

THE GULF COAST WETLANDS CONFERENCE

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TEXAS COASTAL WETLANDS:

THEIR STATUS, LEGISLATION, AND REGULATION

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I. Coastal Setting

A. Climate

The coast of Texas spans about 4 degrees of latitude and a diverse climatic setting. Annual precipitation decreases systematically down the coast from a high of about 55 in. along the Texas-Louisiana border to about 26 in. at the mouth of the Rio Grande. Between these same geographic reference points, mean annual temperature increases down the coast from 69 to 74 degrees F. South of the Colorado River average annual evapotranspiration exceeds precipitation, producing a water deficit which is at a maximum at the tip of South Texas. Marshes and associated environments are affected by astronomical tides that have a maximum amplitude of only about 2.5 ft. along the Gulf shoreline and less than 1.0 ft. in the bay-estuary-lagoon system. Wind tides have a more dramatic effect. Depending on the speed and direction of the winds, tidal levels can rise or fall as much as 2.0 to 3.0 ft. in a matter of hours.

B. Geology

The modern regional geologic framework consists of a bay-estuary-lagoon system, alluvial-deltaic plains such as that formed by the ancestral Brazos-Colorado River system, a chenier plain extending inland from the Gulf

alterniflora), saltwort (Batis maritima), glasswort (Salicornia virginica and S. bigelovii), saltgrass (Distichlis spicata), seashore dropseed (Sporobolus virginica), sea ox-eye (Borrchia frutescens), salt-marsh bulrush (Scirpus maritimus), and others. Black mangroves (Avicennia germinans) are significant components of salt marsh systems in some areas along the central and south Texas coast. Salt marshes have their broadest distributions south of the Galveston Bay area, where they are common on the bayward side of barrier islands and peninsulas and along the mainland shores of narrow bays such as West Galveston Bay. Although salt marshes occur on bay-head deltas, the communities change rather rapidly to brackish and fresh marshes up the valleys.

B. Brackish Marsh

The brackish-marsh community is transitional between salt marshes and fresh marshes. Among the dominant species in topographically higher areas of this community are marshhay cordgrass (Spartina patens), Gulf cordgrass (Spartina spartinae), saltgrass, and sea ox-eye. Other species in lower, wetter areas include Olney bulrush (Scirpus olneyi), cattail (Typha spp.), California bulrush (Scirpus californicus), alligatorweed (Alternanthera philoxeroides), and others. Brackish marshes dominate the coastal marsh community between Sabine Lake and Galveston Bay. They are also widely

distributed along the lower reaches of the Trinity delta, inland from West Bay, in the inland part of the marsh system south of the Brazos River, and along much of the lower reaches of the Lavaca and Guadalupe river valleys.

C. Fresh Marsh

Environments in which fresh marshes occur are generally beyond the limits of saltwater flooding except perhaps locally during hurricanes. The freshwater influence from rivers, precipitation, runoff, and ground water is sufficient to maintain a fresher-water vegetation assemblage consisting of species such as cattail, California bulrush, three-square bulrush (Scirpus americanus), water hyacinth (Eichornia crassipes), spiny aster (Aster spinosus), and rattlebush (Sesbania drummondii). Fresh marshes occur inland along river or fluvial systems and in upland basins both on the mainland and on barrier islands. Inland from the chenier plain and upstream along the river valleys of the Neches, Trinity, San Jacinto, Colorado, Lavaca, Guadalupe, and San Antonio rivers, salinities decrease and fresh marshes intergrade with and replace brackish marshes.

D. Swamps

Swamps are most commonly defined as woodlands or forested areas that contain saturated soils or are inundated by water during much of the year. In Texas, these are areas in which bald cypress (Taxodium distichum) and water

tupelo (Nyssa aquatica) occur in association with other species of trees such as sweetgum (Liquidambar styraciflua) and willows (Salix spp.). Swamps occur principally in the entrenched valleys of the Sabine, Neches, and Trinity rivers.

E. Tidal Flats

Wind-driven tides flood broad, topographically low areas at irregular intervals along the bay-estuary-lagoon system producing, in many areas, sandy and muddy flats generally barren of macrophytes. Flats are more extensive southward, in part because of the increasing water deficit down the coast, which is reflected in increasing salinities of water bodies, substrates, and vegetation communities. Wind-tidal zones in South Texas are characterized by barren wind-tidal flats capped with algal mats.

F. Marine Grass

Marine grasses occur in relatively shallow (less than 6 ft) subtidal areas of the bay-estuary-lagoon system. Five marine spermatophytes, including shoalgrass (Halodule wrightii), widgeongrass (Ruppia maritima), turtlegrass (Thalassia testudinum), clovergrass (Halophila engelmannii), and manatee grass (Syringodium filiformis) occur on the Texas Gulf Coast. However, only widgeongrass and shoalgrass have been reported on the central and northern coast.

III. Community Abundance in Acres (from Reyer and others, 1988; Brown and others, 1972-1980; Pulich and White, 1990; and unpublished data from TPWD and USFWS).

Salt and brackish marsh	434,600
Fresh marsh	480,200
Swamp	7,400
Tidal flats	275,100
Marine grass	<u>189,865</u>
Total	1,387,165

IV. Status of Texas Wetlands

A. Overall

The U.S. Fish and Wildlife Service (USFWS) estimates that Texas lost approximately 8,400,000 acres of wetlands (inland and coastal) between colonial times and the 1980's, next to Florida, the second highest total of any state. The Texas Parks and Wildlife Department (TPWD) estimates that approximately 35% of the state's coastal marshes (salt, brackish, and fresh) were lost between the mid-1950's and 1979.

B. River Deltas

Wetlands (salt, brackish, and fresh) are being replaced by open water/barren flats in the Neches, Trinity, San Jacinto, Lavaca, Guadalupe, and Nueces river deltas (White and Calnan, 1990). Only the Colorado River delta increased in wetlands area after the mid-1950's; vegetation increased by about 2% between 1956 and 1982. The greatest wetland losses occurred along the San Jacinto (40%) and Neches (40%) rivers, and smaller losses occurred along the Trinity (30%), Lavaca (15%), Guadalupe

(6%), and Nueces (3%) rivers. The total loss in vegetated wetlands was more than 19,760 acres, about 29% of the vegetated area in the 1950's.

C. Marine Grasses

Submerged vascular vegetation (mostly marine grasses or seagrasses) in the Galveston Bay system has declined by approximately 90 percent since 1956 (Pulich and White, 1990). In Laguna Madre, the estuarine system with the greatest area of marine grasses, 2,470 acres were lost between the 1960's and 1988.

V. Processes Affecting Wetlands

A. Relative Sea-level Rise

Relative sea-level rise refers to a rise in sea level with respect to the surface of the land, whether it is caused by actual sea-level rise or land-surface subsidence. Relative sea-level rise is composed of two components, a lesser component of eustatic (global) sea-level rise that is estimated to be about 1.2 mm/yr, and a more significant component of land-surface subsidence, which varies along the Texas coast from approximately 5 to 13 mm/yr. Rates of relative-sea level rise are considerably higher than this in areas undergoing human-induced subsidence due to underground fluid withdrawal (ground water and oil and gas) such as the Houston and Beaumont-Port Arthur areas. Subsidence rates in the area of maximum subsidence have exceeded 75 mm/yr (3

1906-1982
subsidence 9 ft
Texas City Area
1952-1978
100 ft
Houston Area

in/yr). In areas associated with subsidence, surface faults may be activated by ground water withdrawal or hydrocarbon production and areas on the down-thrown side of the fault may become wetter than on the up-thrown side, ultimately replacing the marsh with water.

B. Reduction in Sediment Load Delivered by Coastal Rivers

Over the past 3 to 4 decades, there has been a marked decline in fluvial sediments delivered by many coastal rivers. Sediment load in several rivers is less than half the previous load measured before the 1950's, and in some cases the load is less than 15 percent of previous amounts. Comparisons of reservoir development in the drainage basins with reductions in stream sediment load indicate that reservoirs are probably the major reason for the decline. Large reservoirs, such as Lake Livingston on the Trinity River, can trap from 95 to 100 percent of the sediment delivered to them. Reduction in peak flows below dams decreases the ability of the stream to transport sediments accumulating downstream at the mouths of tributaries. In some deltas, such as the Trinity River delta, the long-term sedimentation rate of 5.4 mm/yr is not keeping pace with the estimated subsidence rate of 6.5 mm/yr and wetlands are being replaced by open water or barren flats.

C. Agriculture

Tiner (1984) estimates that agriculture contributes to

80% of the freshwater and 2% of the saltwater wetland losses nationwide.

- D. Dredging and filling
- E. Discharges of pollutants
- F. Changes in hydrology

VI. Current Wetland Legislation

A. Texas Coastal Management Plan

*bill signed
6/5/91
by Ann Richards*

In 1989, the 71st Texas Legislature amended the Texas Natural Resources Code and appointed the Texas General Land Office (GLO) the lead agency for development of a comprehensive, long-term management plan for the state's coastal public lands (from mean high tide to 10.35 mi. offshore in the Gulf of Mexico). The GLO appointed a citizens advisory committee and state and federal agency task forces to aid in formulating the plan. Five public meetings were held on the coast to determine which issues coastal citizens felt were most critical. Three issues emerged as being of primary importance to the coastal public: coastal erosion/dune protection, beach access, and wetland loss. These issues were discussed in depth in a series of consensus-building workshops by representatives of business, environmental groups, and government. The Texas Coastal Management Plan: 1990-1991, summarizes the management recommendations developed and approved for each of the issues by the citizens who participated in the workshops and by the Coastal

Management Advisory Committee. These recommendations were then presented to the public in a second series of five coastal hearings. Two bills, HB 1622 on coastal wetlands and HB 1623 on shoreline erosion/dune protection, have been drafted to implement these recommendations:

1. Adopt a State Wetland Conservation Plan

The Texas Parks and Wildlife Department (TPWD) and the GLO will develop a plan for protecting coastal public wetlands. The plan will include:

- a. a policy framework for achieving a goal of no overall net loss of state-owned coastal wetlands, which framework will include monitoring and enforcement of the no overall net loss policy;
- b. provisions for an inventory of state-owned coastal wetlands to determine gains and losses in areal extent, wetland types, wetland functions, and causes of wetland alterations;
- c. provisions for an inventory of sites for compensatory mitigation, enhancement, restoration, and acquisition priorities;
- d. clarification and unification of wetland mitigation policies within the TPWD, the GLO, the Texas Water Commission (TWC), and other agencies;

Ann Richards
6/91

Coastal Conservation
Federal

Texas
only

including
banking

- e. development of guidelines and regulations for mitigation done in advance for losses due to possible future development and for which credit may be received when such future development occurs;
- f. evaluation of requirements for freshwater inflow to estuaries that affect state-owned coastal wetlands;
- g. preparation of long-range navigational dredging and disposal plans;
- h. provisions for studies examining the effects of boat traffic in sensitive wetlands and public education about these effects and about proper non-damaging boating techniques;
- i. provisions to encourage the reduction of nonpoint-source pollution, in consultation with the TWC, including the monitoring and adoption of nonpoint-source pollution standards;
- j. development of a networking strategy to improve coordination among existing federal and state agencies with respect to coastal wetland permitting, review, and protection responsibilities;
- k. a public education program on wetlands;
- l. participation in the establishment of a National Wetlands Information Center by the

federal government;

- m. evaluation of the feasibility and effect of sediment bypassing from reservoirs to bays and estuaries;
- n. consideration of sea level rise as it relates to coastal wetlands; and
- o. a plan to acquire coastal wetlands.

B. Texas Mitigation Management Commission

The Texas Mitigation Management Commission is responsible for development of a broad state mitigation management program to provide state oversight to mitigation management or mitigation banking activities by others, provide for public oversight to mitigation management or management banking activities by the State, and execute and manage mitigation banking projects.

1. Policy

It is the policy of State to encourage "no net loss" or a "net gain" of natural habitats to ensure that fish and wildlife and their habitats and the natural resources that they support are protected, enhanced, and increased for the benefit of present and future human generations. Specifically, the state will:

- (1) encourage any private development or public works project that, after all reasonable means and measures to avoid and minimize direct and indirect impacts have been exhausted, results in loss of

habitat, to restore, enhance, or create habitat equivalent in acreage, function, or value to offset or compensate for the loss; (2) encourage the execution and construction of aggregated mitigation projects when it can be demonstrated that such projects would provide for both a greater ecological benefit and enjoy a higher probability of success than would multiple smaller projects; and (3) support mitigation banking when the magnitude of a feasible, large-scale mitigation project may greatly exceed the mitigation requirements of the development or public works project that created the need for the mitigation.

2. Membership

The commission will have the following six members or representatives: (a) the Land Commissioner; (b) the chairman of the Texas Parks and Wildlife Commission; (c) the chairman of the TWC; (d) an independent scientist with expertise in natural resource management; (e) an activist in the conservation field; and (f) a person representing a special district or authority.

3. Duties

The Commission's specific duties are: (1) to evaluate the potential need for improved protection of existing natural habitats, for improved

mitigation management, and for mitigation banking from an ecological, economic regulatory, recreational, and financial perspective; (2) to identify, describe, and quantify the potential long-term economic and ecological benefits to Texas resulting from habitat protection, mitigation management, and mitigation banking; and (3) to submit a report to the governor presenting the commission's findings.

1/25/84 passed
C. Ad Valorem Tax Relief

A constitutional amendment authorizing ad valorem tax relief for the preservation of wetland and waterfront property in its natural state has been proposed in the Texas Senate. A related bill specifies that the Texas Parks and Wildlife Commission will adopt rules establishing procedures for land to be certified as wetlands.

VI. Wetland Regulation

State agencies that either issue permits or comment on applications for Corps of Engineers permits are the Texas Water Commission (TWC), the Texas Parks and Wildlife Department (TPWD), and the Texas General Land Office (GLO). Flowcharts illustrate the permitting and review process of each of the state agencies and the COE, especially as it relates to the impact on wetlands occurring on state-owned coastal lands. For the purpose of this discussion, unless

otherwise specified, the definition of "wetland" in Chapter 11 of the Texas Water Code applies:

an area (including a swamp, marsh, bog, prairie pothole, or similar area) having a predominance of hydric soils that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and that under normal circumstances support the growth and regeneration of hydrophytic vegetation.

The Texas Water Code also states that if the state definition of wetlands conflicts with the federal definition, the federal definition prevails. State-owned wetlands include vegetated bay or river bottoms to mean high tide.

A. Texas Water Commission (TWC)

The TWC is responsible for the protection of the state's resources under Chapter 26 of the Texas Water Code. Chapter 5 of the Code authorizes the TWC to adopt rules necessary to carry out its powers and duties, and to establish and approve all general policy of the commission. The TWC develops water-quality standards designed to protect current uses and to maintain the quality of water in the state. These standards are revised every three years as appropriate. The water-quality standards serve as the basis for permits issued by the TWC authorizing discharges into or adjacent to waters in the state and for the TWC's review of applications for a federal permit or license for which a state water quality certification is required under Section 401 of the Clean Water Act. The TWC recently

proposed new surface water quality standards for Texas. The proposed standards include wetlands as surface waters of the state, subject to protection from destruction or degradation by the General Criteria and Antidegradation Policy of the Surface Water Quality Standards.

1. Processing Procedure

The Corps, the EPA, and the Coast Guard, which frequently process requests for federal permits/licenses requiring a state water-quality certification, have elected to participate with the TWC in a joint public notice procedure to inform the public of both the request for the federal permit/license and of the concurrent review by the Commission for the purpose of providing the water quality certification. This notice, initiating a 30-day public comment period, provides information about the proposed action and the process for contacting the commission to request a public hearing on the issuance of a Section 401 Certification. During the public notice period, the TWC may receive comments from many sources. The TWC also attends the COE joint agency evaluation meeting.

2. Decision Process

All information submitted to the TWC is considered with respect to applicable state water-quality

standards (designated uses, quality, antidegradation). The Commission may issue a Section 401 water-quality certification, certification with conditions, certification waiver, or certification denial.

B. Texas Parks and Wildlife Department (TPWD)

1. Agency Role and Responsibilities

The TPWD has primary responsibility for protecting the state's fish and wildlife resources. The department's resource protection activities include providing recommendations to local, state, and federal agencies that approve, permit, license, or construct developmental projects, and providing recommendations to the Texas Department of Water Resources on scheduling of in-stream flows and freshwater inflows to estuaries for fish and wildlife management.

- a. Dredge spoil - The TPW Commission recognizes that wetland areas are of indispensable value to fish and wildlife and that the deposition of dredge spoil in wetland areas can often be detrimental to fish and wildlife resources. The Parks and Wildlife Code defines wetlands as coastal wetlands including marshes, grass flats, ecologically valuable bay bottoms, island rookeries, and inland wetlands including

marshes, swamps, and oxbow lakes. If the TPWD staff determines that a wetland area has unique aesthetic or ecological qualities, spoil disposal techniques that would adversely affect the area will be discouraged and alternate sites recommended. Ecological need will be a major determining factor in making recommendations.

b. Marl, sand, and gravel permits - The director of the TPWD has the authority to issue permits for the taking of bed and bottom materials from the state's waters if no other state permit is required. (oysters ★)

c. Mitigation - The TPW Commission opposes channelization and wetland drainage as a general policy and seeks full mitigation for fish and wildlife losses resulting from water resource development projects. Mitigation measures include improving lands to replace hunter opportunity loss, acquisition, and using fishery management techniques.

2. Corps Permitting Process

The TPWD provides objective comments on all section 10/404 permit applications. In addition, the TPWD may provide comments to the TWC in order to help them evaluate Section 401 Certification requests.

C. Texas General Land Office (GLO)

1. Agency Role and Responsibilities

The GLO is the state agency responsible for the management and use of state-owned public lands, including coastal wetlands to an inland boundary of mean high tide. This agency is proprietary, not regulatory, and assesses fees for the use of public lands.

2. Easement or Lease Process

Instruments authorizing the use of state-owned coastal public lands are issued under the authority of either the School Land Board (SLB) or the Commissioner of the GLO. The SLB is composed of the Texas Land Commissioner, an appointee from the Governor's office, and an appointee from the Attorney General's office. This three-member board may grant the following interests in coastal public lands: (1) leases for public purposes; (2) permits authorizing limited continued use of previously unauthorized structures on coastal public lands not connected with ownership of littoral property (fishing cabins); (3) easements for purposes connected with the ownership of littoral property; and (4) channel easements to the holders of any surface or mineral interest in coastal public land for purposes necessary or appropriate to the use of

*Investigation
conducted by GLO
La Porte
Corpus Christi*

GLO regulates under 280C-1

the interests. Activities covered by easements or leases issued by the SLB on coastal public lands include floating piers, wharves, docks, jetties, groins, breakwaters, artificial reefs, fences, posts, retaining walls, levees, ramps, cabins, shelters, landfills, excavations, canals, channels, and roads. The Commissioner of the GLO may grant miscellaneous easements for grants of rights-of-way for such uses as telephone, telegraph, electric transmission and power lines, oil and gas pipelines, sulfur pipelines, irrigation canals and laterals, and pipelines connecting onshore storage facilities with the offshore facilities of a deepwater port. The Commissioner may also issue surface leases for such projects as oil and gas drilling and production platforms, electrical substations, pumping stations, loading racks, and tank farms.

3. Corps of Engineers (COE) Processing Procedure

The GLO routinely participates in the COE process, attending "pre-application meetings" to identify proposed activities that may involve the use of state-owned lands. The GLO obtains copies of the COE permit applications that appear to include state-owned land and submits them to the GLO surveying division for a formal determination. Once the determination is made that state-owned lands are

involved, the GLO sends the COE permit applicant an "Application Package." This package informs the applicant that a state instrument is required for the use of state-owned land. It includes the appropriate easement or lease application and rate schedule. The applicant sends the completed application to the appropriate GLO field office. GLO coastal field inspectors conduct an "on-site" investigation of the proposed project. The inspection and field report is an environmental assessment of the proposed project that describes any impacts the project could have on state-owned lands, including wetlands. Also, the report provides recommendations as to the fee assessments, mitigation (if required), and/or project modification. The GLO coordinates its project evaluation, any negotiations, and development of contract requirements with the other state and federal agencies involved in the permitting process.

4. Decision process

Once the GLO staff has reached a consensus (or impasse) with the applicant on fees, terms, and special conditions, the easement or lease application is placed on the agenda for the next scheduled SLB meeting or sent to the Commissioner for action along with staff recommendations. The

staff will recommend approval of the project as presented; approval with modifications and/or special conditions; or denial. Comments received from the SLB, Commissioner, agencies, and/or the public largely determine whether the application is approved. If an application is denied by either the SLB or the Commissioner, the applicant may: (1) appeal the decision; (2) revise the project and resubmit the application; (3) terminate the project; or (4) litigate.

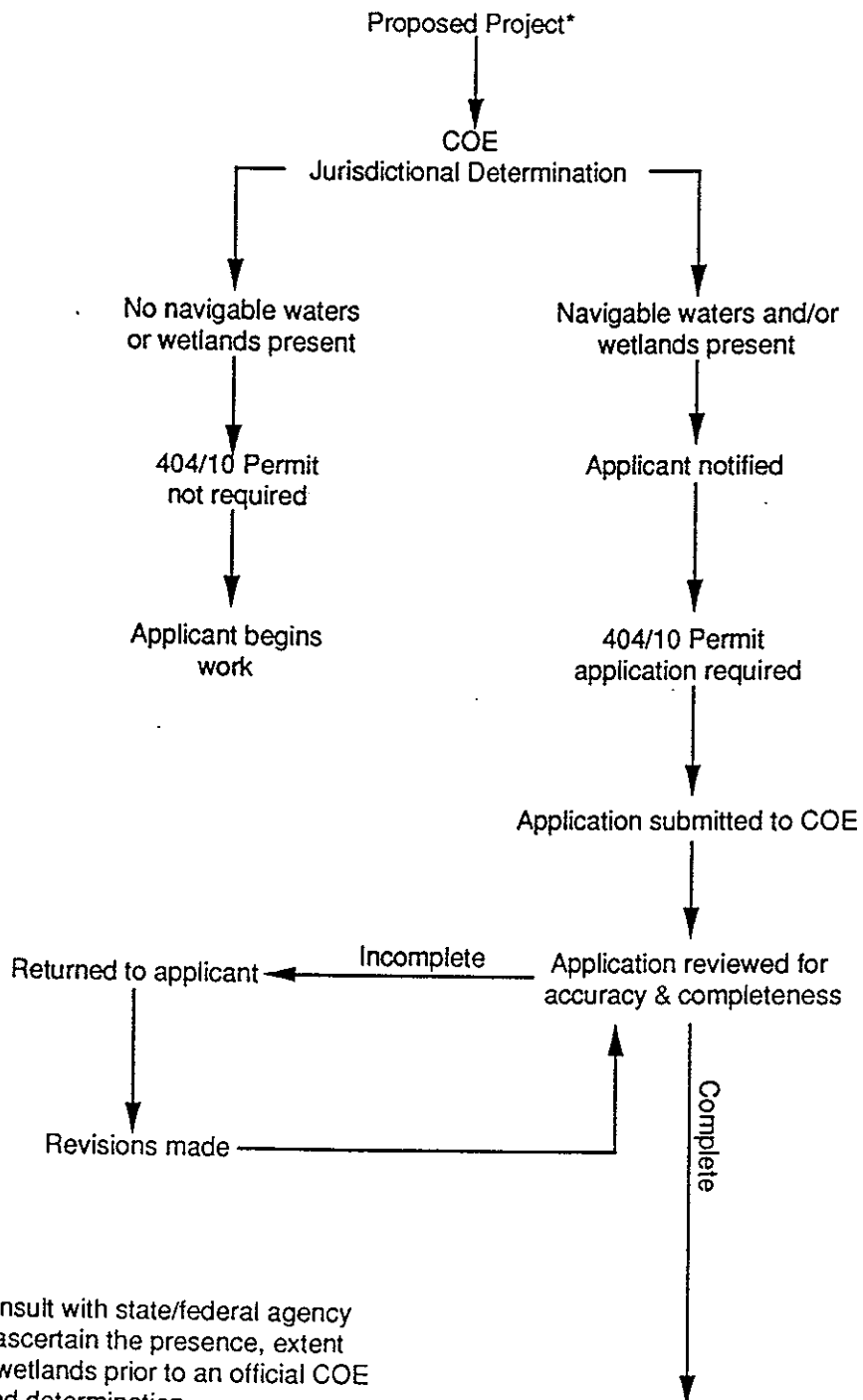
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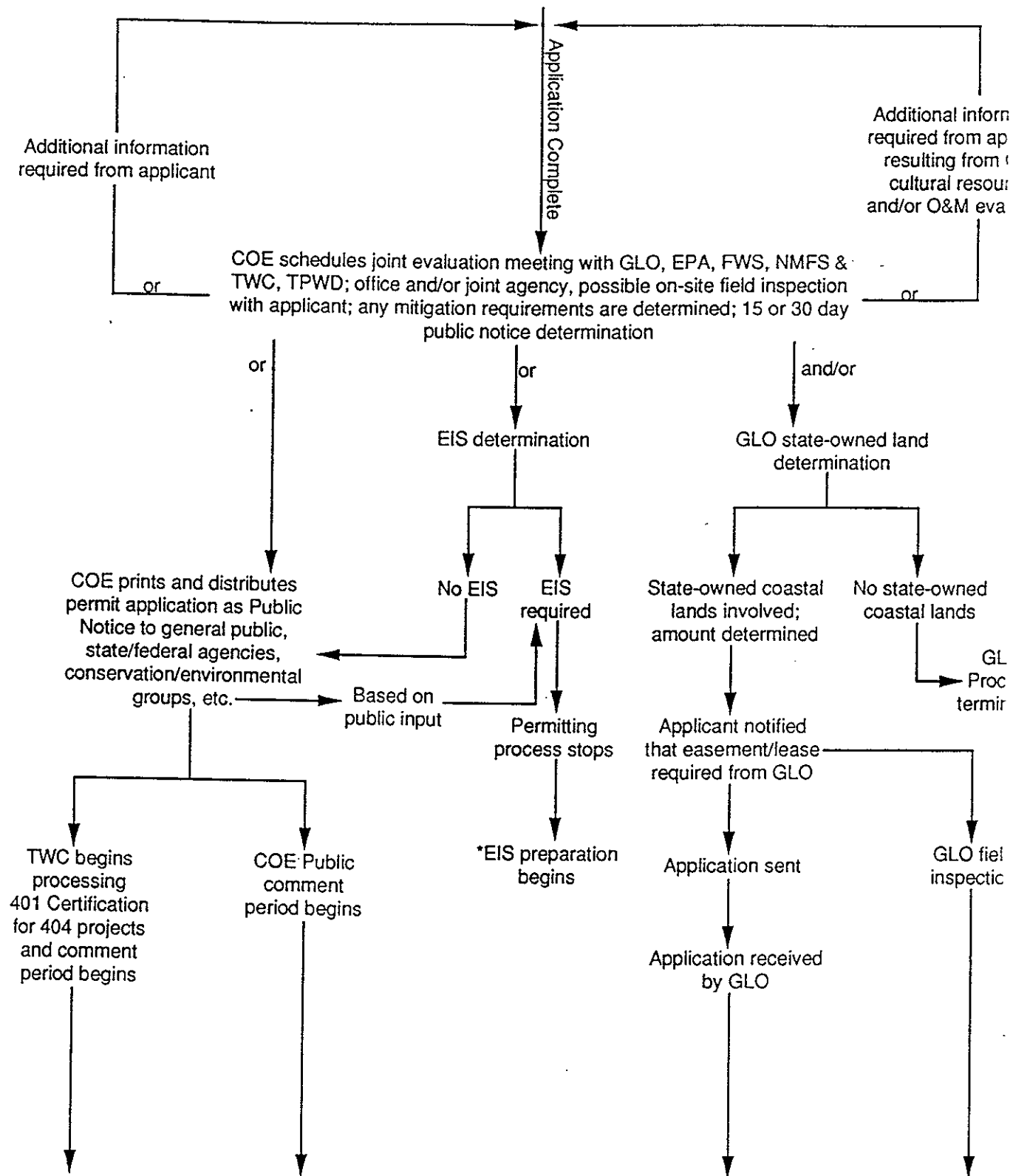
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Federal and State Permitting Process on State-Owned Coastal Lands

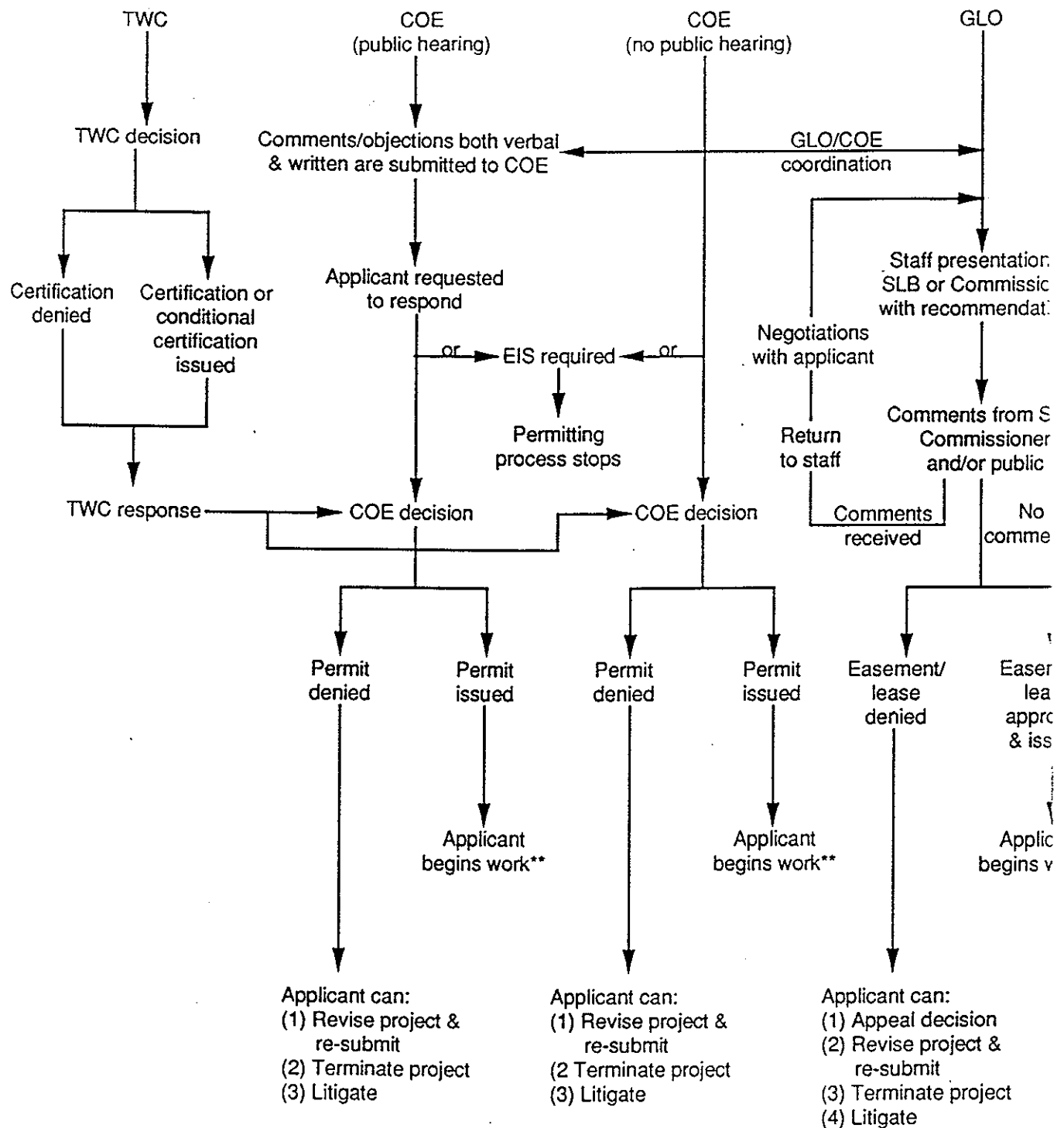
[Note: The permitting programs of the COE and GLO are separate activities, however, coordination between these two agencies is commonplace relevant to processes, permits and/or authorizations.]



* Applicants often consult with state/federal agency representatives to ascertain the presence, extent and/or absence of wetlands prior to an official COE jurisdictional wetland determination.



*EIS process not covered in these flowcharts



**Before the applicant can begin work in wetlands and/or navigable waters of the U.S., authorizations must be obtained from the COE, TWC and the GLO where state-owned lands are involved.