A-5: Clean Water Act Compliance

404(b)(1) Evaluation and State Water Quality Certificate

Jon Niermann, *Chairman*
Emily Lindley, *Commissioner*
Toby Baker, *Executive Director*

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

November 5, 2018

Ms. Melinda Fisher, Biologist
Environmental Compliance Branch
Regional and Environmental Planning Center
2488 E 81st Street
Tulsa, Oklahoma 74137-4290

Re: Jefferson County Ecosystem Restoration Feasibility Study Draft Integrated Feasibility Study and Environmental Assessment

Dear Ms. Fisher:

This letter is in response to the Joint Notice of Availability dated June 26, 2018 on the Jefferson County Ecosystem Restoration Feasibility Study Draft Integrated Feasibility Report and Environmental Assessment (JCER Feasibility Study) made available June 27, 2018. The JCER Feasibility Study is a primary subcomponent of the Sabine to Galveston (S2G) Study. The goal of the larger S2G Study was to evaluate coastal storm risk management and ecosystem restoration in six counties along the eastern Gulf Coast in Texas and recommend measures to mitigate coastal storm damages and restore regional ecosystems. Implementation of the recommended plan from the JCER Feasibility Study would include restoration of 8,421 acres of marsh and construction of 6,592 linear feet of offset breakwaters that would be placed along the south bank of the Gulf Coast Intracoastal Waterway (GIWW). Marsh restoration would beneficially use dredged material from the Sabine-Neches Waterway to increase the marsh elevation with the goal of improving habitat, hydrology, water quality, and fish nurseries. The recommended plan from the JCER Feasibility Study includes marsh restoration and shoreline restoration in and around Keith Lake in Jefferson County, Texas.

The Texas Commission on Environmental Quality (TCEQ) has reviewed the JCER Feasibility Study, revisions to the study received September 27, 2018, public comments, and related information. On behalf of the Executive Director and based on our evaluation of the information contained in these documents, the TCEQ certifies that there is reasonable assurance that the project will be conducted in a way that will not violate water quality standards. General information regarding this water quality certification, including standard provisions of the certification, is included as an attachment to this letter.

According to the JCER Feasibility Study, the benefits from implementing the recommended plan far outweigh any temporary or permanent loss realized during construction impacts and results in a net increase of coastal marsh habitat condition and function. Therefore, no mitigation is proposed.

The TCEQ has reviewed this proposed action for consistency with the Texas Coastal Management Program (CMP) goals and policies in accordance with the CMP regulations (Title 31, Texas Administrative Code (TAC), Section (§)505.30) and has determined that the action is consistent with the applicable CMP goals and policies.

This certification was reviewed for consistency with the CMP's development in critical areas policy (31 TAC §501.23) and dredging and dredged material disposal and placement policy (31 TAC §501.25). This certification complies with the CMP goals (31 TAC §501.12(1, 2, 3, 5)) applicable to these policies.

No review of property rights, location of property lines, nor the distinction between public and private ownership has been made, and this certification may not be used in any way with regard to questions of ownership.

If you require additional information or further assistance, please contact C. Brad Caston, Water Quality Assessment Section, Water Quality Division (MC-150), at (512) 239-4711 or by email at Charles.Caston@tceq.texas.gov.

Sincerely,

David W. Galindo, Director
Water Quality Division
Texas Commission on Environmental Quality

DWG/CBC/fc

Attachment

cc: Ms. Allison Buchtien via e-mail at Federal.Consistency@GLO.TEXAS.GOV

WORK DESCRIPTION: As described in the Joint Notice of Availability dated June 26, 2018, the JCER Feasibility Study made available June 27, 2018, and revisions to the study received September 27, 2018.

SPECIAL CONDITIONS: None

GENERAL: This certification, issued pursuant to the requirements of Title 30, Texas Administrative Code, Chapter 279, is restricted to the work described in the June 27, 2018, JCER Feasibility Study and the revisions to the study received September 27, 2018. This certification may be extended to any minor revision of the JCER Feasibility Study when such change(s) would not result in an impact on water quality. The Texas Commission on Environmental Quality (TCEQ) reserves the right to require full joint public notice on a request for minor revision. The applicant is hereby placed on notice that any activity conducted pursuant to the JCER Feasibility which results in a violation of the state's surface water quality standards may result in an enforcement proceeding being initiated by the TCEQ or a successor agency.

STANDARD PROVISIONS: These following provisions attach to any permit issued by the COE and shall be followed by the permittee or any employee, agent, contractor, or subcontractor of the permittee during any phase of work authorized by a COE permit.

1. The water quality of wetlands shall be maintained in accordance with all applicable provisions of the Texas Surface Water Quality Standards including the General, Narrative, and Numerical Criteria.

2. The applicant shall not engage in any activity which will cause surface waters to be toxic to man, aquatic life, or terrestrial life.

3. Permittee shall employ measures to control spills of fuels, lubricants, or any other materials to prevent them from entering a watercourse. All spills shall be promptly reported to the TCEQ by calling the State of Texas Environmental Hotline at 1-800-832-8224.

4. Sanitary wastes shall be retained for disposal in some legal manner. Marinas and similar operations which harbor boats equipped with marine sanitation devices shall provide state/federal permitted treatment facilities or pump out facilities for ultimate transfer to a permitted treatment facility. Additionally, marinas shall display signs in appropriate locations advising boat owners that the discharge of sewage from a marine sanitation device to waters in the state is a violation of state and federal law.

5. Materials resulting from the destruction of existing structures shall be removed from the water or areas adjacent to the water and disposed of in some legal manner.

6. A discharge shall not cause substantial and persistent changes from ambient conditions of turbidity or color. The use of silt screens or other appropriate methods is encouraged to confine suspended particulates.

7. The placement of any material in a watercourse or wetlands shall be avoided and placed there only with the approval of the Corps when no other reasonable alternative is available. If work within a wetland is unavoidable, gouging or rutting of the substrate is prohibited. Heavy equipment shall be placed on mats to protect the substrate from gouging and rutting if necessary.

8. Dredged Material Placement: Dredged sediments shall be placed in such a manner as to prevent any sediment runoff onto any adjacent property not owned by the applicant. Liquid runoff from the disposal area shall be retained on-site or shall be filtered and returned to the watercourse from which the dredged materials were removed. Except for material placement authorized by this permit, sediments from the project shall be placed in such a manner as to prevent any sediment runoff into waters in the state, including wetlands.

9. If contaminated spoil that was not anticipated or provided for in the permit application is encountered during dredging, dredging operations shall be immediately terminated and the TCEQ shall be contacted by calling the State of Texas Environmental Hotline at 1-800-832-8224. Dredging activities shall not be resumed until authorized by the Commission.

10. Contaminated water, soil, or any other material shall not be allowed to enter a watercourse. Noncontaminated storm water from impervious surfaces shall be controlled to prevent the washing of debris into the waterway.

11. Storm water runoff from construction activities that result in a disturbance of one or more acres, or are a part of a common plan of development that will result in the disturbance of one or more acres, must be controlled and authorized under Texas Pollutant Discharge Elimination System (TPDES) general permit TXR150000. A copy of the general permit, application (notice of intent), and additional information is available at:
http://www.tceq.texas.gov/permitting/stormwater/wq_construction.html or by contacting the TCEQ Storm Water & Pretreatment Team at (512) 239-4671.

12. Upon completion of earthwork operations, all temporary fills shall be removed from the watercourse/wetland, and areas disturbed during construction shall be seeded, riprapped, or given some other type of protection to minimize subsequent soil erosion. Any fill material shall be clean and of such composition that it will not adversely affect the biological, chemical, or physical properties of the receiving waters.

13. Disturbance to vegetation will be limited to only what is absolutely necessary. After construction, all disturbed areas will be revegetated to approximate the pre-disturbance native plant assemblage.

14. Where the control of weeds, insects, and other undesirable species is deemed necessary by the permittee, control methods which are nontoxic to aquatic life or human health shall be employed when the activity is located in or in close proximity to water, including wetlands.

15. Concentrations of taste and odor producing substances shall not interfere with the production of potable water by reasonable water treatment methods, impart unpalatable flavor to food fish including shellfish, result in offensive odors arising from the water, or otherwise interfere with reasonable use of the water in the state.

16. Surface water shall be essentially free of floating debris and suspended solids that are conducive to producing adverse responses in aquatic organisms, putrescible sludge deposits, or sediment layers which adversely affect benthic biota or any lawful uses.

17. Surface waters shall be essentially free of settleable solids conducive to changes in flow characteristics of stream channels or the untimely filling of reservoirs, lakes, and bays.

18. The work of the applicant shall be conducted such that surface waters are maintained in an aesthetically attractive condition and foaming or frothing of a persistent nature is avoided. Surface waters shall be maintained so that oil, grease, or related residue will not produce a visible film of oil or globules of grease on the surface or coat the banks or bottoms of the watercourse.

19. This certification shall not be deemed as fulfilling the applicant's/permittee's responsibility to obtain additional authorization/approval from other local, state, or federal regulatory agencies having special/specific authority to preserve and/or protect resources within the area where the work will occur.

DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1229
GALVESTON, TEXAS 77553-1229

June 26, 2018

Mr. Peter Schaefer
Texas Council on Environmental Quality
Water Quality Assessment Section, MC 150
P.O. Box 13087
Austin, Texas 78711-3087

Dear Mr. Schaefer:

The U.S. Army Corps of Engineers (USACE) Galveston District, in partnership with Jefferson County and the Sabine Neches Navigation District, is conducting the Jefferson County Ecosystem Restoration (JCER) Feasibility Study. As part of the study process, a Tentatively Selected Plan (TSP) has been selected and the JCER Draft Integrated Feasibility Study and Environmental Assessment (DIFR-EA) Report is being prepared for public release.

The TSP, Alternative 4Abu, incorporates marsh and shoreline restoration and nourishment features which are critical to the stabilization and sustainment of marsh resources in and around Keith Lake now and into the future. Marsh measures would beneficially use dredged material to restore and/or nourish marsh which will increase land coverage in the area and improve terrestrial wildlife habitat, hydrology, water quality, and fish nurseries. Shoreline measures include construction of rock breakwater features that would dissipate wave energies, stabilize shorelines, reduce land loss, reduce saltwater intrusion, and support reestablishment of emergent marsh along the Gulf Intracoastal Waterway (GIWW) shoreline through retention of sediments.

Water quality certification for ecosystem restoration is normally covered under the USACE Nationwide Permit (NWP) 27. USACE policy does not allow water quality certification by proxy for Civil Works Projects, even though the study would meet the conditions of NWP 27. Therefore, USACE requests a separate water quality certification for the JCER Feasibility Study. Impacts to surface waters are addressed in the enclosed Section 404(b)(1) analysis and the TCEQ Tier II Certification Questionnaire and Alternative Analysis Checklist.

If you have any questions or need additional information to conduct your review, please contact Ms. Melinda Fisher, Biologist, Environmental Compliance Branch, Regional Planning and Environmental Center at 918-669-7423 or Melinda.Fisher@usace.army.mil.

Sincerely,

Douglas C. Sims, PMP, RPA
Chief, Environmental Compliance Branch
Regional Planning and Environmental Center

Enclosure

EVALUATION OF SECTION 404(b)(1) GUIDELINES (SHORT FORM)

PROPOSED PROJECT: Jefferson County Ecosystem Restoration—Draft Integrated Feasibility Report and Environmental Assessment (DIFR-EA)

PROJECT DESCRIPTION:

Alternative 4Abu was chosen as the tentatively selected plan (the plan) based on preliminary analyses because it meets the study objectives, reasonably maximizes benefits for the associated costs, and includes key restoration features to restore and sustain the form and function of the coastal system in a portion of the study area. This plan incorporates marsh and shoreline restoration features which are critical to the stabilization and sustainment of the critical marsh resources in and around Keith Lake now and into the future. Marsh measures consist of marsh restoration and/or nourishment to increase land coverage in the area and improve terrestrial wildlife habitat, hydrology, water quality, and fish nurseries. Shoreline measures include construction of rock breakwater features that would mitigate some effects of erosion along the GIWW. The structures dissipate wave energies, stabilize shorelines, reduce land loss, reduce saltwater intrusion, and support reestablishment of emergent marsh along the GIWW shoreline through retention of sediments.

Measures for this alternative would be constructed on lands owned by Texas Parks and Wildlife Department (TPWD) JD Murphree Wildlife Management Area (WMA), US Fish and Wildlife Service McFaddin National Wildlife Refuge (NWR), and private lands (Table 1).

Table 1. Scale and scope of 4Abu measures in Comparison to Land Ownership

Ownership	Marsh Measures (acres)	Shoreline Measures (linear feet)
JD Murphree WMA	5,365	6,592
McFaddin NWR	683	0
Private	2,373	0

Alternative 4Abu measures and the accompanying Adaptive Management Plan have been developed to a feasibility level of design (i.e. estimates, design level that is not detailed enough for construction) based on currently available data and information developed during plan formulation. There is significant institutional knowledge regarding the construction of the restoration measures; therefore, there is minimal uncertainty from a construction standpoint. Uncertainties relating to measure design and performance are mainly centered on site specific, design-level details (e.g. exact sediment quantities, invasive species removal needs, extent of erosion control needs, construction staging area locations, pipeline pathways, timing and duration of construction, engineering challenges, etc.), which would be addressed during the pre-engineering and design phase (PED).

An Adaptive Management and Monitoring Plan has also been developed for 4Abu which provides a coherent process for making decisions in the face of uncertainty and increases the likelihood of achieving desired project outcomes based on the identified monitoring program. The Adaptive Management Plan addresses uncertainties associated with ecosystem function and how the ecosystem components of interest will respond to the restoration efforts in light of changing conditions (e.g. sea-level change is different than anticipated) or new information (e.g. surveys indicate the design needs modification in order to function properly).

Marsh Measures

Marsh restoration measures involve placement of borrow material dredged from the Sabine-Neches Waterway (SNWW) into these locations. Material placed into the marsh would have similar properties to the existing native material. Under the existing and projected future dredging cycles, there is sufficient quantities of suitable material available to meet all restoration needs without seeking other borrow sources (e.g. off-shore, upland placement areas).

4Abu would restore and nourish approximately 8,421 acres of technically significant marsh habitat surrounding Keith Lake in Jefferson County, Texas. Within each of the five marsh restoration units, material dredged from the SNWW would be hydraulically pumped into open water and low lying areas assuming that 65% of the restoration unit will have a post-construction settlement target elevation of +1.2 feet MSL. As necessary, earthen containment dikes would be employed to efficiently achieve the desired initial construction elevation. Dikes would be breached following construction to allow dewatering and settlement to the final target marsh elevation.

All marsh restoration locations would have one future renourishment cycle. For purposes of the study, renourishment is assumed to occur at year 30 based on the intermediate SLC curve; however, actual timing will be part of the adaptive management strategy and dependent on observed local sea level change conditions. Subsequent marsh renourishment would employ similar techniques and specifications as developed for the initial construction except that the target elevation would be +2.2 feet MSL (based on current water levels), although like similar to the timing of renourishment, the elevation may be modified depending on observed local sea level change conditions. It is estimated that 6.7 million cubic yards (MCY) of dredged material would be required to initially restore the 8,421 acres of marsh and an additional 3.7 MCY would be required for renourishment.

Following marsh restoration actions, non-native/undesirable species monitoring would be implemented. If species are found, measures would be taken to stop or slow the expansion of the species within the restoration units.

Shoreline Measures

GIWW armoring would involve constructing 6,592 linear feet of breakwater structures. They structures would be built in shallow water (<3 feet deep) along the southern edge of the GIWW, at varying distances from the shoreline and where soils are conducive to supporting the weight of the stone without significant subsidence. The distance from the shoreline would be determined during PED, after site specific surveys have been completed, but sufficiently offset from the boundaries of the GIWW navigation channel to ensure continued safe navigation.

The design would be a trapezoidal structure built of rock up to a height of +3.0 MSL, which will yield approximately 1-1.5 feet of rock exposed above the mean high tide level. Other approximate features of the design include a 5-foot wide crown, a 1.5:1 slope, and a base that is roughly 29 feet wide. The base of the structure would be on filter cloth ballasted to the water bottom to secure placement and prevent displacement of the outboard edges. The number of openings and width of each would be determined during PED and dependent on the location of major channel entrances or access points required for fishery access or circulation. Initially, constructing the 6,592 linear feet of breakwaters would require 672,384 cubic feet of material which equates to about 39,800 tons of rock. It is anticipated that the breakwaters would need to be raised at least two times throughout the 50-year period of analysis to keep up with relative sea level change and remain effective. For purposes of the study materials would need to be added in year 15 (6,000 tons of rock) and year 25 (4,000 tons of rock), but timing and quantities could vary depending on observed local conditions and identified need to continue functioning as designed.

Equipment Needs and Access Routes

Sediment transport equipment would most likely include hopper or cutterhead dredges, pipelines (submerged, floating, and land) and booster pumps. Heavy machinery would be used to move sediment and facilitate construction. Heavy equipment could include bulldozers, front-end loaders, track-hoes, marshbuggy, track-hoes, and backhoes. For GIWW armoring construction, rock would be purchased from a commercial quarry and transported to the site by barge, where it would then be placed by crane or hopper barge. Various support equipment would also be used, such as crew and work boats, trucks, trailers, construction trailers, all-terrain vehicles, and floating docks and temporary access channels to facilitate loading and unloading of personnel and equipment.

Identification of staging areas, temporary access channels, and placement of floatation docks would occur during PED. Each disturbance for access and staging would be placed outside of environmentally sensitive areas to the greatest extent practicable. All ground disturbance for access and staging areas would be temporary and fully restored to result in no permanent loss.

Timing

Timing of initial construction of this project is dependent on a number of factors including: timing of authorization, duration of pre-engineering and design phase, identification of a cost-share sponsor, and Federal- and non-federal funding cycles. It was assumed that construction would take 60 months to complete all restoration actions, in which it was assumed that only one restoration unit would be undertaken at a time. For the GIWW armoring, it was assumed that dune construction and beach nourishment would occur simultaneously.

Implementation of the marsh restoration measures is highly dependent on dredging cycles. Currently, seasonal timing restrictions related to Endangered Species Act compliance includes a seasonal dredging window for hopper dredge use between December 1 and March 31, unless work outside this window cannot be completed, in which NMFS would need to approve the deviation. Hopper dredges would be used for dredging offshore areas of the entrance channel to just inside the jetties. Non-hopper dredges (e.g. cutterhead pipeline dredges) may be used from April to November. This type of dredge would be used anywhere else within the SNWW.

GUIDELINE COMPLIANCE:

1. Review of Compliance (230.10(a)-(d))		
A review of the proposed project indicates that:	**Yes**	**No***
a. The placement represents the least environmentally damaging practicable alternative and, if in a special aquatic site, the activity associated with the placement must have direct access or proximity to, or be located in the aquatic ecosystem, to fulfill its basic purpose (if no, see section 2 and information gathered for EA alternative).	**X**	
b. The activity does not appear to:		
1) Violate applicable state water quality standards or effluent standards prohibited under Section 307 of the Clean Water Act;	**X**	
2) Jeopardize the existence of Federally-listed endangered or threatened species or their habitat; and	**X**	
3) Violate requirements of any Federally-designated marine sanctuary (if no, see section 2b and check responses from resource and water quality certifying agencies).	**X**	
c. The activity will not cause or contribute to significant degradation of waters of the U.S. including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values (if no, see values, Section 2)	**X**	
d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem (if no, see Section 5)	**X**	

2. Technical Evaluation Factors (Subparts C-F)			
	Not Applicable	Not Significant	Significant*
a. Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C)		X	
1) Substrate impacts		X	
2) Suspended particulates/turbidity impacts		X	
3) Water column impacts		X	
4) Alteration of current patterns and water circulation		X	
5) Alteration of normal water fluctuation/ hydroperiod		X	
6) Alteration of salinity gradients		X	
b. Biological Characteristics of the Aquatic Ecosystem (Subpart D)		X	
1) Effect on threatened/endangered species and their habitat		X	
2) Effect on the aquatic food web		X	
3) Effect on other wildlife (mammals, birds, reptiles and amphibians)		X	
c. Special Aquatic Sites (Subpart E)		X	
1) Sanctuaries and refuges		X	
2) Wetlands		X	
3) Mud flats	X		
4) Vegetated shallows		X	
5) Coral reefs	X		
6) Riffle and pool complexes	X		
d. Human Use Characteristics (Subpart F)		X	
1) Effects on municipal and private water supplies	X		
2) Recreational and commercial fisheries impacts		X	
3) Effects on water-related recreation		X	
4) Aesthetic impacts		X	
5) Effects on parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves		X	

*** Where a 'Significant' category is checked, add explanation below.**

3. Evaluation of Dredged or Fill Material (Subpart G)	
a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material (check only those appropriate)	
1) Physical characteristics	X
2) Hydrography in relation to known or anticipated sources of contaminants	X
3) Results from previous testing of the material or similar material in the vicinity of the project	X
4) Known, significant sources of persistent pesticides from land runoff or percolation	X
5) Spill records for petroleum products or designated (Section 311 of Clean Water Act) hazardous substances	X
6) Other public records of significant introduction of contaminants from industries, municipalities or other sources	X
7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities	X

List appropriate references: Section 4.5.4.1.1 and Section 4.12 of the DIFR-EA; Appendix A-8 (HTRW Analysis); Appendix B (Engineering Appendix)

3. Evaluation of Dredged or Fill Material (Subpart G) (continued)	Yes	No
b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredged or fill material is not a carrier of contaminants, or that levels of contaminants are substantively similar at extraction and placement sites and not likely to degrade the placement sites, or the material meets the testing exclusion criteria.	X	

4. Placement Site Delineation (230.11(f))	
a. The following factors as appropriate, have been considered in evaluating the placement site:	
1) Depth of water at placement site	X
2) Current velocity, direction, and variability at placement site	X
3) Degree of turbulence	X
4) Water column stratification	X
5) Discharge vessel speed and direction	X
6) Rate of discharge	X
7) Fill material characteristics (constituents, amount, and type of material, settling velocities)	X
8) Number of discharges per unit of time	X
9) Other factors affecting rates and patterns of mixing (specify)	

List appropriate references: Section 4.5.1, 4.5.4, and 4.5.6 of the DIFR-EA; Appendix B (Engineering Appendix)

4. Placement Site Delineation (230.11(f)) (continued)	Yes	No
b. An evaluation of the appropriate factors in 4a above indicates that the placement site and/or size of mixing zone are acceptable.	X	

5. Actions to Minimize Adverse Effects (Subpart H)	Yes	No
All appropriate and practicable steps have been taken, through application of recommendations of 230.70-230.77 to ensure minimal adverse effects of the proposed discharge.	X	

List actions taken: See section 4.5.4.1.4, which provides more detailed information about actions taken to minimize adverse effects.

1) Best available practical techniques and BMPs would be utilized during dredging and construction activities to avoid and minimize potential temporary and long-term adverse impacts.
2) Movement of heavy equipment and support vehicles would utilize placement pipeline corridors to the greatest extent possible. Staging areas, access corridors, and general ground disturbance not related to restoration would utilize the smallest footprint possible to maintain a safe work environment.
3) Geotextile/filter cloth would be placed under the GIWW armoring breakwater structure to reduce subsidence of placed rock over time.
4) Movement of sediment during and post-construction would be contained by constructing earthen containment/exclusion dikes around the marsh restoration sites. Dikes would be constructed of in-situ materials and would be breached through natural degradation or mechanical means following sufficient dewatering and settlement of the placed material. The dike would be able to maintain one-foot of freeboard at all times.

6. Factual Determination (230.11)	Yes	No*
A review of appropriate information as identified in items 2-5 above indicates that there is minimal potential for short- or long-term environmental effects of the proposed discharge as related to:		
a. Physical substrate at the placement site (review Sections 2a, 3, 4, and 5 above)	X	
b. Water circulation, fluctuation and salinity (review Sections 2a. 3, 4, and 5)	X	
c. Suspended particulates/turbidity (review Sections 2a. 3, 4, and 5)	X	
d. Contaminant availability (review Sections 2a. 3, and 4)	X	
e. Aquatic ecosystem structure and function (review Sections 2b and c, 3, and 5)	X	
f. Placement site (review Sections 2, 4, and 5)	X	
g. Cumulative impacts on the aquatic ecosystem	X	
h. Secondary impacts on the aquatic ecosystem	X	

7. Evaluation Responsibility	
a. This evaluation was prepared by: Position:	**Melinda Fisher** **Biologist,** **Regional Planning and Environmental Center**

8. Findings (Select One)	Yes
a. The proposed placement site for discharge of or fill material complies with the Section 404(b)(1) Guidelines.	X
b. The proposed placement site for discharge of dredged or fill material complies with the Section 404(b)(1) Guidelines with the inclusion of the following conditions: N/A	
c. The proposed placement site for discharge of dredged or fill material does not comply with the Section 404(b)(1) Guidelines for the following reason(s): 1) There is a less damaging practicable alternative 2) The proposed discharge will result in significant degradation of the aquatic ecosystem 3) The proposed discharge does not include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem	

6/26/18 Date	Douglas Sims, RPA Chief, Environmental Compliance Branch

NOTES:

* A negative, significant, or unknown response indicates that the permit application may not be in compliance with the Section 404(b)(1) Guidelines.

Negative responses to three or more of the compliance criteria at the preliminary stage indicate that the proposed projects may not be evaluated using this "short form" procedure. Care should be used in assessing pertinent portions of the technical information of items 2a-e before completing the final review of compliance.

Negative response to one of the compliance criteria at the final stage indicates that the proposed project does not comply with the Guidelines. If the economics of navigation and anchorage of Section 404(b)(2) are to be evaluated in the decision-making process, the "short form" evaluation process is inappropriate.

Texas Commission on Environmental Quality
Tier II Analysis

INTRODUCTION

The U.S. Army Corps of Engineers, Galveston District (USACE), in partnership with Jefferson County and Sabine Neches Navigation District, is reviewing restoration opportunities in the study area, which incorporates all of Jefferson County and focuses in on coastal marsh habitats along the Gulf of Mexico. The study will help contribute to larger ongoing efforts to improve, preserve, and sustain ecological resources along the Texas coast by stakeholder groups, non-governmental organizations, and government agencies at the local, state, and federal level.

Alternative 4Abu was chosen as the tentatively selected plan (the plan) based on preliminary analyses because it meets the study objectives, reasonably maximizes benefits for the associated costs, and includes key restoration features to restore and sustain the form and function of the coastal system in a portion of the study area. This plan incorporates marsh and Gulf Intracoastal Waterway (GIWW) shoreline restoration features which are critical to the stabilization and sustainment of the critical marsh resources now and into the future. Marsh measures consist of marsh restoration and/or nourishment to increase land coverage in the area and improve terrestrial wildlife habitat, hydrology, water quality, and fish nurseries. Shoreline measures include construction of rock breakwater features that would mitigate some effects of ship wake induced erosion along the GIWW. The structures dissipate wave energies, stabilize shorelines, reduce land loss, reduce saltwater intrusion, and support reestablishment of emergent marsh along the GIWW shoreline through retention of sediments.

Measures for this alternative would be constructed on lands owned by Texas Parks and Wildlife Department (TPWD) JD Murphree Wildlife Management Area (WMA), US Fish and Wildlife Service McFaddin National Wildlife Refuge (NWR), and private lands (Table 1).

Table 1. Scale and scope of 4Abu measures in Comparison to Land Ownership

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staging area locations, pipeline pathways, timing and duration of construction, engineering challenges, etc.), which would be addressed during the pre-engineering and design phase (PED).

A Monitoring and Adaptive Management Plan has also been developed for 4Abu which provides a coherent process for making decisions in the face of uncertainty and increases the likelihood of achieving desired project outcomes based on the identified monitoring program. The Monitoring and Adaptive Management Plan addresses uncertainties associated with ecosystem function and how the ecosystem components of interest will respond to the restoration efforts in light of changing conditions (e.g. sea-level change is different than anticipated) or new information (e.g. surveys indicate the design needs modification in order to function properly).

Marsh Measures

Marsh restoration measures involve placement of borrow material dredged from the Sabine-Neches Waterway (SNWW) into these locations. Material placed into the marsh would have similar properties to the existing native material. Under the existing and projected future dredging cycles, there is sufficient quantities of suitable material available to meet all restoration needs without seeking other borrow sources (e.g. off-shore, upland placement areas).

4Abu would restore and nourish approximately 8,421 acres of technically significant marsh habitat surrounding Keith Lake in Jefferson County, Texas. Within each of the five marsh restoration units, material dredged from the SNWW would be hydraulically pumped into open water and low lying areas assuming that 65% of the restoration unit will have a post-construction settlement target elevation of +1.2 feet mean sea level (MSL). As necessary, earthen containment dikes would be employed to efficiently achieve the desired initial construction elevation. Dikes would be breached following construction to allow dewatering and settlement to the final target marsh elevation.

All marsh restoration locations would have one future renourishment cycle. For purposes of the study, renourishment is assumed to occur at year 30 based on the intermediate SLC curve; however, actual timing will be part of the adaptive management strategy and dependent on observed local sea level change conditions. Subsequent marsh renourishment would employ similar techniques and specifications as developed for the initial construction except that the target elevation would be +2.2 feet MSL (based on current water levels). Similar to the timing of renourishment, the elevation may be modified depending on observed local sea level change conditions. It is estimated that 6.7 million cubic yards (MCY) of dredged material would be required to initially restore the 8,421 acres of marsh and an additional 3.7 MCY would be required for renourishment.

Following marsh restoration actions, non-native/undesirable species monitoring would be implemented. If species are found, measures would be taken to stop or slow the expansion of the species within the restoration units.

Shoreline Measures

GIWW armoring would involve constructing 6,592 linear feet of breakwater structures. The structures would be built in shallow water (<3 feet deep) along the southern edge of the GIWW, at varying distances from the shoreline and where soils are conducive to supporting the weight of the stone without significant subsidence. The distance from the shoreline would be determined during PED, after

site specific surveys have been completed, but sufficiently offset from the boundaries of the GIWW navigation channel to ensure continued safe navigation.

The design would be a trapezoidal structure built of rock up to a height of +3.0 MSL, which will yield approximately 1-1.5 feet of rock exposed above the mean high tide level. Other approximate features of the design include a 5-foot wide crown, a 1.5:1 slope, and a base that is roughly 29 feet wide. The base of the structure would be on filter cloth ballasted to the water bottom to secure placement and prevent displacement of the outboard edges. The number of openings and width of each would be determined during PED and dependent on the location of major channel entrances or access points required for fishery access or circulation. Initially, constructing the 6,592 linear feet of breakwaters would require 672,384 cubic feet of material which equates to about 39,800 tons of rock. It is anticipated that the breakwaters would need to be raised at least two times throughout the 50-year period of analysis to keep up with relative sea level change and remain effective. For purposes of the study materials would need to be added in year 15 (6,000 tons of rock) and year 25 (4,000 tons of rock), but timing and quantities could vary depending on observed local conditions and identified need to continue functioning as designed.

Equipment Needs and Access Routes

Sediment transport equipment would most likely include hopper or cutterhead dredges, pipelines (submerged, floating, and land) and booster pumps. Heavy machinery would be used to move sediment and facilitate construction. Heavy equipment could include bulldozers, front-end loaders, track-hoes, marshbuggy, track-hoes, and backhoes. For GIWW armoring construction, rock would be purchased from a commercial quarry and transported to the site by barge, where it would then be placed by crane or hopper barge. Various support equipment would also be used, such as crew and work boats, trucks, trailers, construction trailers, all-terrain vehicles, and floating docks and temporary access channels to facilitate loading and unloading of personnel and equipment.

Identification of staging areas, temporary access channels, and placement of floatation docks would occur during PED. Each disturbance for access and staging would be placed outside of environmentally sensitive areas to the greatest extent practicable. All ground disturbance for access and staging areas would be temporary and fully restored to result in no permanent loss.

Timing

Timing of initial construction of this project is dependent on a number of factors including: timing of authorization, duration of pre-engineering and design phase, identification of a cost-share sponsor, and Federal- and non-federal funding cycles. It was assumed that construction would take 60 months to complete all restoration actions, in which it was assumed that only one restoration unit would be undertaken at a time. For the GIWW armoring, it was assumed that dune construction and beach nourishment would occur simultaneously.

Implementation of the marsh restoration measures is highly dependent on dredging cycles. Currently, seasonal timing restrictions related to Endangered Species Act compliance includes a seasonal dredging window for hopper dredge use between December 1 and March 31, unless work outside this window cannot be completed, in which NMFS would need to approve the deviation. Hopper dredges would be used for dredging offshore areas of the entrance channel to just inside the jetties. Non-hopper dredges

(e.g. cutterhead pipeline dredges) may be used from April to November. This type of dredge would be used anywhere else within the SNWW.

Additional plan details are provided in the JCER DIFR-EA and the Engineering Appendix of the DIFR-EA (Appendix D).

401 CERTIFICATION QUESTIONNAIRE

The following questions are included on the Texas Commission on Environmental Quality (TCEQ), Tier II 401 Certification Questionnaire. The responses provided seek to show that implementation of the TSP will avoid adverse impacts during construction and upon completion of the project.

I. Impacts to surface water in the State, including wetlands

A. What is the area of surface water in the State, including wetlands, that will be disturbed, altered or destroyed by the proposed activity?

Up to 8,421 acres would be disturbed and altered from its current state. During construction wetlands would be trampled, filled in and/or buried by dredged material placement and associated earth moving construction activities. In the long-term, all 8,421 acres are expected to return to conditions which have higher habitat quality than under the existing condition.

B. Is compensatory mitigation proposed? If yes, submit a copy of the mitigation plan. If no, explain why not.

No, compensatory mitigation is not proposed. There is no net loss surface water, including wetlands, in the State therefore no mitigation is needed. All negative impacts are temporary in nature occurring only during the construction periods. Long-term permanent impacts are beneficial resulting in a net increase in function and value of the wetlands.

C. Please complete the attached Alternatives Analysis Checklist.

See Alternatives Analysis Checklist section below.

II. Disposal of waste materials

A. Describe the methods for disposing of materials recovered from the removal or destruction of existing structures.

Not Applicable. Implementation of the action would not involve removal or destruction of existing structures.

B. Describe the methods for disposing of sewage generated during construction. If the proposed work establishes a business or a subdivision, describe the method for disposing of sewage after completing the project.

Not Applicable. No sewage would be generated during construction.

C. For marinas, describe plans for collecting and disposing of sewage from marine sanitation devices. Also, discuss provisions for the disposing of sewage generated from day-to-day activities.

Not Applicable. Implementation of the action would not involve construction or usage of a marina(s).

III. Water Quality Impacts

A. Describe the methods to minimize the short-term and long-term turbidity and suspended solids in the waters being dredged and/or filled. Also, describe the type of sediment (sand, clay, etc.) that will be dredged or used for fill.

Implementation of the action would minimize or avoid adverse dispersal effects to the greatest extent practicable during construction. Material to be used for restoration would be hydraulically discharged at specific discharge points in low elevation areas. Material would then be mechanically moved into place with heavy equipment, which should reduce dispersal of material into undesirable areas. Additionally containment/exclusion dikes would be constructed around marsh restoration units to limit movement of sediments outside of the intended placement area. After all ground disturbing activities are complete and the site has sufficiently dewatered and settled, the dike would be mechanically breached if sufficient natural degradation has not occurred.

In the long-term, it is anticipated that recruitment and sustainment of marsh vegetation would sufficiently hold sediments in place and not result in long-term adverse water quality impacts beyond those that exist under the existing condition as a result of natural erosional processes and tidal exchanges.

Implementation of the marsh restoration measures would utilize borrow material that would be dredged from the SNWW. The dredged material has been characterized as silt and clay, with varying amounts of organic material and sands.

B. Describe measures that will be used to stabilize disturbed soil areas, including: dredge material mounds, new levees or berms, building sites, and construction work areas. The description should address both short-term (construction related) and long-term (normal operation and maintenance) measures. Typical measures might include containment structures, drainage modifications, sediment fences, or vegetative cover. Special construction techniques intended to minimize soil or sediment disruption should also be described.

During construction of marsh restoration sites, effluent from dewatering would be discharged into adjacent wetlands via spill box weirs. Movement of sediment during and immediately post-construction would be contained by constructing earthen containment/exclusion dikes around the marsh restoration site. The dike would be constructed from in-situ material located within the marsh restoration/nourishment area using a mechanical (clamshell or bucket) dredge. Borrow areas used for construction of earthen containment/exclusion dikes would be refilled during the placement of dredged material for marsh restoration. The containment dike would be able to maintain one foot of freeboard at all times during dredge discharge operations. Following construction, the dikes would be breached in multiple places to restore fish access if natural degradation has not sufficiently occurred.

Marsh restoration would include planting native vegetation species in areas which historically demonstrated erosion problems or that monitoring indicates it is not recruiting and establishing as necessary to stabilize the surface. Additionally, silt fencing or other sediment containing barriers could be used if an area is not sufficiently protected by other means (e.g. earthen containment/exclusion dikes).

C. Discuss how hydraulically dredged material will be handled to ensure maximum settling of solids before discharging the decant water. Plans should include a calculation of minimum settling times with supporting data (Reference: Technical Report, DS-7810, DREDGED MATERIAL RESEARCH PROGRAM, GUIDELINES FOR DESIGNING, OPERATING, AND MAINTAINING DREDGED MATERIAL CONTAINMENT AREAS). If future maintenance dredging will be required the disposal site should be designed to accommodate additional dredged materials. If not, please include plans for periodically removing dried sediments from the disposal area.

The referenced guidance and EM-1110-2-5025 will be used during PED to determine the settlement rate and discharge rate and timing. For the feasibility phase, the construction schedule was assumed to be five years, which includes a settling period post construction prior to breaching the earthen containment/exclusion dike.

Marsh restoration would incorporate one future renourishment at approximately year 30. The quantity of borrow material dredged during SNWW dredging operations far exceeds the available marsh restoration unit placement areas and needed borrow material. The additional dredged material would be placed in upland placement areas or in an offshore disposal sites following the existing/future Dredged Material Management Plan. These sites have been previously used and are independent of any actions being taken by this project. This project would redirect up to 10.4 MCY of borrow material to the restoration units which would free up space in the existing disposal sites for future needs.

D. Describe any methods used to test the sediments for contamination, especially when dredging in an area known or likely to be contaminated, such as downstream of municipal or industrial wastewater discharges.

USACE has collected and archived a significant amount of water and sediment chemistry data as well as elutriate data that provide information on the constituents that are dissolved into the water column during dredging and placement. Based on available data, there is no indication of current water or elutriate contaminant problems along the SNWW.

ALTERNATIVES ANALYSIS CHECKLIST

I. Alternatives

A. How could you satisfy your needs in ways which do not affect surface water in the State?

B. How could the project be re-designed to fit the site without affecting surface water in the State?

C. How could the project be made smaller and still meet your needs?

D. What other sites were considered?

(1) What geographic area was searched for alternative sites?

(2) How did you determine whether other non-wetland sites are available for development in the area?

The purpose of the action is to restore coastal marsh habitats and restore ecological function to the coastal system. This intent can only be achieved by conducting work within surface waters in the State, specifically wetlands. A total of 14 restoration units were considered for inclusion in whole or part of 19 alternative plans. All 14 restoration units were selected based on the critical need for restoration. Units that were identified as not having as great of a need were screened from incorporation into the plans. The selection of the 6 restoration units included in this plan were selected based on a number of factors including: meeting strategic goals of the plan, cost-benefit analyses, feasibility, effectiveness, acceptability, etc. With incorporation of beneficial use of dredge material (BUDM) and selection of only the most critical units in need of restoration, there is no practicable alternative with fewer adverse effects that also provides the same level of restoration benefits.

(3) In recent years, have you sold or leased any lands located within the vicinity of the project? If so, why were they unsuitable for the project?

No lands have been sold or leased by the USACE which would have benefited ecosystem restoration in lieu of conducting restoration within the identified units.

E. What are the consequences of not building the project?

Without action, marine influences and other natural and human factors, such as subsidence, sea level change, navigation channels, oil and gas development, industry growth, and population increases would result in continued coastal habitat loss in the study area. Without action, the coastal vegetation resources would continue to decline through bankline erosion, sloughing of the shoreline, and continued fragmentation and conversion of existing brackish and saline marsh to shallow open water habitats. Significant reductions of the brackish and saline marshes, under a condition in which no action is taken, are anticipated because of the accelerated rate of land loss and the narrowing of zones based on differing salinity regimes.

II. Comparison of alternatives

A. How do the costs compare for the alternatives considered above?

All alternatives went through a cost-benefit and risk analysis. A total of four alternatives rose to the top as being a cost-effect and best-buy plan, meaning that there were no other plans that provided the same level of benefit for a lesser cost. The identified alternative was included as the first cost-effective, best-buy plan.

B. Are there logistical (location, access, transportation, etc.) reasons that limit the alternatives considered?

Yes. Additional alternatives beyond the initial array were logistically not feasible due to their location outside of the tidal influence or existing/historic range of coastal marsh habitat. It would not be feasible to create marsh in an area that is not suitable.

C. Are there technological limitations for the alternatives considered?

No, there are no technological limitations for the alternatives considered.

D. Are there other reasons certain alternatives are not feasible?

No, there are no other reasons why other alternatives were not feasible.

III. If you have not chosen an alternative which would avoid impacts to surface water in the State, please explain:

A. Why your alternative was selected, and

The chosen alternative does not avoid impacts to surface water in the State. This alternative was selected because it met the purpose and need for the action. Although there are temporary adverse impacts to surface waters, the long-term benefit of restoring coastal habitats far outweighs any temporary impacts through increasing the habitat quality and functionality for the entire coastal system in the project area.

B. What you plan to do to minimize adverse effect on the surface water in the State impacted.

- Best available practical techniques and best management practices (BMPs) would be utilized during dredging and construction activities to avoid and minimize potential temporary and long-term adverse impacts.
- Movement of heavy equipment and support vehicles would utilize placement pipeline corridors to the greatest extent possible. Staging areas, access corridors, and general ground disturbance not related to restoration would utilize the smallest footprint possible to maintain a safe work environment.
- Geotextile/filter cloth would be placed under the GIWW armoring breakwater structure to reduce subsidence of placed rock over time.
- Movement of sediment during and post-construction would be contained by constructing earthen containment/exclusion dikes around the marsh restoration sites. Dikes would be constructed of

in-situ materials and would be breached through natural degradation or mechanical means following sufficient dewatering and settlement of the placed material. The dike would be able to maintain one-foot of freeboard at all times.

IV. Please provide a comparison of each criteria (from Part II) for each site evaluation in the alternatives analysis.

No alternatives beyond the initial array were considered in plan formulation which involved non-surface water locations. The cost-benefit analysis table is provided below for the alternatives that were given full consideration. Plans are considered cost effective if no other plan provides the same level of benefits are a lower cost. Of the 19 plans (including no action) evaluated, five plans, including no action, were identified as cost effective. These are shown in Table 2 as the cost effective and best buy plans. A graphical presentation of the cost effective analysis is shown Figure 1.

Table 2. Preliminary Results of Cost Effective Analysis

Plan	Annual Cost ($1000)	Annual Benefit (AAHU)	Cost Effective
No Action	0	0	**Best Buy**
1A	$ 43,428	$ 10,976	No
1B	$ 62,304	$ 10,973	No
2A	$ 54,640	$ 11,142	No
2B	$ 34,506	$ 1,682	No
3	$ 54,574	$ 10,322	No
4A	$ 14,343	$ 6,897	No
4B	$ 14,287	$ 923	No
6A	$ 17,654	$ 8,894	**Best Buy**
6B	$ 22,532	$ 8,850	No
10	$ 48,629	$ 9,977	No
13	$ 62,267	$ 11,141	No
1Abu	$ 30,460	$ 10,976	**Best Buy**
1Bbu	$ 49,335	$ 10,973	No
2Abu	$ 41,094	$ 11,142	**Best Buy**
3bu	$ 43,920	$ 10,322	No
4Abu	$ 6,142	$ 6,897	**Best Buy**
10bu	$ 37,749	$ 9,977	No
13bu	$ 48,721	$ 11,141	No

Figure 1. Cost Effective Analysis