



February 8, 2019

USACE, Galveston District
Attention: Ms. Jennifer Morgan
Environmental Compliance Branch, RPEC
Post Office Box 1229
Galveston, Texas 77553-1229
Sent via Email <CoastalTexas@usace.army.mil>

RE: Coastal Texas Protection and Restoration Feasibility Study and Draft Integrated Feasibility Report & Environmental Impact Statement

Dear Ms. Morgan,

Below are the official public comments of Turtle Island Restoration Network (TIRN) regarding the U.S. Army Corps of Engineers (USACE) and Texas General Land Office (GLO) Draft Coastal Texas Protection and Restoration Feasibility Study (CTPRFS), Draft Integrated Feasibility Report (IFR), and Draft Environmental Impact Statement (DEIS).

Since this proposal is at only "10 percent design" as per Kelly Burks-Copes in the Galveston Daily News article on December 4th, 2018, and that the "[barrier] could very well move to the front of the island," it is pertinent that the USACE allow a second public comment period after more details of this multibillion-dollar plan are finalized. Any alterations to the modeled layout in the Tentatively Selected Plan (TSP) will need to be reevaluated for the environmental impacts along the upper Texas coast (UTC) and within the Galveston Bay system. TIRN also requests that the USACE includes the value of lost habitat, species, fisheries and tourism dollars in the cost benefit ratios utilized in project impacts.

The current placement of the Coastal Barrier System (CBS) will disrupt the ecological system on the UTC.

1. TIRN is concerned that the environmental impacts and the overall value of the region have not been clearly evaluated.

“The surge barrier gates associated with the Coastal Barrier would likely alter the hydrology of Galveston Bay, which could affect the ecology of the estuary altering available habitat conditions for various fish and shellfish species (Minello et al., 2012, 2015). This in turn would impact birds and wildlife species, which depend on the resources provided by the marshes” (Appendix C-1-B, p 5-64). This project states that 31 endangered or threatened species could be impacted, and that 15 will likely be found in the study area (Appendix C-1-B, p 2-98). Alterations made to Galveston Bay should be mindful of any hydrological impacts. The USACE needs to specify at what point the cost benefit ratio of impacts to the habitat, species, fisheries and tourism industry will be too great to complete this project. From the preliminary study, the USACE has not given adequate weight to the consequences and these irreparable impacts will leave an enduring problem that lasts longer than the estimated lifespan of the coastal barrier system.

2. Sea Turtles: Incorrect statistics will prompt a violation to the Endangered Species Act and cause irreparable damage to the recovery of threatened and critically endangered species.

The TSP states that activities completed during the construction and maintenance of these structures are “likely to adversely affect” endangered and threatened sea turtles but does not adequately quantify expected consequences (Appendix C-3, p 4-4, Table 2). Eighty percent of the tidal flow into and out of Galveston Bay occurs at Bolivar Roads, and the barrier will reduce the volume of tidal flow between 13.5 and 16.5 percent (McAlpin et al., 2018; Ruijs, 2011) (Appendix C-1-B, p 5-26). Any restriction of this pass will increase shoreline erosion, and any hard structure will eventually become the shoreface. (Appendix C-1-B, p 5-12). The critically endangered Kemp’s ridley sea turtle nests on the shores of Follet’s island, Galveston Island and Bolivar peninsula every year, and the anticipated increase in shoreline erosion will negatively alter their nesting areas. This is a violation of USFWS Endangered Species Act which states that “Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an “agency action”) is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species” (ESA, 1983). The TSP suggests a renourishment plan for mitigation, however, leaves this action up to the local sponsor, giving no guarantee that the nesting habitat will be protected in years to come. A renourishment plan would rely on continuous dredging activity for the sand source, and dredging is also a detrimental activity to these endangered animals.

USACE claims that “sea turtles can easily avoid pipeline dredges because of the slow movement of the dredge” but neglect to provide any data supporting that statement (Appendix C-3, p 4-5). In the same paragraph, USACE also states the Galveston District has recorded 113 incidental takes of sea turtles. “Dredging of fill material for levees can injure or kill sea turtles, and increased turbidity can impede foraging ability of visual predators like sea turtles, piping plovers, red knots, and least terns” (Appendix C-1-B, p 5-140).

The USACE includes incorrect data throughout their environmental supporting documents. The USACE states that “due to their habitat preference, it is unlikely that the loggerhead sea turtle would occur in the study area.” (Appendix C-1-B p 2-104). In the environmental supporting documents, it is stated that all loggerhead nests have been south of the study area (Appendix C-1-B p 2-104). This is false information as we have had multiple loggerhead nests on the upper Texas coast.

In 2017, 232 sea turtles were found stranded on the UTC. This included 84 greens, 110 Kemp’s ridleys, 28 loggerheads, 5 hawksbills, 3 leatherbacks and 2 unknowns (Higgins, per. comm., 2018). In 2018, 505 stranded sea turtles were found (Higgins, per. comm., 2019). It is clear that the amount of sea turtles located within the Galveston Bay area has been underestimated.

It also states that there have been no Kemp’s ridley nests on Galveston Island or Bolivar Peninsula (Appendix C-1-B, p 2-103). From 2002 through 2007, there were 29 viable Kemp’s ridley nests, and 77 viable nests since 2008. Without correct information, this project will neglect appropriate mitigation to reduce the impacts to endangered species. We implore the USACE and GLO to provide accurate data and facts not only when considering mitigation efforts but when looking at if a project should transpire within a specific habitat. Appendix C-3 neglects to include any nesting in the Upper Texas Coast where the CBS has a “likelihood of encountering a Kemp’s ridley sea turtle” (Appendix C-3, p 2-18).

USACE states “incidental take, if it occurs, would not jeopardize the continued existence of potential recovery of any of the sea turtle species” (Appendix C-1-B, p 4-7). TIRN disagrees with this. It is estimated that only one in a thousand sea turtle hatchlings survives to adulthood, and protection must be ensured for every hatchling. Thousands of federal dollars are budgeted each year to the recovery of endangered sea turtle species and every animal is critical to the success of this recovery program. Along the UTC, a sea turtle recovery program has been established and successfully run since the mid 1980’s, and the proposed project will severely hinder the sea turtle populations for the upper Texas coast. Since 2002, the UTC has been a participant in sea turtle nest recovery working with Padre Island National Seashore (PINS). Nest patrols on the UTC are run each nesting season from April through July covering almost 20,000 miles in total looking for nesting sea turtles. Every nest laid on the UTC is protected to ensure the safety of these endangered animals. While searching for nesting sea turtles, many injured or stranded sea turtles are also found.

Sea turtles have been caught along the UTC for over 100 years, with records dating back to the 1800’s. The bays and estuaries provide sea grass for greens, and blue crabs and other crustaceans for Kemp’s ridleys and loggerheads. In-water work shows these turtles moving in and out of the bays all along the Texas coast and throughout the Gulf of Mexico. "Tracking studies indicate that the northern GOM serves as important foraging grounds and a migratory corridor for adult female Kemp's ridleys (Renaud, 1995; Renaud and Williams, 2005; Shaver and Rubio, 2008; Shaver et al., 2013), but few studies have examined the habitat use patterns of benthic juveniles." (Metz and Landry, 2016). During the winter months, when temperatures drop suddenly, the Texas coast sees thousands of juvenile green sea turtles cold stunned as they are trapped in the upper bays and cannot quickly find

escape to the Gulf. In 2018, nearly 4,000 sea turtles were rescued and rehabilitated from such conditions. Closure of San Luis Pass, Rollover Pass or Bolivar Roads has the potential to increase the amount of cold stunned sea turtles we see by creating a more difficult maze for these turtles to quickly exit out of Galveston Bay. The limitation of flow to Galveston Bay will have severe direct impacts on many species, including our protected sea turtles.

The USACE's Environmental Impact Statement needs to include accurate nesting and stranding numbers of sea turtles on the UTC and analyze the impact the CBS will have on both. If the barrier system is relocated to an area along the dune line, a new environmental impact study must be completed on both nesting sea turtles in the upper Texas coast as well as shorebirds that reside in the area. Yearly maintenance, after the initial construction, will be relayed to the nonfederal local sponsor. The USACE must ensure that the local sponsor is able to fund the maintenance and upkeep of this structure and beach renourishment for years to come so that the barrier system does not become the shoreline as anticipated. Any beach renourishment plans need to consider the sea turtle nesting seasons to avoid negative impacts on the nesting females and hatchlings.

3. Dolphins: The USACE does not adequately value the impacts of continued construction and the coastal barrier gates to the local dolphin pods.

There is concern for the local population of dolphins that reside within Galveston Bay. This area has one of the largest pods on the coast of Texas (Wursig, 2017). Concerns for the species include limited access to and from the Gulf of Mexico with the installment of gates at Bolivar Roads, and also changes in hydrology and the Galveston bay ecosystem. "The gate structures may impede movement of manatees, dolphins, and sea turtles travelling between Galveston Bay and the Gulf" (Appendix C-3, p 4-6).

"Dolphins in this area may be impacted by prolonged low salinity exposure caused by increased freshwater runoff and flood events" (Appendix C-1-B, p 2-125). The USACE needs to determine how the population will be protected during a hurricane event if they are trapped within Galveston bay and exposed to low salinity levels for long periods of time. With the expected increases in pollution in Galveston Bay due to flow constriction from the CBS, the anticipated outcome for dolphins that are known to "carry increased toxicant loads in their tissue and are subject to adverse effects on reproduction, endocrine function, and immune function" needs to be considered (Appendix C-1-B, p 2-125). The cost of these mitigation efforts and impacts to the species need to be evaluated and presented to the public.

4. Wetlands: Mitigation and the creation of new wetlands should not be considered an environmentally sustainable option for destroying established wetlands.

Dr. Steve Alexander, a professor of marine sciences at Texas A&M University at Galveston, states, "The value of wetlands includes improving water quality, supporting high rates of plant production, providing habitat, storm buffering, shoreline erosion and flood control. Wetlands also provide a place

for recreation, education and wildlife observation. One half of our Nation's existing wetlands are gone and with those losses come observable consequences; declines in migratory birds, water quality and the dead zone in the GOM, increased river flooding and increased hurricane damage” (GDN, 2015).

This CBS will alter a significant portion of the wetlands throughout Galveston Bay. Appendix C-1-B states that “approximately 512.5 acres of non-tidal and 338.0 acres of tidal wetlands are expected to be altered or damaged due to the construction of this measure” and later that “approximately 3,375 acres of wetlands along the interior of the bay are expected to be indirectly impacted resulting from altered hydrology primarily leading to eventual deterioration of those habitats. A total of 7,295 acres of mitigation will be required for these impacts (Appendix C-1-B, p 5-63,64).

This project will reduce nesting habitat for a critically endangered species as well as contribute to depleted foraging opportunities in impacted wetlands. A study done by Mock in 1966 showed that “catches of brown shrimp were 2.5 times greater and catches of white shrimp were 14 times greater in a natural habitat than in a bulkhead area.” As more concrete structures are introduced throughout Galveston Bay, the USACE needs to include precise impacts on this fishery in their environmental evaluations. Including loss of profit due to population decreases, and the anticipated decrease in population levels.

The range of temperature in water will increase in times of draught when the tidal prism has been lowered. The change in range will influence production of microfauna which will then have an effect on the macroconsumers that feed upon them. The USACE needs to provide detailed analysis on each wetland species and the impacts of the following: changes in temperature during times of influx of freshwater vs times of drought, changes in light penetration, altered scouring and mobilization of bed sediments, impacts on benthic ecology near the gate, increases in erosion, loss of riparian vegetation, increased sediment transport, altered groundwater dynamics, changes in connectivity to intertidal areas, reduced drainage of connected infrastructure, impacts of increased pollution, saline inundation during drought, freshwater influx during floods and what the impact would be with the closure of Rollover Pass. It is also important to include the time period between loss of wetlands and reconstruction of new wetlands, and the impacts to each species that rely on this area.

5. Fisheries: The USACE indicates that there will be severe impacts to fisheries but fails to quantify the impact on both local economy and food web interactions.

With the restriction of the Bolivar Roads pass, there will be significant impacts to the species that rely on it for their life cycles, including: brown and white shrimp, blue crab, gray snapper, red drum, speckled trout, sand trout, southern flounder, Atlantic croaker, black drum, sheepshead, gafftopsail catfish, and gulf whiting (Appendix C-1-B, Table 5-15, p 5-76). These species have been documented as drifting through the Bolivar Roads pass during their life cycles. “Many animals spend part of their lives in estuaries. Adult brown shrimp (*penaeus aztecus*) which contribute to the Texas commercial fishery, spawn offshore in the Gulf of Mexico. Post larvae move into the estuaries to grow for about two months and leave as juveniles and subadults.” (Trent et al., 1975). With the construction of the

gates, flow will be restricted, there will be an increase in velocity, less flow to exterior marshes and “eddies are also expected on the backside of the gate structures” which will trap the larval stages of these marine organisms preventing them from traveling through (Appendix C-1-B, p 5-5). Each of the species mentioned above, travel through the Bolivar Roads pass to lay eggs. Once hatched, the larval stages float to the surface and must flow back into the bay with the currents to be deposited in the nursery habitat. With less flow reaching the estuaries, these organisms will be impacted. The USACE must consider overall population loss as well as financial loss to Texas as the fisheries plummet. Mullet, menhaden, and anchovies rely on this pass for foraging. As the largest inlet into Galveston Bay, the Bolivar Roads pass must not be restricted for the sake of these fisheries.

The TSP will amplify retention, which will “increase sediment deposition and development of low dissolved oxygen conditions. Reduced mixing and water exchange combined with pollution and episodic storms are considered major contributors to low dissolved oxygen levels in estuaries. Most fish die-offs in the Galveston bay system have been attributed to low oxygen” (Appendix C-1-B, p 5-30). And this structure will increase that probability. “Increased retention may increase sediment deposition and development of low dissolved oxygen conditions upstream of the barriers” (Appendix C-1-B, p 5-30). In past studies, low dissolved oxygen has led to lower catches of brown shrimp, white shrimp, pink shrimp and blue crab (Trent et al., 1975). Boesch et al., believes a loss in wetlands will lead to a loss in shrimp production “the average annual yield of shrimp caught inshore in the northern Gulf of Mexico is highly correlated with the area of vegetated wetlands, including grassbeds, within the estuary” (1984).

Commercial landings of fish and shellfish in Galveston Bay accounted for \$127 billion dollars from 2006-2015. Tourism to the Texas coast accounted for \$10 billion dollars in 2014 alone. Hunting, fishing and wildlife viewing on our coast accounts for \$5 billion dollars a year. The USACE needs to estimate the anticipated loss of income to fisheries and tourism in the Galveston area both during and after construction of the CBS. The cost benefit ratios used for this study in Appendix E-3 must include the loss of income from both fisheries and tourism activities.

5. **Oysters:** Impacts to oyster production and potential changes with or without closure to Rollover Pass and Bolivars Roads need to be considered in modeling.

This study states that there will be impacts to the oyster reefs that extend throughout the Bay. With the anticipated closure of Rollover Pass, the salinity levels are expected to be altered by a possible 10 ppts. This is examined in the GLO’s Rollover Pass Erosion and Hazard-related Issues, “Reid measured salinities of 12 – 13 ppt in Rollover Bay before construction of the Pass, which increased to above 25 ppt in 1955 after the Pass opened” (GLO, 2011).

This possible drastic salinity change needs to be considered when anticipating any restriction of flow through Bolivar Roads. The large oyster reefs that extend throughout East Bay will be impacted especially in times of extensive rainfall and an influx of freshwater. If there is an anticipated impact on oyster beds, the losses need to be quantified both in projected income and livestock. As the study has been modeled, 1-2 ppts are expected to be the extent of salinity changes. 1-2 ppts can be drastic

to oyster reefs. 92% of freshwater flows to Bolivar Roads annually, and 17% to West Bay, the USACE needs to identify the alteration after the restriction with the Bolivar Roads gates and closure of Rollover Pass (Matsumoto, 2005).

At what level of severe impacts will this project be too detrimental to continue?

USACE states that “dominant nekton species inhabiting Texas estuaries include blue crab, white shrimp, brown shrimp, pink shrimp (*Farfantepenaeus duorarum*), Atlantic croaker, bay anchovy, code goby (*Gobiosoma robustum*), black drum, Gulf menhaden, hardhead catfish, pinfish (*Lagodon rhomboides*), sheepshead (*Archosargus probatocephalus*), silversides, southern flounder (*Paralichthys lethostigma*), spot (*Leiostomus xanthurus*), and spotted seatrout (Nelson et al., 1992; Pattillo et al., 1997). These species are ubiquitous along the Texas coast and are “unaffected by salinity changes” (Appendix C-1-B, p 2-177). The study later states that “many organisms feed on oysters including black drum, crab, and gastropods, such as the oyster drill (Lester and Gonzales, 2011; Sheridan et al., 1989)” (Appendix C-1-B, p 2-80). If the oysters die-off due to the drastic alterations in salinity, this die-off will affect the population levels of the larger organisms that consume them. The food web of the Galveston Bay has been undervalued and the USACE needs to recalculate the actual economic impact to fisheries by the CBS.

6. **Birds:** Impacts to birds are underestimated.

“Of the 338 species that are listed as Nearctic-Neotropical migrants in North America (north of Mexico), 333 of them (or 98.5%) have been recorded in Texas. This means that of the 615 species of birds documented in Texas, 54% of them are Nearctic-Neotropical migratory birds. Texas is important to these migrants and these migrants are important to Texas” (TPWD, 2005). The development of this Coastal Barrier System would have drastic negative impacts to the migratory and local bird species of Texas as it would deplete foraging grounds and reduce nesting and roosting areas. As the USACE predicts,” the Coastal Barrier could result in a reduction in overall estuarine fauna productivity” (Appendix C-1-B, p 5-79).

Dredging and construction activities associated with construction of the Coastal Barrier System would cause temporary and localized impacts resulting from increased turbidity, suspended sediments, and bottom impacts. In-bay construction durations are not known at this time; however, construction lasting for extended time periods will impact estuarine habitats and fauna resulting in long-term recovery to pre-construction conditions. Reduced flow, reduced tidal amplitude, and periodic high velocities around the gates could have long-term effects on estuarine habitats and fauna in Galveston Bay.

Potential long-term direct impacts to fish and shellfish with larval and juvenile life stages that depend largely on passive transport could result from the cumulative impacts of the Coastal Barrier. Losses could result from 1) reduced numbers entering the bay proportional to the reduced volume flowing into the bay; 2) loss of individuals trapped in eddies that could form on the backside of the gate structures; 3) increased exposure to predation while migrating across the open bay to the marshes due to reduced velocities and increased transport times; and 4) reduced area of accessible marsh

caused by reduced tidal amplitude. Species that rely on passive transport in early life stages are an important food source for birds. This could result in direct impacts from reduced access to foraging and habitat. The USACE should include indirect and direct impacts to both local and migratory birds that utilize the upper Texas coast.

8. Coastal Barrier Resources Act (CBRA): There are multiple areas throughout Follet's Island, Bolivar Peninsula and High Island that are designated as System Unit zones covered under the Coastal Barrier Resources Act (CBRA). CBRA designates these zones as areas not eligible for most new federal expenditures and financial assistance. This was established to encourage conservation of hurricane prone and biologically rich coastal barriers. There are multiple System Units located on Bolivar Peninsula listed as T03A, T02A and T03AP, and Follet's Island has multiple System Units listed under the CBRA. The current location of the Coastal Barrier System dissects many of these zones. TIRN requests that the USACE specify how the barrier will be funded in this area, as federal dollars are not permitted to be spent on any construction projects within these zones. Will the local sponsor be responsible for this funding and will this expense be in addition to the maintenance and other future expenses? Senator Cornyn has submitted a bill to include the zones on Bolivar in the exemptions from the CBRA. He has proposed the zones be added to the exemption 3504 5.a.3. These areas are covered under CBRA with a goal of conservation of this land, and to exempt them for an understudied engineering project is a gross misuse of Senatorial power. TIRN requests these biologically rich coastal barriers be preserved, and the USACE respect the original intention of the act.

9. Pipelines: The movement of pipelines includes numerous environmental concerns.

The USACE states that "a total of 1,267 oil and gas wells are located within 1 miles of the Coastal Barrier, with 57 oil and gas wells intersecting the Coastal Barrier footprint" (Appendix C-1-B, p 5-39). While it is included that "steps would be taken to avoid, minimize, and reduce any potential impacts to oil and gas activity," the steps taken to minimize any environmental impacts are not included (Appendix C-1-B, p 5-39).

The USACE needs to include any environmental mitigation and plans for the prevention of hazardous discharge in the draft. 16 natural gas pipelines will have to be moved for the CBS. What are the environmental concerns with each move? The TSP does not address hazardous response if there is an incident while moving these pipelines and the USACE needs to provide details.

10. Community impacts:

A) Induced flooding: This levee in its current position will induce flooding as defined in the TSP. "Both CSRMs alternatives have the potential to increase stages to the areas exterior to the levee. With the TSP, the potential of induced flooding is limited to the structures on Bolivar Peninsula and Galveston Island. There is a margin of error in both the economic model and the storm surge modeling (ADCIRC) when it comes to induced stages. There are

approximately 1,000 structures outside of the current levee/floodwall proposed alignment, which could be subject to induced stages” (Appendix F, p 9-1).

It is unacceptable for the USACE to engineer a levee system that places homes in harm’s way. Gulf Restoration Network has estimated that the number of homes floodside is actually closer to 3,500. Almost 300 buildings would be in the footprint of the levee and would succumb to eminent domain by the state. The section titled “Landowner Attitudes” presents an opinion that “it is reasonable to suggest that the general public is in favor of flood risk reduction and environmental restoration projects” (Appendix F, p 20-1).

The USACE needs to precisely quantify the number of estimated homes and properties as the exact placement of the barrier is finalized. The public should be allowed to comment on the final placement of the barrier before the project moves forward with development.

- B) Inadequate Notice:** There was inadequate notice given to landowners and property owners within and around the proposed CBS. Public notification must be improved and the specific number of homes and businesses that will be impacted need to be identified. In the plans, for Bolivar, a T-Wall has been proposed bayside of Highway 87 with two highway gates. Their placement and access are not included. It is important for emergency personal and property owners to know how they would access their homes or the highway. This is crucial for an educated opinion to be formed. If the access road is on the beach side of the T-wall, any debris from a hurricane could render it unusable. The same issues lie on the West end of Galveston Island. For the public to make an informed comment, placement of the T-wall and access roads need to be identified and shared with the public.
- C) Non Federal Sponsor (NFS):** The non-federal sponsor has yet to be identified for research, development, construction and maintenance of the CBS. After the completion of the build, the NFS will be responsible for the operation, maintenance, repair, replacement, and rehabilitation (OMRR&R) of the TSP. The public does not understand the role of the NFS for the TSP. The USACE needs to be more transparent in public discussions when mentioning the non-federal sponsor and how it will be a burden to taxpayers.

Our questions to the USACE are which counties will share the brunt of this responsibility? If this is being proposed to protect the entirety of the United States gas economy, will the entire tax base be responsible for the upkeep? What happens to the Barrier system at the end of the expected lifespan? What happens if the local taxing entity falls short of being able to keep up with maintenance costs? How long will it take to open the gates after a storm? How long will it take to close the gates prior to a storm? How much will that cost each time? What are the procedures to open and close the gates? What are the costs for the pumping systems in Galveston? What will be the result of a failure of the pumping systems to the community during a storm?

- D) False sense of security:** After Hurricane Camille in 1969, many levees and walls were created to mitigate the impacts of hurricanes on the Louisiana coast. This led to a false sense of security in many areas that were impacted during Hurricane Katrina, “A few months after Hurricane Katrina, the *Sun Herald* of Biloxi, Mississippi, wrote that “Camille killed more people

in 2005 than it did in 1969.” Many residents did not evacuate from areas that remained dry during Hurricane Camille, a category-5 storm on the standard Saffir-Simpson scale. They believed they were perfectly safe from Hurricane Katrina, only a category-3 storm when it struck the Mississippi coast. But Katrina was much larger than Camille, and tragically, that made it a more dangerous generator of storm surge” (Resio, 2008). If the pumps in the Galveston ring levee fail during a storm, the impact to human life will be significant, and if people do not feel the need to evacuate, this effect will be exponentially worse with a false sense of security created by this system. Barriers like this proposed project have been proven to induce a false sense of security and the USACE would need to provide a plan that eliminates this risk.

Conclusion

In summary, the lack of a factual DEIS prompts TIRN to request a supplemental draft environmental statement. As mentioned, the current draft for the CBS is only at 10% design, and lack of details make it impossible for TIRN to make a valid assessment of the impact of this project to the environment, personal property and people.

The USFWS and NMFS have identified 31 Federally listed threatened and endangered species as potentially occurring in the study area (Appendix C-1-B, p 2-89) and they have confirmed that at least 15 will be negatively impacted. The CBS will change the hydrology of Galveston Bay impacting game fish, shrimp, crabs and oysters. The reduction of microfauna will negatively impact migratory species such as sea turtles, dolphins, and birds. Working with nature; restoration of beaches and dunes, creation of a living shorelines, and allowing nature-based solutions to provide long-term protection to the gulf coast of Texas from hurricane events must be part of the solution.

Sincerely,

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