

**Sabine Pass to Galveston Bay, Texas  
Coastal Storm Risk Management and Ecosystem  
Restoration  
Final Integrated Feasibility Report and  
Environmental Impact Study**

**Appendix M**

**Texas Coastal Management Program  
Consistency Determination**

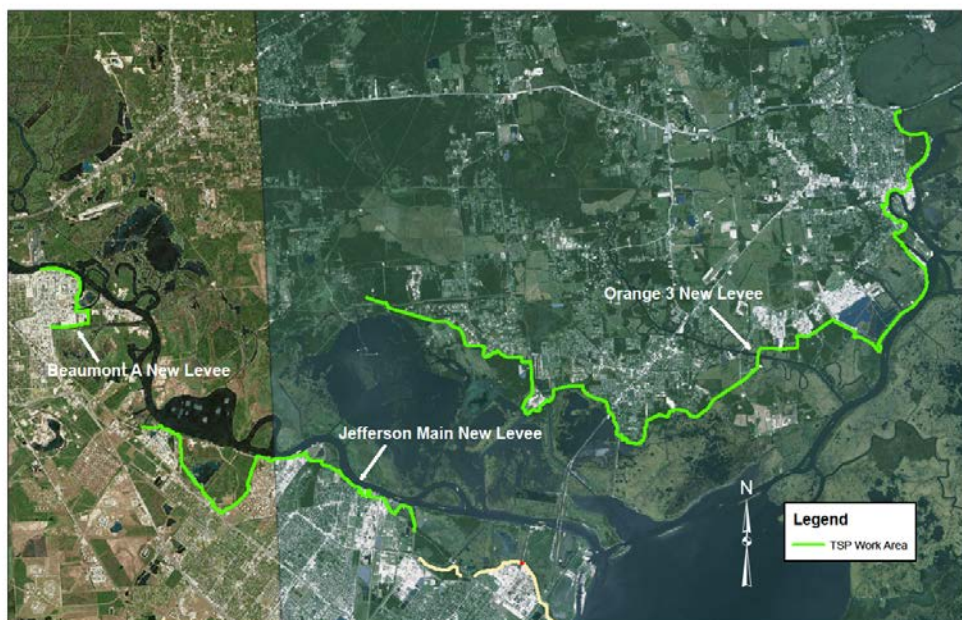
**May 2017**

# INTRODUCTION

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To reduce the risk of coastal storm surge impacts, the U.S. Army Corps of Engineers (USACE) proposes to construct a new levee/floodwall system in Orange and Jefferson counties, and to modify the existing Port Arthur and Freeport Hurricane Flood Protection Projects (HFPP).

The Orange-Jefferson Coastal Storm Risk Management (CSRSM) Plan is comprised of three separate levee segments, one in Orange County and two in Jefferson County, totaling about 39 miles in length (Figure 1). The levees and floodwalls would be constructed to a minimum 11 to 12 feet elevation (NAVD88), adjusted as needed to accommodate for relative sea-level rise over a 50-year project life. The new system would require a maximum of 15 million cubic yards of fill to construct; the fill would be obtained from commercial borrow sources and tested to ensure that it is suitable for use. Tidal surge gates would be constructed on Adams and Cow Bayous in the Orange County segment; these gates would normally remain open, but would be closed for short periods when the area is threatened by storm surge. Culverts would be designed to accommodate future tidal flows and ensure that flows inside and outside of the levee system maintain future without-project conditions. Orange County has agreed to be the non-Federal sponsor for the Orange County portion of the Orange-Jefferson CSRSM Plan, and Jefferson County has agreed to sponsor the Jefferson Main and Beaumont A segments. Plan details are provided in the Sabine Pass to Galveston Draft Integrated Feasibility Report-Environmental Impact Statement (DIFR-EIS) Appendix D.



**Figure 1: Orange-Jefferson CSRSM Plan**

The Port Arthur and Vicinity CSRM Plan would raise three I-Walls and one railroad track closure structure by one foot. Areas to be modified are shown in green on Figure 2. Jefferson County Drainage District No. 7 would continue as the non-Federal sponsor the Port Arthur and Vicinity CSRM Plan.



**Figure 2: Port Arthur and Vicinity CSRM Plan**

The Freeport and Vicinity CSRM Plan would raise the Oyster Creek, East Storm Levee and Old River Levee at DOW Thumb by one foot, raise the Tide Gate I-Wall by one foot, and add resiliency features to the Freeport Dock Floodwall. It would also construct a tidal surge gate structure at the mouth of the DOW Barge Canal. Fill required for levee raises would be obtained from commercial borrow sources and tested to ensure that it is suitable for use. The Velasco Drainage District would continue to serve as the non-Federal sponsor for the Freeport and Vicinity CSRM Plan. Areas to be modified are shown in green on Figure 3.





**Figure 3: Freeport and Vicinity CSRM Plan**

## COMPLIANCE WITH GOALS AND POLICIES

The following goals and policies of the Texas Coastal Management Program (TCMP) were reviewed for compliance:

### **§501.15 Policy for Major Actions**

*1. For purposes of these policy categories, "major action" means an individual agency or subdivision action listed in §505.11 of this title (relating to Actions and Rules Subject to the Coastal Management Program), §506.12 of this title (relating to Federal Actions Subject to the Coastal Management Program), or §505.60 of this title (relating to Local Government Actions Subject to the Coastal Management Program), relating to an activity for which a federal environmental impact statement under the National Environmental Policy Act, 42 United States Code Annotated, §4321 et seq. is required.*

Compliance: This project has been determined to be a “major action” requiring the preparation of an environmental impact statement (EIS). A Notice of Intent to prepare an EIS was published in November 2014. A DIFR-EIS will be issued for public review in September 2015.

*2. Prior to taking a major action, the agencies and subdivisions having jurisdiction over the activity shall meet and coordinate their major actions relating to the activity. The agencies and subdivisions shall, to the greatest extent practicable, consider the cumulative and secondary adverse effects, as described in the federal environmental impact assessment process, of each major action relating to the activity.*

Compliance: Extensive coordination has been conducted with the Environmental Protection Agency, U.S. Fish and Wildlife Service, National Marine Fisheries Service, Natural Resource Conservation Service and Texas Parks and Wildlife to identify and quantify project impacts. Cumulative and secondary adverse impacts have been considered and are identified in the DIFR-EIS.

*3. No agency or subdivision shall take a major action that is inconsistent with the goals and policies of this chapter. In addition, an agency or subdivision shall avoid and otherwise minimize the cumulative adverse effects to CNRAs of each of its major actions relating to the activity.*

Compliance: These resource agencies listed above will also be involved in development of the mitigation plan. Areas targeted for evaluation exclude areas already identified for beneficial use or mitigation in conjunction with other projects. Specifically, authorized improvements to the SNWW navigation project include the restoration of large areas within both Bessie Heights and Old River Cove marshes with the beneficial use of dredged material. In addition, areas targeted for restoration by TPWD have also been excluded. Any mitigation sites selected for this project would augment, not replace, these other proposals.

**§ 501.23 Policies for Development in Critical Areas**

*(a) Dredging and construction of structures in, or the discharge of dredged or fill material into, critical areas shall comply with the policies in this section. In implementing this section, cumulative and secondary adverse effects of these activities will be considered.*

*(1) The policies in this section shall be applied in a manner consistent with the goal of achieving no net loss of critical area functions and values.*

Compliance: The mitigation plan will fully compensate for all wetland impacts such that the project will result in “no net loss” of wetlands.

*(2) Persons proposing development in critical areas shall demonstrate that no practicable alternative with fewer adverse effects is available.*

Compliance: Planning for the avoidance and minimization of impacts began with the initial selection of the Orange-Jefferson levee alignment. The levee was located as close to the upland-wetland margin as possible to minimize wetland impacts, while also minimizing social effects and maximizing economic impacts. Opportunities to further avoid and minimize environmental impacts will be evaluated during final feasibility planning. The project is will reduce the risk of storm surge in areas at risk to flooding, and thus must be situated in special hazard areas.

*(3) In evaluating practicable alternatives, the following sequence shall be applied:*

*(A) Adverse effects on critical areas shall be avoided to the greatest extent practicable.*

*(B) Unavoidable adverse effects shall be minimized to the greatest extent practicable by limiting the degree or magnitude of the activity and its implementation.*

*(C) Appropriate and practicable compensatory mitigation shall be required to the greatest extent practicable for all adverse effects that cannot be avoided or minimized.*

Compliance: Adverse effects on critical areas have been avoided to the greatest extent practicable. The project would primarily impact coastal wetlands; small areas of submerged lands and submerged aquatic vegetation (SAV) are incorporated into the wetland impact analysis as waters within the wetland systems. Total direct construction impacts would affect 300.5 acres of coastal wetlands; indirect impacts would affect 2,551 acres (2,137 acres of which are functional impacts to fisheries access). Direct and indirect impacts would result in a loss of 261.8 AAHUs. Approximately 47.5 acres of coastal preserve areas (Texas Parks and Wildlife Department's [TPWD] Tony Houseman and Lower Neches River Wildlife Management Areas [WMAs]) would also be impacted. None of the other Coastal Natural Resource Areas (CNRAs) would be affected by the proposed project.

*(4) Compensatory mitigation includes restoring adversely affected critical areas or replacing adversely affected critical areas by creating new critical areas. Compensatory mitigation should be undertaken, when practicable, in areas adjacent or contiguous to the affected critical areas (on-site). If on-site compensatory mitigation is not practicable, compensatory mitigation should be undertaken in close physical proximity to the affected critical areas if practicable and in the same watershed if possible (off-site). Compensatory mitigation should also attempt to replace affected critical areas with critical areas with characteristics identical to or closely approximating those of the affected critical areas (in-kind). The preferred order of compensatory mitigation is:(A) on-site, in-kind;(B) off-site, in-kind;(C) on-site, out-of-kind; and(D) off-site, out-of-kind.*

In-kind mitigation areas would be selected during final feasibility planning. Areas being evaluated for mitigation are off-site, but in close proximity to the affected areas and within the Neches and Sabine watersheds. Mitigation of direct impacts could not be on-site, because affected areas would be covered by the levee system. Indirect impacts are primarily fisheries access impacts; mitigation within these areas would not be optimal because the areas are behind the surge gates which create the impact.

*(5) Mitigation banking is acceptable compensatory mitigation if use of the mitigation bank has been approved by the agency authorizing the development and mitigation credits are available for withdrawal. Preservation through acquisition for public ownership of unique critical areas or other ecologically important areas may be acceptable compensatory mitigation in exceptional circumstances. Examples of this include areas of high priority for preservation or restoration, areas whose functions and values are difficult to replicate, or areas not adequately protected by regulatory programs. Acquisition will normally be allowed only in conjunction with preferred forms of compensatory mitigation.*

Compliance: Mitigation banks will be investigated to determine if sufficient and appropriate mitigation is available; none are known at this time. If mitigation banks are not available to compensate for all or a portion of project impacts, areas in the floodplains of the Neches and Sabine Rivers within and adjacent to the study area will be reviewed to identify potential in-kind mitigation sites.

*(6) In determining compensatory mitigation requirements, the impaired functions and values of the affected critical area shall be replaced on a one-to-one ratio. Replacement of functions and values on a one-to-one ratio may require restoration or replacement of the physical area affected on a ratio higher than one-to-one. While no net loss of critical area functions and values is the goal, it is not required in individual cases where mitigation is not practicable or would result in only inconsequential environmental benefits. It is also important to recognize that there are circumstances where the adverse effects of the activity are so significant that, even if alternatives are not available, the activity may not be permitted regardless of the compensatory mitigation proposed.*

Compliance: Compensatory mitigation requirements will be determined using the Wetlands Value Assessment Model. This model considers functions and values of swamp, bottomland hardwood, and marsh communities.

*(7) Development in critical areas shall not be authorized if significant degradation of critical areas will occur. Significant degradation occurs if:*

*(A) the activity will jeopardize the continued existence of species listed as endangered or threatened, or will result in likelihood of the destruction or adverse modification of a habitat determined to be a critical habitat under the Endangered Species Act, 16 United States Code Annotated, §§1531 - 1544;*

Compliance: The project would have no effect on threatened or endangered species.

*(B) the activity will cause or contribute, after consideration of dilution and dispersion, to violation of any applicable surface water quality standards established under §501.21 of this title;*

Compliance: The project would not violate applicable water quality standards.

*(C) the activity violates any applicable toxic effluent standard or prohibition established under §501.21 of this title;*

Compliance: Material used to construct the new or modify the existing levee systems would be tested to determine if it is suitable for use.

*(D) the activity violates any requirement imposed to protect a marine sanctuary designated under the Marine Protection, Research, and Sanctuaries Act of 1972, 33 United States Code Annotated, Chapter 27; or*

Compliance: The project would not affect any marine sanctuaries.

*(E) taking into account the nature and degree of all identifiable adverse effects, including their persistence, permanence, areal extent, and the degree to which these effects will have been mitigated pursuant to subsections (c) and (d) of this section, the activity will, individually or collectively, cause or contribute to significant adverse effects on:*

*(i) human health and welfare, including effects on water supplies, plankton, benthos, fish, shellfish, wildlife, and consumption of fish and wildlife;*

*(ii) the life stages of aquatic life and other wildlife dependent on aquatic ecosystems, including the transfer, concentration, or spread of pollutants or their byproducts beyond the site, or their introduction into an ecosystem, through biological, physical, or chemical processes;*

*(iii) ecosystem diversity, productivity, and stability, including loss of fish and wildlife habitat or loss of the capacity of a coastal wetland to assimilate nutrients, purify water, or reduce wave energy; or*



*(iv) generally accepted recreational, aesthetic or economic values of the critical area which are of exceptional character and importance.*

Compliance: The project would not cause significant adverse effects on human health and welfare or any of the natural resources or systems listed above. It would not reduce ecosystem diversity, productivity, or the capacity of the wetland systems to assimilate nutrients, purify water, or reduce wave energy.

*(b) The TCEQ and the RRC shall comply with the policies in this section when issuing certifications and adopting rules under Texas Water Code, Chapter 26, and the Texas Natural Resources Code, Chapter 91, governing certification of compliance with surface water quality standards for federal actions and permits authorizing development affecting critical areas; provided that activities exempted from the requirement for a permit for the discharge of dredged or fill material, described in Code of Federal Regulations, Title 33, §323.4 and/or Code of Federal Regulations, Title 40, §232.3, including but not limited to normal farming, silviculture, and ranching activities, such as plowing, seeding, cultivating, minor drainage, and harvesting for the production of food, fiber, and forest products, or upland soil and water conservation practices, shall not be considered activities for which a certification is required. The GLO and the SLB shall comply with the policies in this section when approving oil, gas, or other mineral lease plans of operation or granting surface leases, easements, and permits and adopting rules under the Texas Natural Resources Code, Chapters 32, 33 and 51 - 53, and Texas Water Code, Chapter 61, governing development affecting critical areas on state submerged lands and private submerged lands, and when issuing approvals and adopting rules under Texas Natural Resources Code, Chapter 221, for mitigation banks operated by subdivisions of the state.*

Compliance: A 404(b)(1) analysis has been prepared and will be submitted to TCEQ for approval.

*(c) Agencies required to comply with this section will coordinate with one another and with federal agencies when evaluating alternatives, determining appropriate and practicable mitigation, and assessing significant degradation. Those agencies' rules governing authorizations for development in critical areas shall require a demonstration that the requirements of subsection (a)(1) - (7) of this section have been satisfied.*

Compliance: Extensive coordination has been conducted with the Environmental Protection Agency, U.S. Fish and Wildlife Service, National Marine Fisheries Service, Natural Resource Conservation Service and Texas Parks and Wildlife to identify and quantify project impacts. These agencies will also be involved in development of the mitigation plan.

*(d) For any dredging or construction of structures in, or discharge of dredged or fill material into, critical areas that is subject to the requirements of §501.15 of this title (relating to Policy for Major Actions), data and information on the cumulative and secondary adverse affects of the project need not be produced or evaluated to comply with this section if such data and information is produced and evaluated in compliance with §501.15(b) - (c) of this title.*

Compliance: The project complies with §501.15(b) - (c).

**§501.29 Policies for Development in State Parks, Wildlife Management Areas or Preserves**

*Development by a person other than the Parks and Wildlife Department that requires the use or taking of any public land in such areas shall comply with Texas Parks and Wildlife Code, Chapter 26 Protection of Public Parks and Recreational Lands.*

Compliance: USACE has determined that there is no feasible and prudent alternative to the taking of approximately 47.5 acres of TPWD lands in the Tony Houseman and Lower Neches River WMAs for construction of a portion of the Orange-Jefferson CSRM Plan. Project construction will employ best management practices to minimize harm to remaining WMA lands that would result from the taking.

**§501.34 – Levee Improvement or Flood Control Projects**

*1. a) Drainage, reclamation, channelization, levee construction or modification, or flood- or floodwater-control infrastructure projects shall be designed, constructed, and maintained to avoid the impoundment and draining of coastal wetlands to the greatest extent practicable. If impoundment or draining of coastal wetlands cannot be avoided, adverse effects to the wetlands shall be mitigated in accordance with the sequencing requirements found in the critical areas policy (§ 501.23).*

Compliance: No significant environmental impacts have been identified for the Port Arthur and Freeport and Vicinities CSRM Plans. All environmental impacts identified for the TSP are associated with the Orange-Jefferson CSRM Plan, and these are limited to wetland impacts. Planning for the avoidance and minimization of impacts began with the initial selection of the Orange-Jefferson levee alignment. The levee was located as close to the upland-wetland margin as possible to minimize wetland impacts, while also minimizing social effects and maximizing economic impacts. Opportunities to further avoid and minimize environmental impacts will be evaluated during final feasibility planning.

Indirect impacts on drainage associated with installation of the levee system would be minimized by maintaining flows in tidal bayous and streams equivalent to the future without-project (FWOP) condition. Culverts would be sized and modified as needed to provide for increased tidal flows

expected with RSLC. With tidal access maintained at FWOP flows, RSLC-related landscape and wetland changes to areas both inside and outside of the levee system would occur with the project in place as they would have occurred in the FWOP condition. A few small areas have been identified where marsh and forested wetland would be impounded between the upland terrace margin and the new levee system, and where hydrologic connectivity would be permanently disrupted by levee system construction. Impacts for all of these areas, as well as direct impacts associated levee system construction, have been quantified. In total, mitigation would be needed to compensate for a loss of 80.1 AAHUs from forested wetlands and 181.7 AAHUs from coastal wetlands. All impacts would be fully compensated with a mitigation plan to be developed during final feasibility planning. WVA modeling will be conducted to quantify benefits (AAHUs) of mitigation measures. Selection of potential mitigation sites and modeling of benefits will be conducted in coordination with resource agencies. Feasibility-level costs of selected mitigation measures will be developed, and the costs and benefits will be used to identify a best buy mitigation plan using Cost Effectiveness-Incremental Cost Analysis that will fully compensate for all impacts.

*1. b) TCEQ rules and approvals for the levee construction, modification, drainage, reclamation, channelization, or flood- or floodwater-control projects, pursuant to the Texas Water Code, §16.236, shall comply with the policies in this section.*

Compliance: Extensive hydrology and hydraulics evaluations conducted in development of the Orange-Jefferson, Port Arthur and Vicinity, and Freeport and Vicinity CSMR Plans are presented in the Engineering Appendix (Appendix D) of the Sabine Pass to Galveston Bay DIFR-EIS. These studies evaluated the effects of the levees on storm surge coincident with heavy inland rainfall events and determined that the design would not adversely impact the flood carrying capacity of adjacent rivers, will not increase flooding or divert waters such that lives and property would be endangered or subject to significantly increased flooding. Orange and Jefferson Counties have indicated a willingness to serve as local sponsors for the new Orange-Jefferson CSMR system; Jefferson County Drainage District No 7 would continue as the sponsor of the Port Arthur and Vicinity CSRM project, and Velasco Drainage District would continue to sponsor the Freeport and Vicinity CSRM project. Landowners that would be affected by construction of the new Orange-Jefferson CSRM system and modifications of the Port Arthur and Freeport and Vicinities CSRM projects are identified in the DIFR-EIS Distribution List (Section 9.2).

## **IMPACTS ON COASTAL NATURAL RESOURCE AREAS**

Potential impacts to Coastal Natural Resource Areas (CNRAs) listed in 31 Texas Administrative Code (TAC) §501.3, and of methods to minimize or avoid potential impacts, are discussed below.

*Waters of the Open Gulf of Mexico*

Waters of the open Gulf of Mexico (Gulf) are not located in any of the three CSRM project areas.

#### *Waters Under Tidal Influence*

All three CSRM project areas include streams and bayous that experience tidal influence. Levee, floodwall and surge gate construction activities would result in a negligible impact because the potential release of suspended solids is minimized by using appropriate best management practices (BMPs) such as silt curtains, and compliance with the required State §401 Certification.

#### *Submerged Lands*

Small areas of submerged lands within the Orange-Jefferson CSRM Plan construction right-of-way would be impacted by construction of the new levee system. Impacts on submerged lands have been minimized to the greatest extent possible. Total acres of marsh and forested wetland impacts are included in the impact areas evaluated with the Wetlands Value Assessment model, and thus impacts will be fully compensated by the mitigation plan. Construction of the Cow and Adams Bayou surge gates would result in the loss of approximately 11 acres of submerged lands. The structures themselves would provide artificial hard bottom habitat in the same area, increasing the diversity of bottom types in the area, resulting in negligible long-term impacts. No impacts on submerged lands are expected with construction of the Port Arthur and Vicinity CSRM Plan. The Freeport and Vicinity CSRM Plan would impact a small area of submerged bottom with construction of a surge gate in DOW Barge Canal. This is an artificial canal with little fish and wildlife value; the impacts would result in negligible long-term impacts.

#### *Coastal Wetlands*

Direct and indirect impacts associated with construction of the Orange-Jefferson CSRM Plan would result in the loss of about 275.9 acres of estuarine emergent marsh and 139.9 acres of forested wetlands over the period of analysis. Impacts were minimized to the greatest extent practicable. Remaining unavoidable impacts will be fully compensated by in-kind mitigation; all impacts would be fully compensated with the restoration of estuarine emergent marsh and shallow water.

Total acres include water within the wetlands and small drainages; some SAV in the estuarine marsh areas would also be lost. These acres would be replaced by in-kind mitigation in the amount determined using the WVA model and the CE/ICA incremental analysis

Construction of the Cow and Adams Bayou surge gates would result in the loss of approximately 11 acres of estuarine soft bottom EFH. This is the area estimated for the footings of the gate structures. The structures themselves would provide artificial hard bottom habitat in the same area, increasing the diversity of EFH bottom types in the area. The net long-term loss to EFH bottom habitat from the Cow and Adams gate structures would therefore be negligible.

*Submerged Aquatic Vegetation*

Some submerged aquatic vegetation is present in waters in the wetlands that will be impacted by construction of the Orange-Jefferson CSR Plan. These acres would be replaced by in-kind mitigation in the amount determined using the WVA model.

*Tidal Sand and Mud Flats*

No tidal sands and mud flats occur in the project areas.

*Oyster Reefs*

No oyster reefs occur in the project areas.

*Hard Substrate Reefs*

No hard substrate reefs occur in the project areas.

*Coastal Barriers*

No coastal barriers occur in the project areas.

*Coastal Shore Areas*

No coastal shore areas occur in the project areas.

*Gulf Beaches*

No Gulf beaches occur in the project areas.

*Critical Dune Areas*

No critical dune areas occur in the project areas.

*Special Hazard Areas*

Special hazard areas are areas designated by the Administrator of the Federal Insurance Administration under the National Flood Insurance Act as having special flood, mudslide, and/or flood-related erosion hazards. The new Orange-Jefferson CSR Plan alignment is predominantly located in or adjacent to the 100-year floodplain in special hazard zones A8 and AE. Project objectives would decrease the hazard of the flood-prone areas, and a beneficial effect to the hazard area is expected. The Port Arthur and Freeport and Vicinities CSR Plans are modifications of existing projects which have decreased flood hazards in those areas; no special hazard areas would be affected by modifications of these systems.

*Critical Erosion Areas*

No critical erosion areas occur in the project areas.

*Coastal Historic Areas*

No coastal historic areas (sites in the National Register of Historic Places on public land or State Archeological Landmarks that are identified by the Texas Historical Commission as being coastal in character) would be impacted by the project.

*Coastal Preserves*

The project would directly impact approximately 47.5 acres of TPWD lands in the Tony Houseman and Lower Neches River WMAs. The lands are required for construction of a portion of the Orange-Jefferson CSR Plan. USACE has determined that there is no feasible and prudent alternative to the taking of these lands. These acres would be replaced by in-kind mitigation in the amount determined using the WVA model on TPWD lands in close proximity to the impact areas.