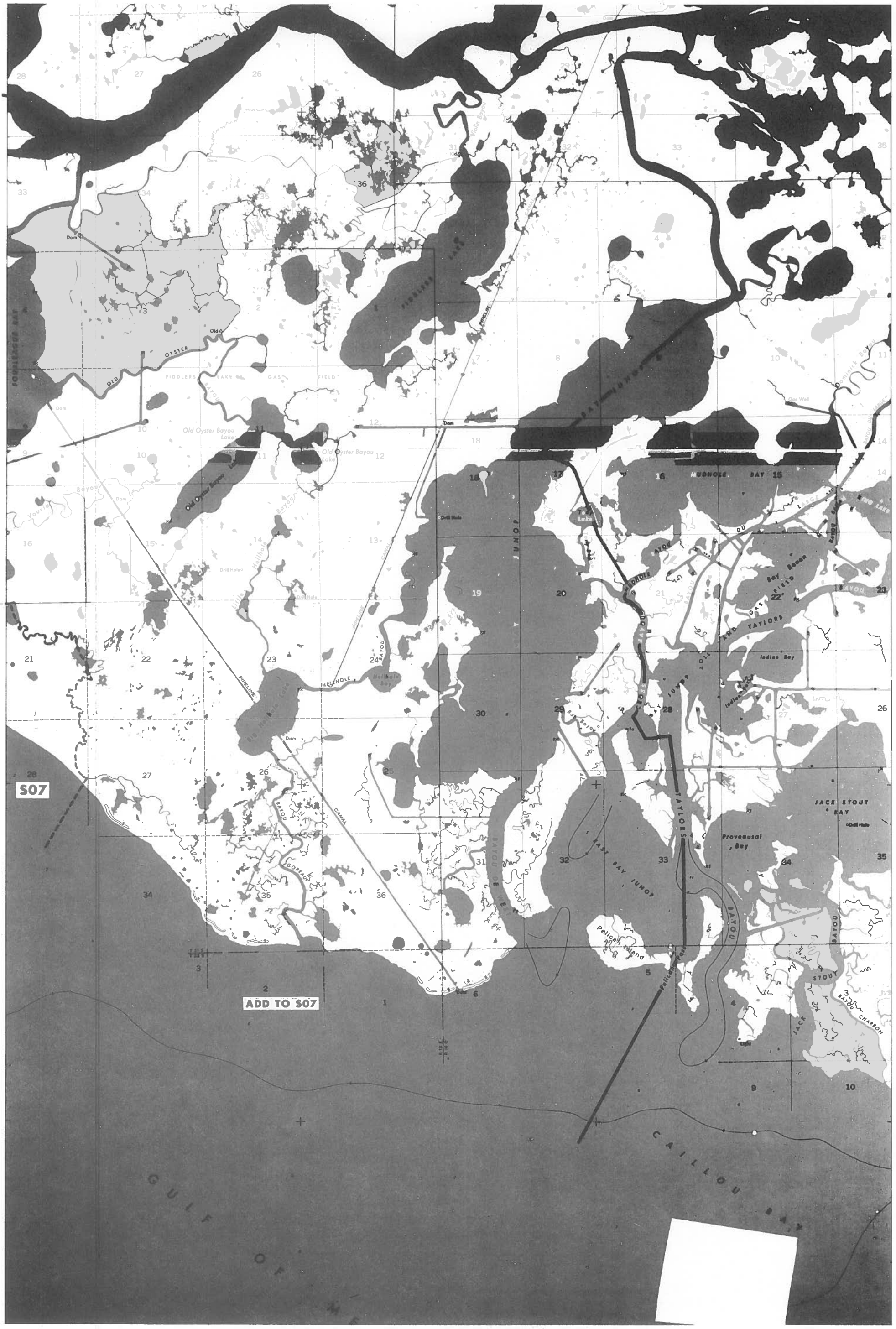

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28

North

QUADRANGLE

EAST BAY JUNOP

LOUISIANA

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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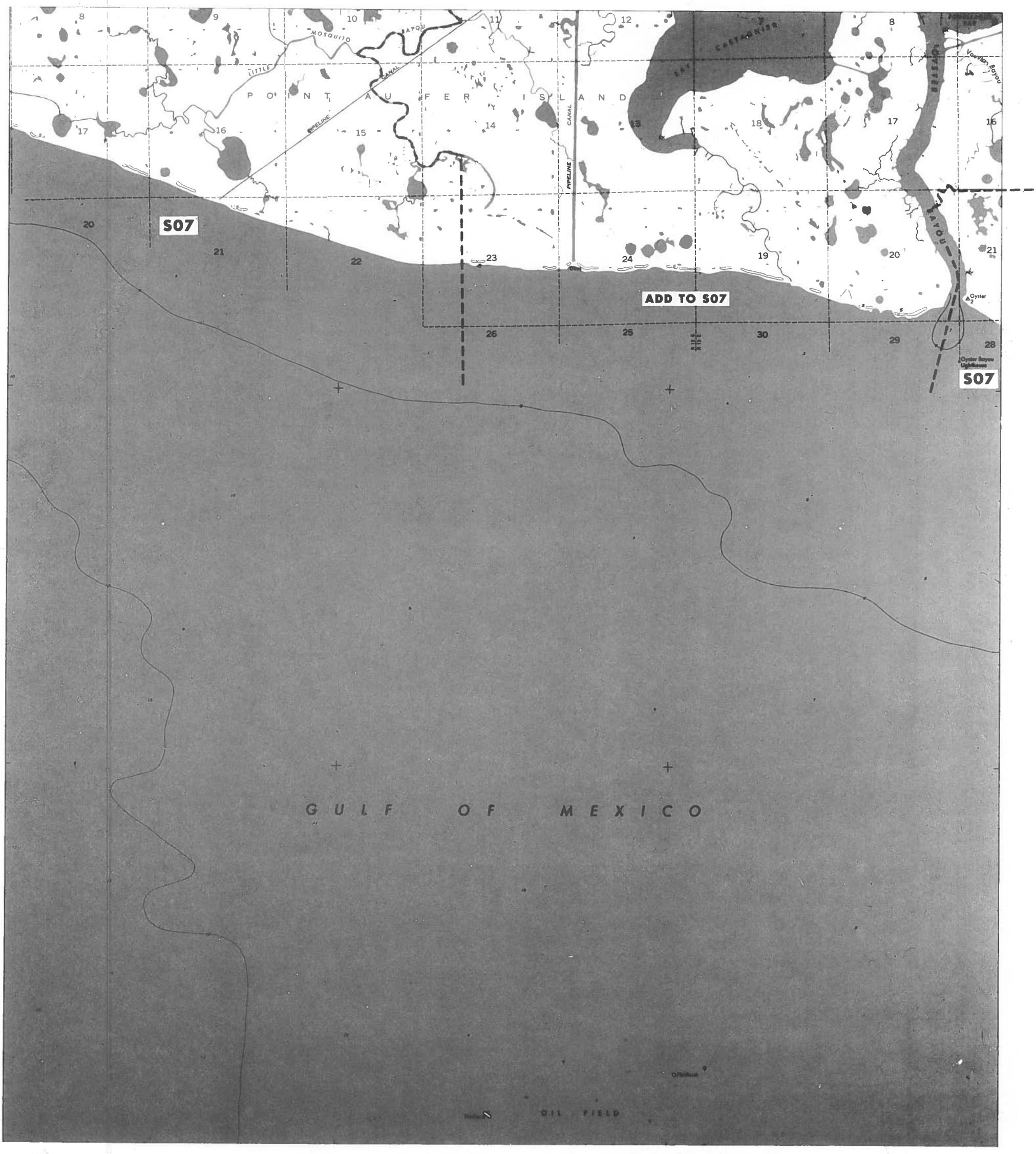

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29

North

QUADRANGLE

OYSTER BAYOU

LOUISIANA

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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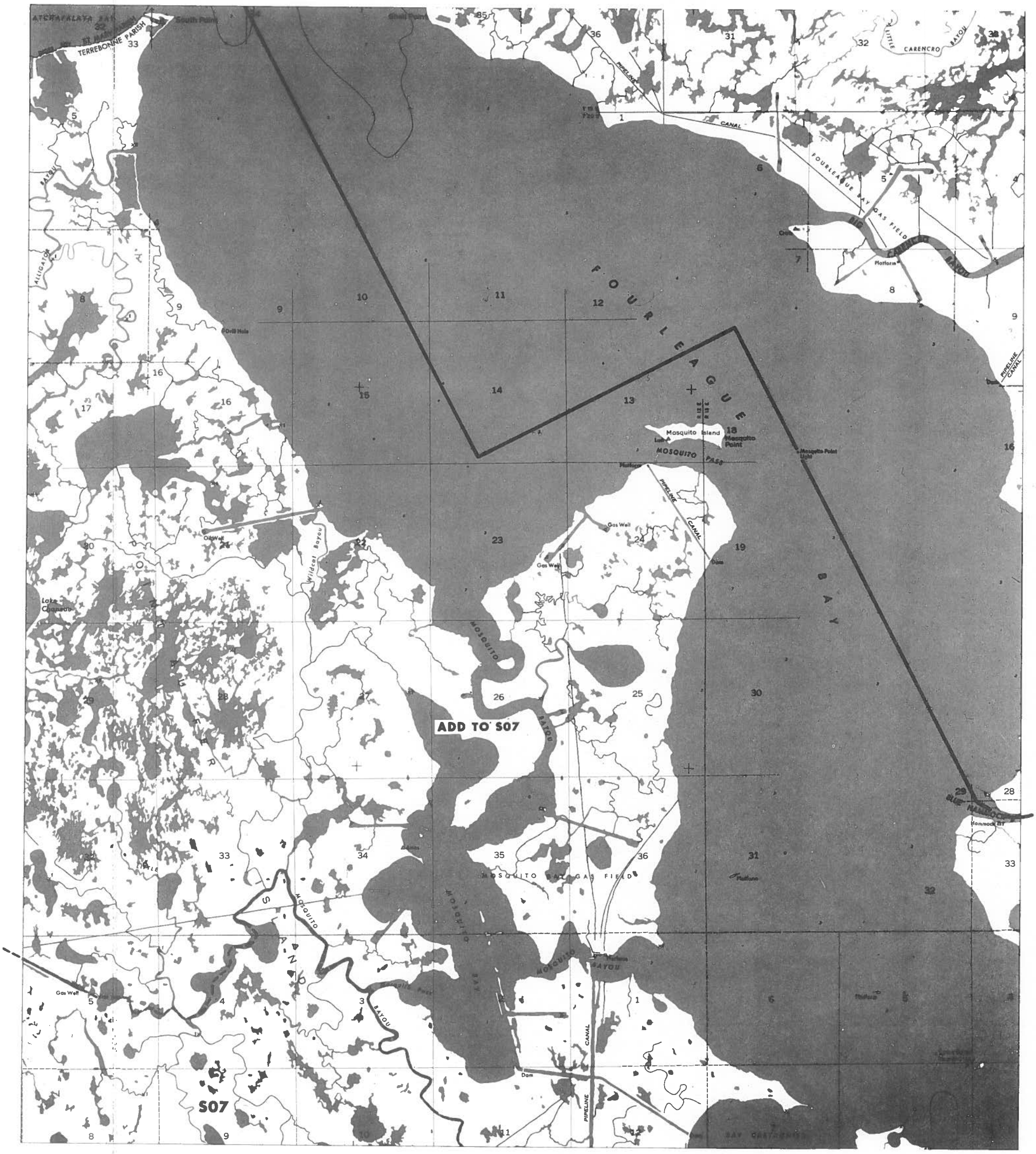

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UNITED STATES
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30

QUADRANGLE

FOURLEAGUE BAY

LOUISIANA

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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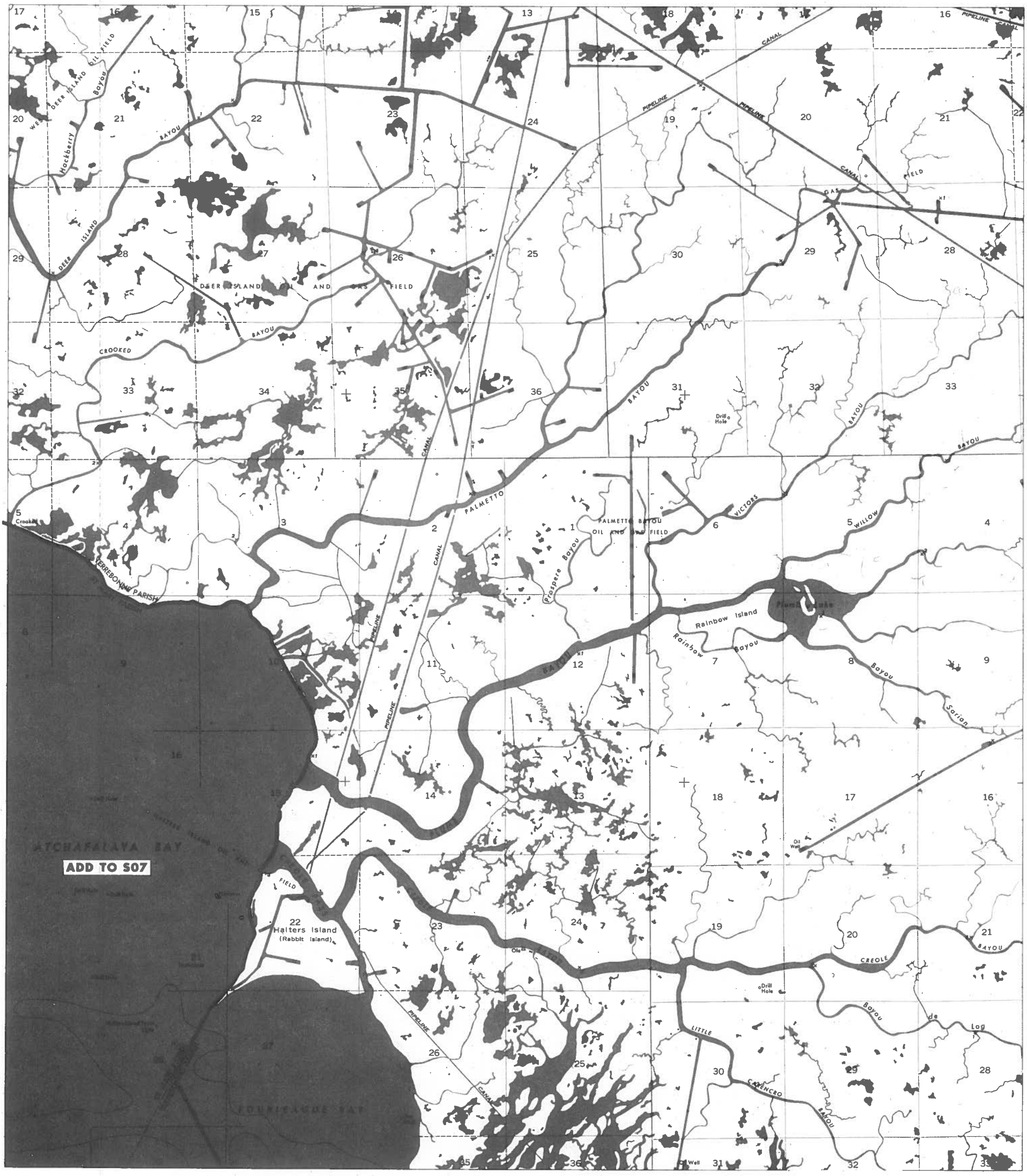

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31

QUADRANGLE

PLUMB BAYOU

LOUISIANA

SCALE

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

North

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ADD TO S07

POINT AU FER ISLAND

Point au Fer

Shell Reef

North Point

Shell Reef

Raquet Pass

Mullet Cove

Mud

Fox Point

Narrow Hammock

Mud

Drill Hole

Turn Point

Mud

Drill Hole

Fishing Point

Light

Dead Alligator Point

Light

Little Hammock

Little Bayou

Mud

Lake Chapeau

Locust

Bayou Point au Fer

Oil Field

Pipeline

Canal

Bayou

Alligator

Bayou

ST MARY PARISH
TERREBONNE PARISH

MORPHETTE BOUNDARY

R11E
R12E

R31E
R32E

T20S
T21S

S07

GULF OF MEXICO

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32

North

QUADRANGLE

POINT AU FER

LOUISIANA

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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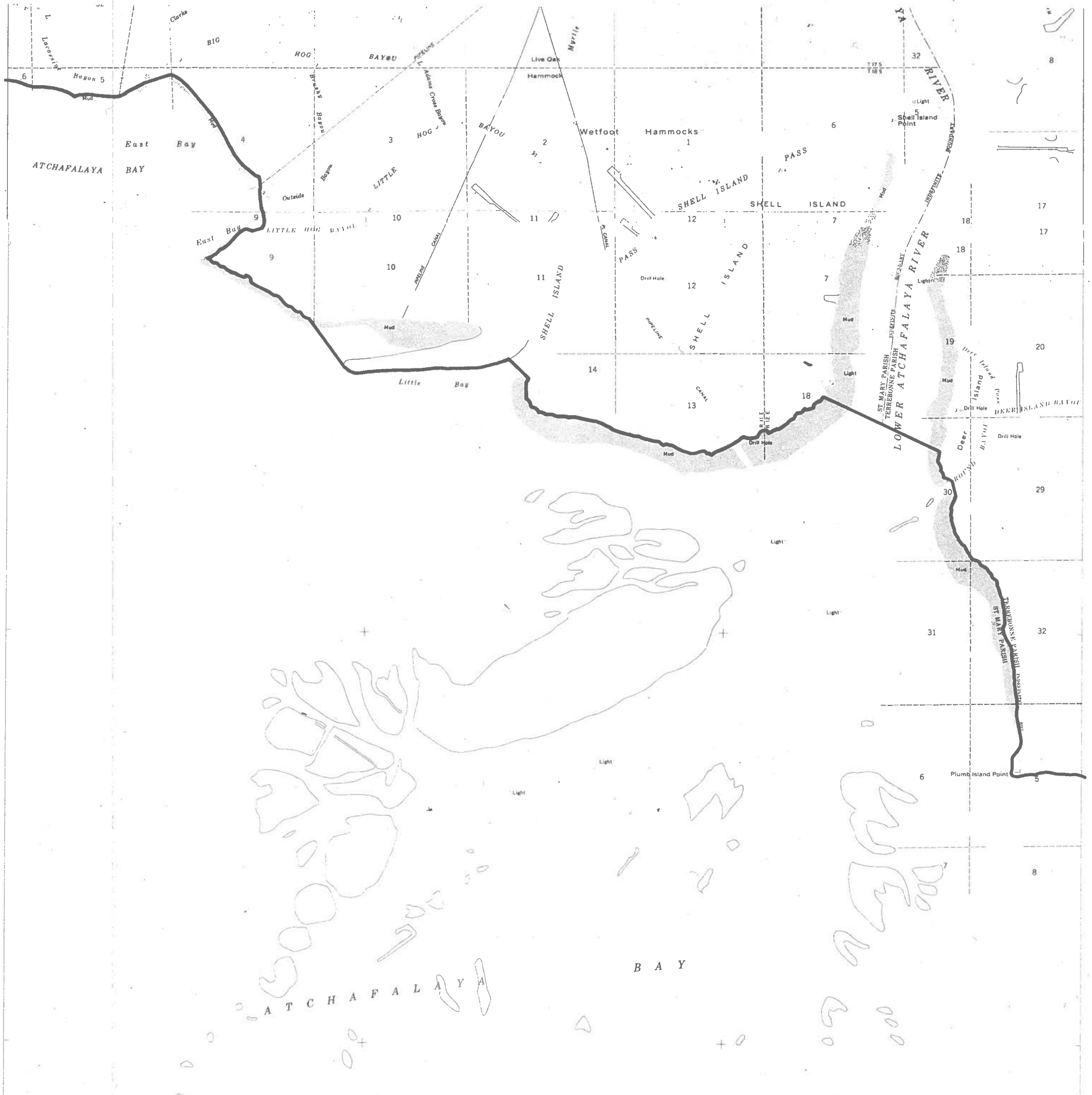

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33

North

QUADRANGLE

POINT AU FER NE

LOUISIANA

SCALE

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

t 5 0 1 KILOMETER

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34

QUADRANGLE

BELLE ISLE

LOUISIANA

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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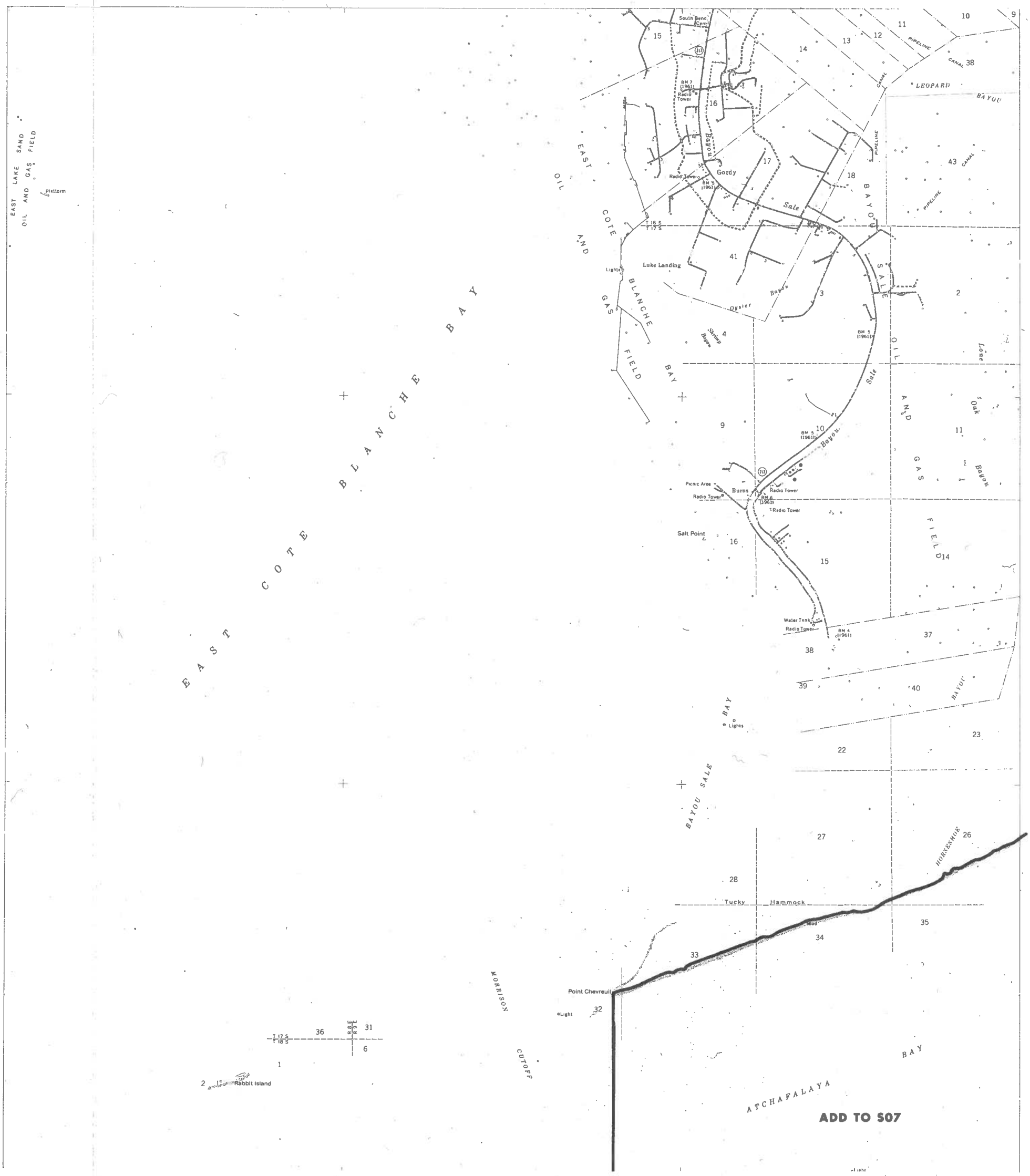
ADD TO S07



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35

QUADRANGLE

POINT CHEVREUIL

LOUISIANA

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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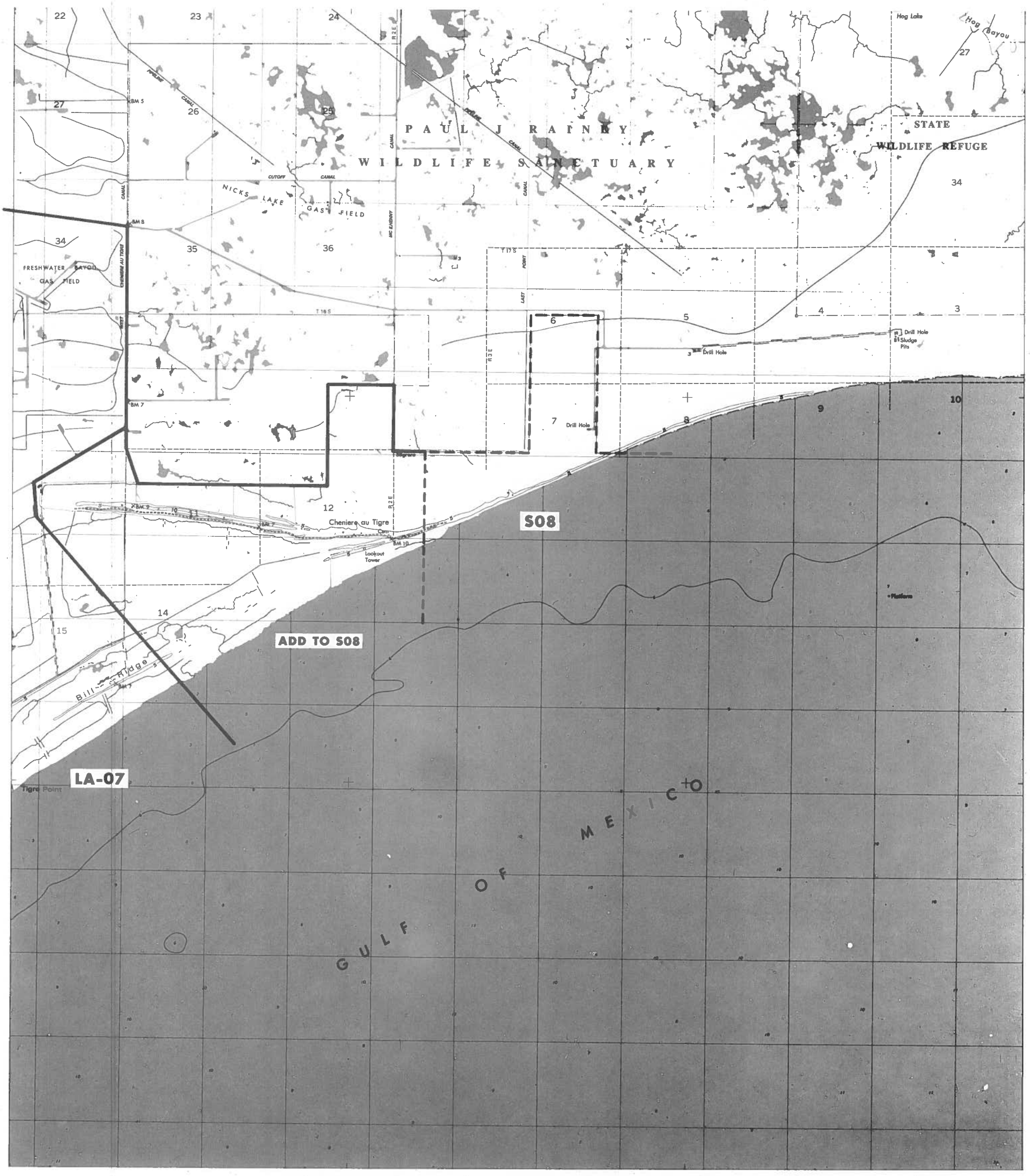

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36

North

QUADRANGLE

CHENIERE AU TIGRE

LOUISIANA

SCALE

1 1/2 0 1 2 3 4 MILES

3000 0 3000 6000 9000 12000 15000 18000 21000 FEET

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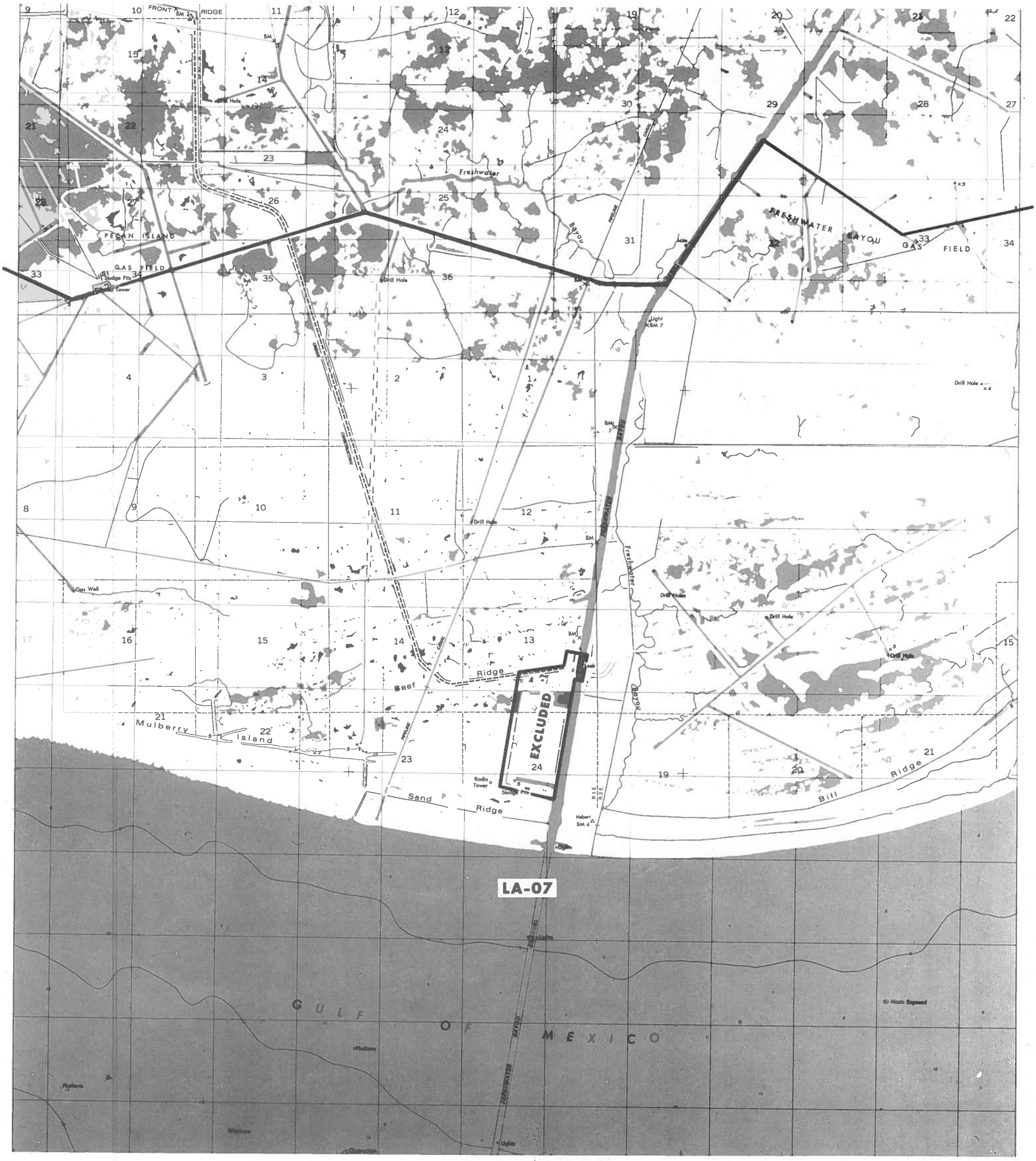

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37

QUADRANGLE

MULBERRY ISLAND EAST

LOUISIANA

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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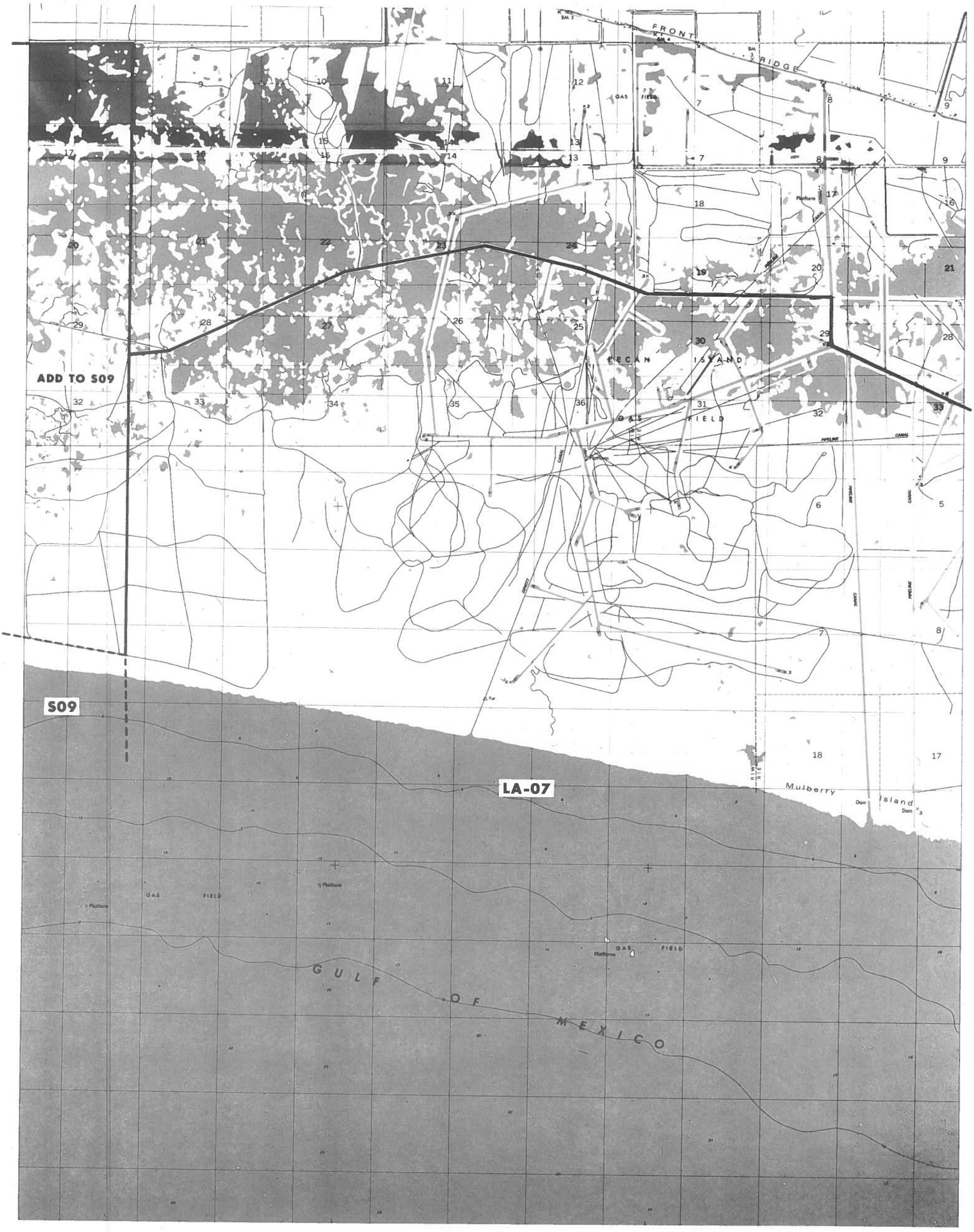

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38

North

QUADRANGLE

MULBERRY ISLAND WEST

LOUISIANA

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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39

North

QUADRANGLE

ROLLOVER LAKE

LOUISIANA

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 S10

S10

GULF OF MEXICO

ROCKEFELLER STATE WILDLIFE REFUGE AND GAME PRESERVE

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40

North

QUADRANGLE

HOG BAYOU

LOUISIANA

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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41

QUADRANGLE
CREOLE
LOUISIANA

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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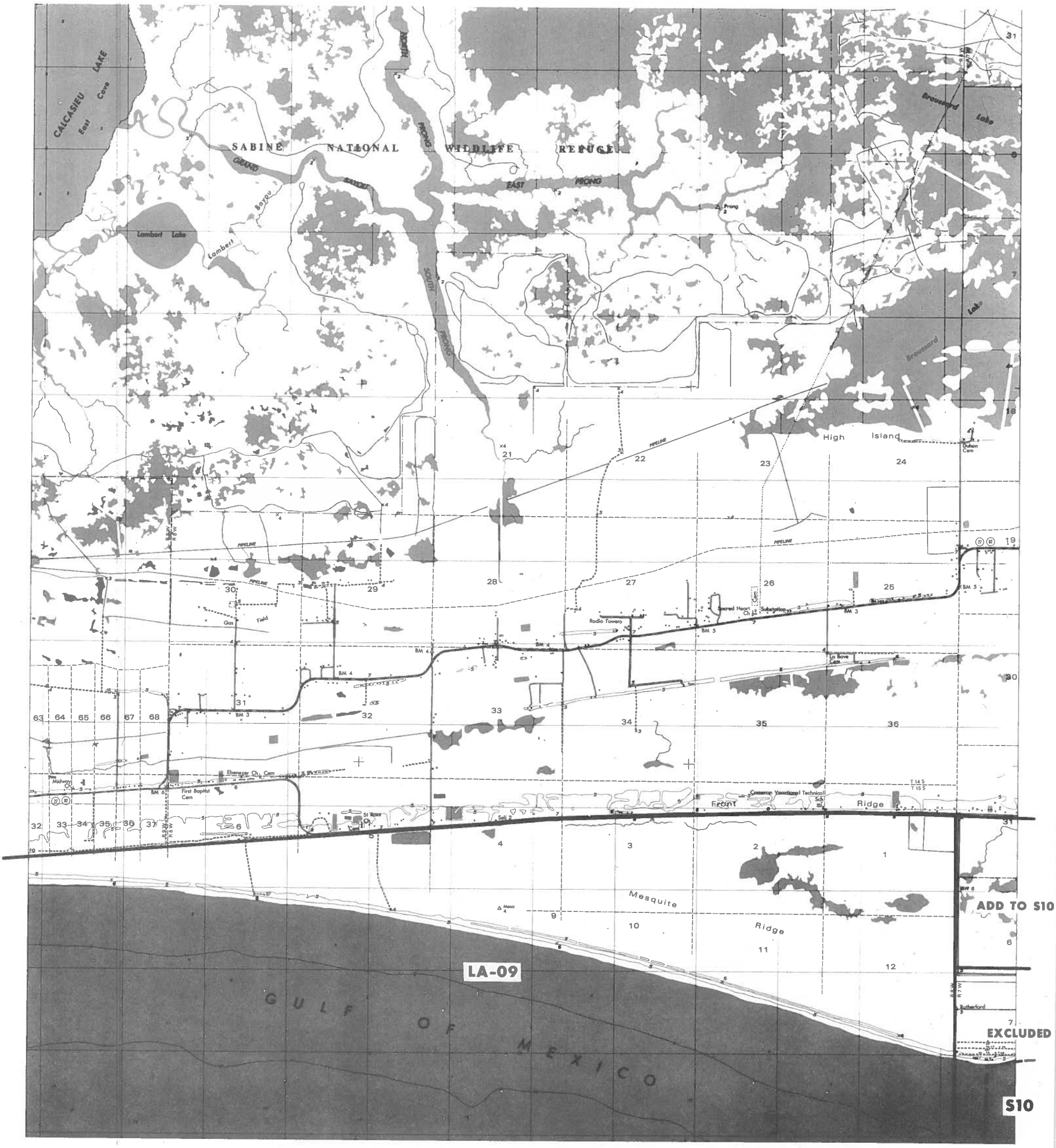
EXCLUDED

ADD TO S10

S10

BROUSSARD LAKE
Little Chenier
Ridge
CHENIER PERDUE GAS FIELD
EAST CHENIER PERDUE GAS FIELD
Pumpkin Ridge
Oak Grove
Front Ridge
EUGENE ISLAND GAS FIELD
OAK GROVE RIDGE
Dens Ridge
Kings Bayou
Bayou Labauve
High Island
Creole
Mesquite Ridge
Hackberry Beach
MERMENTAU RIVER
LOWER MUD LAKE
GULF OF MEXICO
Gas Well
Drill Hole
Radio Tower
Floodgate
Cem
Road
Richard
Gas Tanks
Lights
T13S
T14S
T15S
R7W
R6W



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42

QUADRANGLE

GRAND BAYOU

LOUISIANA

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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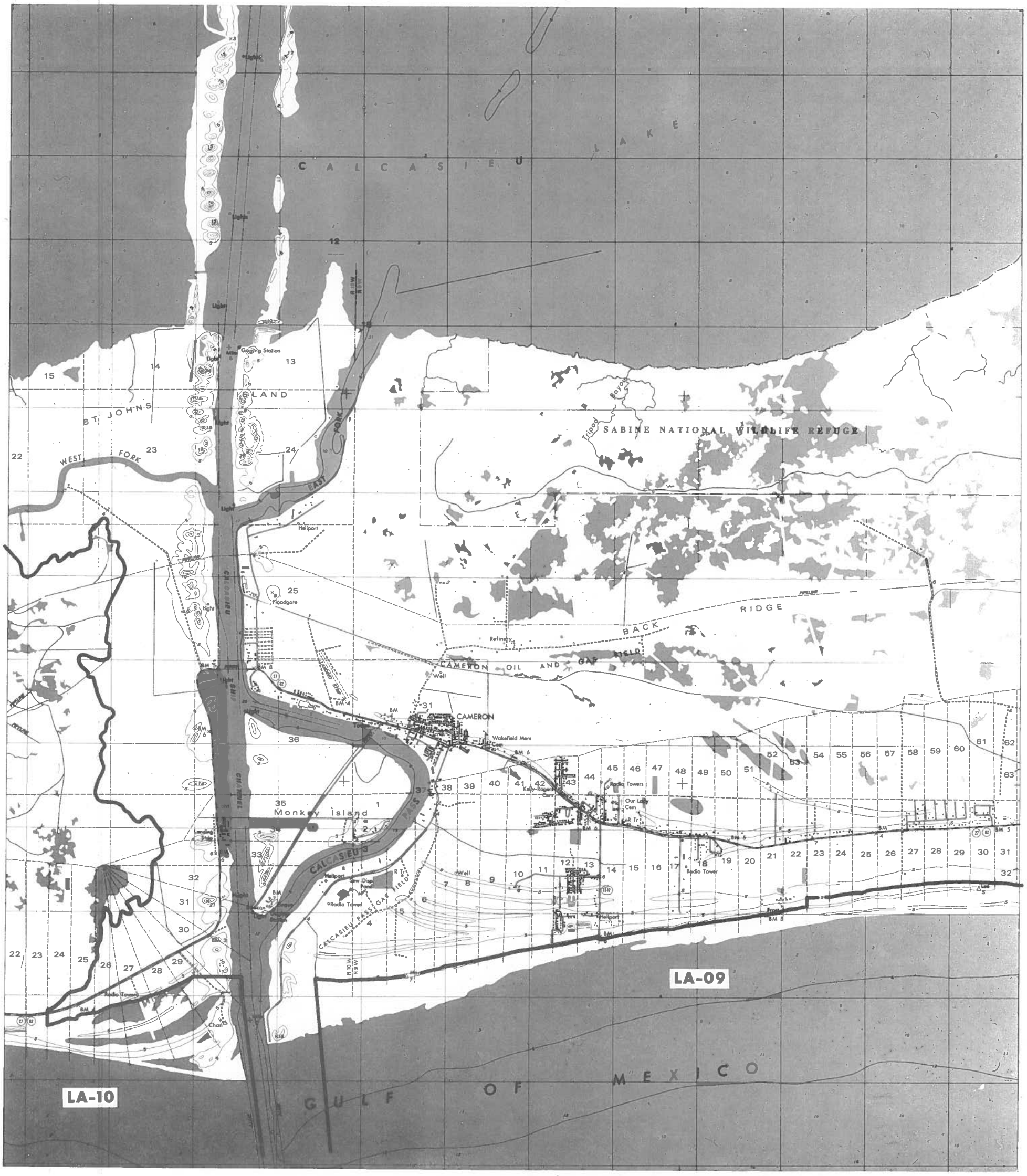

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43

QUADRANGLE

CAMERON

LOUISIANA

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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SABINE NATIONAL WILDLIFE REFUGE

CALCASIEU LAKE

WEST COVE

EXCLUDED

LA-10

GULF OF MEXICO

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DEPARTMENT OF THE INTERIOR
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44

QUADRANGLE

HOLLY BEACH

LOUISIANA

SCALE

1 t/2 0 t MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

North

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45

QUADRANGLE

PEVETO BEACH

LOUISIANA

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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QUADRANGLE

JOHNSONS BAYOU

LOUISIANA

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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47

QUADRANGLE

TEXAS POINT

LOUISIANA

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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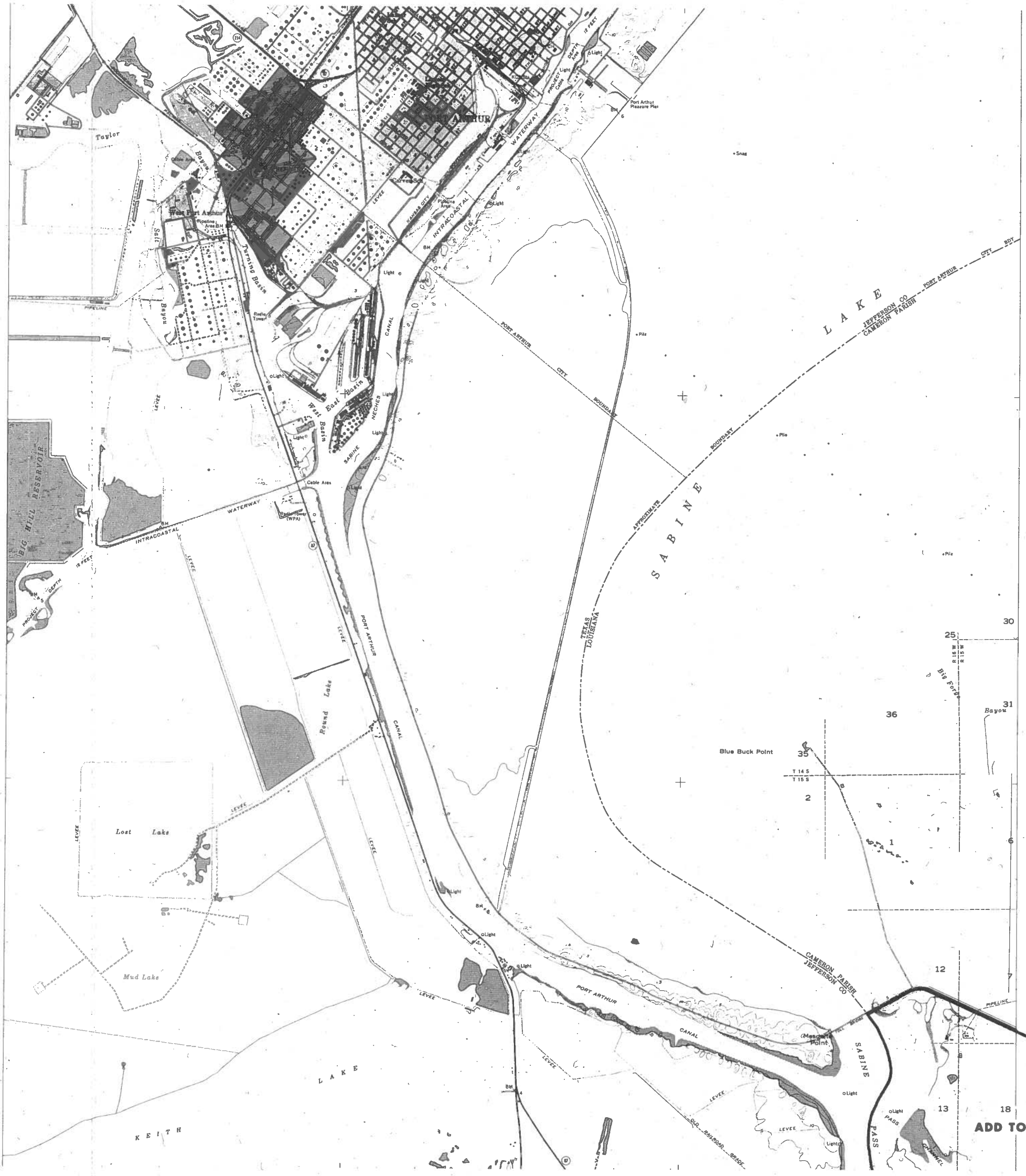

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48

QUADRANGLE

PORT ARTHUR

LOUISIANA

SCALE

1 1/2 0 1 MILE

t000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

North

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