



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

1875 Century Boulevard  
Atlanta, Georgia 30345

In Reply Refer To:  
FWS/R4/DH NRDAR

AUG 26 2015

### Memorandum

To: Field Supervisor, Texas Coastal Ecological Services Field Office, Houston, Texas

From: Deputy *Deepwater Horizon* Department of the Interior Natural Resource Damage Assessment and Restoration (NRDAR), Case Manager *Rebecca L. McCl...*

Subject: Informal Consultation and Conference Request for the Proposed Texas Rookery Islands Project, Texas

As you are no doubt aware, on or about April 20, 2010, the mobile offshore drilling unit *Deepwater Horizon* experienced an explosion, leading to a fire and its subsequent sinking in the Gulf of Mexico (the Gulf). These events resulted in the discharge of millions of barrels of oil into the Gulf over a period of 87 days. In addition, various response actions were undertaken in an attempt to minimize impacts from spilled oil. These events are hereafter collectively referred to as the Oil Spill.

The Department of the Interior (DOI), acting through the U.S. Fish and Wildlife Service (the Service) and other Bureaus, is a designated natural resource trustee agency authorized by the Oil Pollution Act of 1990 (OPA) and other applicable federal laws to assess and assert a natural resource damages claim for this Oil Spill. DOI is only one of several Trustees, including agencies in the State of Texas, so authorized. Consistent with their federal and state authorities, the Trustees are investigating the resource injuries and losses that occurred as a result of the Oil Spill and have initiated restoration planning to identify the actions that will be needed or appropriate to restore injured natural resources to make the public whole for injuries and losses that occurred. This process is known as a Natural Resource Damage Assessment (NRDA).

On April 20, 2011, DOI, National Oceanic and Atmospheric Administration (NOAA), and the Trustees for the five Gulf states affected by the Oil Spill entered into an agreement with BP, a responsible party for the Oil Spill, under which BP agreed to provide \$1 billion for early restoration projects in the Gulf to address injuries to natural resources caused by the Oil Spill. The subject project is being evaluated by the Trustees as a potential early restoration project. The early restoration project has been proposed in a draft early restoration plan that was released for public comment and review May 20, 2015. If the Trustees select the project after publication of the plan and consideration of public comment and a stipulated agreement is reached with BP, three project components will be implemented by the Texas Parks and Wildlife Department (TPWD) and one project component, Dressing Point Island, will be implemented by the Department of the Interior.

The above facts lead us to the conclusion that consultation and conference under Section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*), is required for the proposed project and we wish to engage in such consultation. The proposed Texas Rookery Islands project has four project components. We have reviewed each of the project components and the overall project for potential impacts to listed, candidate, and proposed species and designated and proposed critical habitats in accordance with Section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*). Potential effects, conservation measures and justifications for our determinations are presented for each component of the proposed project in separate Biological Evaluation (BE) forms attached to this letter. The determination for each project component is listed in Table 1 below. Our summary determination for the overall project is may affect, but is not likely to adversely affect piping plover, red knot, Sprague's pipit, Northern aplomado falcon, whooping crane, and West Indian manatee and will have no effect on Attwater's greater prairie chicken. The attached BE forms will also be used to initiate consultation with National Marine Fisheries Service (five species of sea turtles (loggerhead, green, Kemp's ridley, leatherback, and hawksbill) using in-water habitats, smalltooth sawfish) and in regards to Marine Mammal Protection Act (MMPA) of 1972, as amended (16 U.S.C. 1461 *et seq.*).

Within the BE forms, we have also reviewed the proposed project for impacts to bald eagles and migratory birds in accordance with the Bald and Golden Eagle Protection Act (BGEPA) of 1940 (16 U.S.C. 668-668c) and the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-712), respectively and we determined take would be avoided.

Potential effects, conservation measures and justifications for our determinations are presented for each component of the proposed project in separate BE forms to facilitate your review. However, we request your concurrence with the proposed project in totality rather than component by component. To facilitate your response, should you concur with our determinations, we have attached a template response letter. If you have questions or concerns regarding this request for consultation, please contact Ashley Mills, Fish and Wildlife Biologist, at 812-756-2712 or [ashley\\_mills@fws.gov](mailto:ashley_mills@fws.gov).

Attachments (10)

Table 1. Species, Status, and Critical Habitat for each of the four proposed Texas Rookery Island project components.

Species	Status	Smith Pt	Rollover Bay	Dickinson Bay	Dressing Point	OVERALL
Attwater's Greater prairie chicken	Endangered	NE	NE	NE	-	NE
Piping plover	Threatened	NLAA	NLAA	NE	NLAA	NLAA
Red knot	Threatened	NLAA	NLAA	NE	NLAA	NLAA
Sprague's Pipit	Candidate	NLAA	NLAA	NLAA	NLAA	NLAA
West Indian Manatee	Endangered	NLAA	NLAA	NLAA	NLAA	NLAA
Green Sea Turtle - In Water	Endangered	NLAA	NLAA	NLAA	NLAA	NLAA
Hawksbill Sea Turtle - In Water	Endangered	NLAA	NLAA	NLAA	NLAA	NLAA
Kemp's Ridley Sea Turtle - In Water	Endangered	NLAA	NLAA	NLAA	NLAA	NLAA
Leatherback Sea Turtle - In Water	Endangered	NLAA	NLAA	NLAA	NLAA	NLAA
Loggerhead Sea Turtle - In Water	Threatened	NLAA	NLAA	NLAA	NLAA	NLAA
Smalltooth Sawfish	Endangered	NE	NE	NE	NE	NE
Northern Aplomado Falcon	Endangered	-	-	-	NLAA	NLAA
Whooping Crane	Endangered	-	-	-	NLAA	NLAA
Critical Habitat		none	none	none	none	

## **Endangered Species Act Biological Evaluation Form** ***Deepwater Horizon Oil Spill Restoration***

Fish and Wildlife Service & National Marine Fisheries Service

### **Texas Rookery Islands Project (Dickinson Bay Island II)**

#### **Section A. Project Identification**

*Lead Agency Agency Contact Person*

U.S. Fish and Wildlife Service/National Marine Fisheries Service

*Agency Contact Person*

Ashley Mills and Laurel Jennings

*Phone*

812-756-2712 and 206-526-4601

*Email*

Ashley\_Buchanan@fws.gov and [Laurel.Jennings@noaa.gov](mailto:Laurel.Jennings@noaa.gov)

- I. Applicant Agency or Business Name  
Texas Parks and Wildlife Department (TPWD)
- II. Applicant Contact Person  
Angela Schrift
- III. Phone  
512-389-8755  
Email:  
[Angela.Schrift@tpwd.texas.gov](mailto:Angela.Schrift@tpwd.texas.gov)
- IV. Project Name and ID# (Official name of project and ID number assigned by action agency)  
Texas Rookery Island Project – (Dickinson Bay Island II)
- V. Project Type  
Other
- VI. NMFS Office (Choose appropriate office based on project location)  
NMFS Southeast Regional Office

- VII. FWS Office (Choose appropriate office based on project location)  
Texas Coastal Ecological Services Field Office, Houston, TX

## **Section B.**

- I. Project Location  
Dickinson Bay Island II site lies less than 1.0 mile southwest of the community of San Leon in Dickinson Bay. The island is located in Dickinson Bay, a secondary bay of the Galveston Bay complex.
- II. State & County/Parish of Project Site  
Galveston County, Texas
- III. Latitude & Longitude for Project Site (Decimal degrees and datum [e.g., 27.71622°N, 80.25174°W NAD83] [online conversion: <http://transition.fcc.gov/mb/audio/bickel/DDDMMSS-decimal.html>])  
Approximate 29.464394° N, 94.936601° W; NAD83
- IV. Township, range and section of the project area  
Texas does not use the public land survey system.

## **Texas Rookery Islands Project (Dickinson Bay Island II)**

### **Section C. Description of Action Area**

The site is Dickinson Bay Island II. Dickinson Bay Island II lies on the upper Texas coast at the mouth of Dickinson Bay in Galveston Bay (Figure 1 and 2). The island site lies southwest of the community of San Leon. The relationship of the proposed site island to the surrounding area is shown in Figures 2 thru 5, and 8. There currently is no island at the proposed location for this restoration effort (Figure 3). The original island and two associated islands eroded several decades ago from subsidence and erosion. The area that may be directly or indirectly affected includes the transportation corridors; breakwater, armored levee, or other structure; direct dredge borrow site, Mid-Bay Reach of the Houston Ship Channel, or upland borrow site; vegetation plantings; earthen fill; construction area; and staging areas (Figures 3 thru 5).

Dickinson Bay originally contained three bird nesting islands associated with the Dickinson Bay navigation channel. Conservation partners successfully restored one of the islands, Dickinson Bay Island I (Figure 3). The partners intend to restore all three sites for colonial nesting birds. Dickinson Bay Island II, would be managed by the Galveston Bay Foundation and leased from the Texas General Land Office. The project proposes to create an island using earthen fill protected by armored shorelines, and vegetate it with desirable scrub-shrub plants. These actions would provide habitat that will support colonial nesting waterbirds.

The primary area that would potentially be affected is identified in Figures 3, 4, and 5. Potentially, the direct dredge borrow source area would be affected and is shown in Figure 4 and is bounded by the following coordinates: 29.46000° E, 94.91140° W; 29.45790° E, 94.90400° W; 29.45520° E, 94.90500° W; 29.45720° E, 94.91230° W (NAD 83). Indirect and temporary effects would take place with boat ramps, navigation channels, and staging areas.

The project proposes to create an island approximately 4 acres in size using earthen fill, incorporate an armored shoreline (Figures 6 and 7), and vegetate the island with desirable scrub-shrub plants. The purpose of these actions is to provide habitat that will support colonial nesting waterbirds.

**#1 Attach a separate map delineating where the action will occur.**

See attached figures.

**#2 Describe ALL areas that may be affected directly or indirectly by the Federal Action and not merely the immediate project site involved in the action, or just where species or critical habitat may be present. Provide a description of the existing environmental conditions and characteristics (e.g., topography, vegetation type, soil type, substrate type, water quality, water depth, tidal/riverine/estuarine, hydrology and drainage patterns, current flow and direction), and land uses (e.g., public, residential, commercial, industrial, agricultural).**

The majority of the Action Area is identified in Figures 3 thru 5. Dickinson Bay Island II is under half of a mile from the mainland, is less than a mile southwest of the community of San Leon, and is located at the mouth of Dickinson Bay in Galveston Bay, Galveston County, Texas. Specifically it is located in Dickinson Bay near 29.464394° N, 94.936601° W; NAD83. There are two locations currently proposed to replace a lost rookery island (Figure 3).

Figure 4 shows the location of the proposed island, direct dredge borrow source area, and navigation channels. Figure 5 shows the potential source of dredged material from the Mid-Bay Reach of the Houston Ship Channel that could be a source of beneficially use to provide fill material for Dickinson Bay Island II. Figures 6 and 7 show the preliminary restoration design. Figure 8 shows the potential site location and known pipelines in the area.

The community of San Leon is located on the nearby April Fool's Point and contains homes and structures, some commercial facilities, residential piers and docks (Figure 4). This community may be impacted by noise, additional use of the boat docks, and additional personnel passing through the area.

See below for detailed descriptions of the action area.

Existing Environmental Conditions and Characteristics

*Substrate type, Topography, and Soils*

Dickinson Bay Island II when built, will impact submerged sediments in subtidal habitat. Sediment cores were taken and the substrate was analyzed. The substrate was defined as sandy clay with shell

fragments or clayey sand with shell fragments. Detailed substrate profiles are in Appendix A of the Alternatives Analysis (HDR 2014). The Dickinson Bay Island II site is located in subtidal habitat with an average water depth of approximately 4 feet. Between the two potential site locations, there is the Dickinson Bay Channel that is over 7 feet deep (HDR 2014).

Based on surveys of the submerged bay bottom performed in May 2013, there are no seagrasses or oyster reefs/shell pads at either the north or south site (HDR 2014). In addition, the TPWD seagrass viewer does not identify any seagrasses in the project area (<http://tpwd.texas.gov/gis/seagrass/>) and no seagrasses have been reported by resource agency biologists working in the area.

The project may use material from several sources and potentially affect these source areas. These sources include a suitable site within the direct dredge borrow source area (Figures 4 and 5), beneficial use of dredged material from the Mid-Bay Reach of the Houston Ship Channel (Figure 5), or earthen fill associated with an upland borrow site. This direct dredge borrow source area is comprised mainly of sandy silts (White 1985). The Houston Ship Channel sediments would vary but would include silts and sands.

#### *Existing Vegetation Type*

No vegetation exists at the site.

#### *Water Quality, Water Depth, Tidal/Riverine/Estuarine, Hydrology and Drainage Patterns, Current Flow and Direction*

The depths surrounding the island are relatively shallow ranging to a depth of approximately 4 feet in the surrounding area and above 7 feet in the nearby navigation channel. Conditions within Dickinson Bay are influenced predominately by the larger Galveston Bay. Flows in Dickinson Bayou may become significant with rainfall events and thus lower the salinity within Dickinson Bay. The hydrology of the area is affected by tidal actions and the location of the nearby navigation channel. Wind speed and direction within the Galveston Bay System plays an important role in affecting tide elevation. It can dampen or enhance the height of waves as well as their potential energy.

The current island design and orientation will account for hydrological pressures in the area. The recent construction of an island, (Dickinson Bay Island I), located just northwest of the proposed project is being used as a model for this project (Figure 3).

According to the water quality index, Galveston Bay received a poor rating. Galveston Bay is rated fair for dissolved inorganic nitrogen concentrations and rated poor for dissolved inorganic phosphorus concentrations. Thirteen percent of the estuarine area was rated poor for dissolved inorganic nitrogen concentrations, whereas 68% of the estuarine area was rated poor for dissolved inorganic phosphorus concentrations. Expectations for water clarity are similar to those for normally turbid estuaries, with water clarity rated poor at a sampling site if light penetration at 1 meter was less than 10% of surface illumination. Dissolved oxygen conditions in Galveston Bay are rated good (U.S. EPA 2007).

Due to the presence of dioxins and PCBs, the project area has consumption advisories for all species of catfish, spotted seatrout, and blue crabs.

(<http://www.dshs.state.tx.us/seafood/Survey.shtm#advisory>)

#### *Land Uses*

The project area is submerged bay bottom that is managed by the state of Texas. The appropriate lease will be obtained prior to construction. There are pipelines nearby which will not be impacted.

Vessels use the nearby Dickinson Bay Channel and the Houston Ship Channel. Commercial and recreational fishing, boating, and potentially wildlife viewing does occur in the open water areas. Nearby Dickinson Bay Island phase I is managed for colonial waterbirds by the Galveston Bay Foundation. Management includes monitoring, predator control, and educational signage to reduce disturbance.

#### **#3 If habitat for species is present in the action area, provide a general description of the current state of the habitat.**

The proposed project site is currently open water. Water dependent birds may use the open bay to forage and roost. These would include loons, bay ducks, gulls and terns, and pelicans.

There are areas of oyster/shell reef near the area proposed for island construction. Surveys were conducted to identify these areas so these areas could be avoided during construction activities (HDR 2014). The two proposed island locations avoid the oyster/shell reefs (HDR 2014).

Dominant aquatic species that could be found in the project area include fish species (sand seatrout, spotted or speckled seatrout, red drum, tonguefish, flounders, Atlantic bumper, and porgys) and benthic organisms (bivalves, gastropods and other mollusks, amphipods, annelids, crabs, and brown and white shrimp). There are no seagrasses present according to the TPWD seagrass viewer (<http://tpwd.texas.gov/gis/seagrass/>).

#### **# 4 Identify any management or other activities already occurring in the area.**

Submerged bay bottom is managed by the state of Texas. There are nearby pipelines and an adjacent navigation channel (Figure 8). Fisherman and boaters may use the nearby areas for recreational or commercial purposes. The navigation channels, including the Houston Ship Channel, may be used by vessels for transportation.

#### **#5 Detailed map of the area of potential effect for ground disturbing activities.**

The potential area of impact from the construction activities is shown in Figures 3 thru 5. Earthen fill material will be placed on submerged lands to raise elevations. Once the earthen fill has dewatered and sediments have settled, the existing island will be planted (about 3.5 acres) with scrub-shrub vegetation. The final elevation of the improved island will be such that it will support ground nesting species of colonial waterbirds.



DRAFT/DELIBERATIVE; ATTORNEY WORK PRODUCT; ATTORNEY CLIENT COMMUNICATION; PRIVILEGED AND/OR CONFIDENTIAL

Potential sources of material would be from a direct dredge borrow source area (Figure4); the Houston Ship Channel (Figure 5) or an unidentified upland borrow location.

**Section a. Waterbody (If applicable. Name the body of water, including wetlands (freshwater or estuarine), on which the project is located. If the location is in a river or estuary, please approximate the navigable distance from the project location to the marine environment.)**

Dickinson Bay Island II is located at the mouth of Dickinson Bay in Galveston Bay, Galveston County, Texas.

**Section b. Existing Structures (If applicable. Describe the current and historical structures found in the project area (e.g., buildings, parking lots, docks, seawalls, groines, jetties, marina). If known, please provide the years of construction.**

There are no existing structures at the proposed site.

**Section c. Seagrasses & Other Marine Vegetation**

**(If applicable. Describe seagrasses found in project area. If a benthic survey was done, provide the date it was completed and a copy of the report. Estimate the species area of coverage and density. Attach a separate map showing the location of the seagrasses in the project area.)**

There are no known seagrasses in the project area. The TPWD seagrass viewer does not show any seagrasses in the project area (<http://tpwd.texas.gov/gis/seagrass/>).

**Section d. (If applicable. Describe the mangroves found in project area. Indicate the species found (red, black, white), the species area of coverage in square footage and linear footage along project shoreline. Attach a separate map showing the location of the mangroves in the project area.)**

There are no mangroves present in the proposed project site as it is open water.

**Section e. Corals**

**(If applicable. Describe the corals found in project area. If a benthic survey was done, provide the date it was completed and a copy of the report. Estimate the species area of coverage and density. Attach a separate map showing the location of the corals in the project area.)**

There are no corals in the project area. Appropriate habitat does not exist.

**Section f. Uplands (If applicable. Describe the current terrestrial habitat in which the project is located (e.g. pasture, forest, meadows, beach and dune habitats, etc.).**

There island is proposed to be constructed in an open water area.

A remote upland borrow source may be used to obtain the fill material. All potential upland sites will be characterized and reviewed for environmental constraints including contaminants, habitat value, presence of protected and at-risk species, and cultural resources. Any areas with critical habitat will be

avoided and the activities associated with the use of an upland borrow site would not adversely affect listed species. To the maximum extent practicable, locations with habitats of at-risk species will also be avoided.

There will be no take of migratory birds.

## **Section D.**

### **Part 1.**

#### **Construction Schedule (What is the anticipated schedule for major phases of work? Include duration of in-water work.)**

Activities associated with engineering and design may take several months to accomplish with a maximum estimated timeframe of 12 months. Dredging activities may be conducted both day and night. To prevent disturbance to nearby residential communities, construction activities that produce significant noise or require precision, such as moving or placing rock would be limited to daylight hours. Activities associated with construction, which includes "in water work" are not expected to take longer than 6 months. The timing of contracting awards and weather conditions could impact the construction schedule. Any such activities potentially affecting ESA species or migratory birds would be coordinated with the appropriate state and federal agency biologists and with non-governmental organization (NGO) partners prior to initiation of the field work.

### **Part 2.**

#### **#1 What is the purpose and need of the proposed action?**

The action falls within the scope of the programmatic purpose and need for early restoration *Deepwater Horizon* Oil Spill as described in the Programmatic and Phase III Early Restoration Plan and Early Restoration Programmatic Environmental Impact Statement because it would accelerate meaningful restoration of injured natural resources and their services resulting from the Spill. This project's purpose is to begin to restore and protect birds injured as a result of the Spill. The project is needed to restore colonial waterbird nesting habitat in Galveston Bay. Restoration actions at the rookery island would increase the amount of available nesting habitat by restoring a nesting island, enhance the quality of habitat through the establishment of native vegetation, and increase the longevity of the habitat through the construction of protective features, such as breakwaters or armoring. Increasing the amount of available nesting habitat, enhancing the quality of habitat, and increasing the protection of the habitat from erosion and sea level rise would result in an increase in the numbers of nesting colonial waterbirds.

**#2 How do you plan to accomplish it? Describe in detail the construction equipment and methods\*\* needed; permanent vs. temporary impacts; duration of temporary impacts; dust, erosion, and sedimentation controls; restoration areas; if the project is growth-inducing or facilitates growth; whether the project is part of a larger project or plan; and what permits will need to be obtained.**

A site assessment has been completed for Dickinson Bay Island II (HDR 2014). Preliminary engineering work has started. A professional registered engineer (PE) will develop a refined design and specification package. The description of each of the construction elements are based on experience with similar projects within Galveston Bay and should be considered typical. Uncontaminated earthen fill will be placed on submerged bay bottom at the project location to build an emergent island. Depending on specific construction techniques, temporary levees may be constructed first to contain material and decant water. Once the earthen fill has dewatered and sediments have settled, a portion of the new island will be planted with scrub-shrub vegetation to support nesting birds. In order to protect the island from adverse physical processes, the shoreline would be protected with armoring to ensure sustainability. One end of the island will be open to the bay. A low berm or breakwater would be constructed to break wave energy. This would provide water access for juvenile waterbirds. The Dickinson Bay Island II project contains the following elements:

- Construct a 4-acre island by placing fill over submerged land;
- Construct 2,000 feet of armored shoreline to protect the restored island;
- Construct a 0.8 acre submerged breakwater to create a lagoon for juvenile bird access; and
- Plant 3.5 island acres with native scrub-shrub vegetation.

Approximately 76,000 cubic yards of uncontaminated earthen fill material will be required to raise elevations of the submerged lands to the appropriate height. The volume of earthen fill material is the maximum amount of material estimated to be needed. The fill material will be beneficial use of dredged material from the Mid-Bay Reach of the Houston Ship Channel (Figure 5), from a direct dredge borrow source area (Figure 4), or obtained from an upland borrow site. Borrow sites determined to be suitable from an engineering perspective would be evaluated for environmental conditions to ensure that any cultural and/or sensitive resources are properly addressed. For any of these borrow sites, the material would be mixed with water, requiring a settlement period and the controlled discharge of decant water from the placement area. The final elevation of the area with earthen fill will be such that it will support scrub shrub nesting species of colonial waterbirds. The height of any temporary or permanent structure and construction methods required to contain the earthen fill would be determined by the type of material used and its estimated water content. Location of the structures would ensure containment and settlement of the fill materials, using best management practices (BMPs).

Material from the borrow source area would be mechanically excavated or hydraulically dredged. Excavators used may include a dragline or long-arm excavator to place material on barges for transport from the borrow site to the island site. Hydraulic dredge would use a cutter-head because it does not pose a significant risk to pelagic aquatic organisms. Placement of dredge pipe will avoid disturbance to sensitive resource areas such as oyster reefs and seagrass beds. The pipe would be routed to avoid laying on top of these resource areas and any equipment will avoid them as well. Any areas containing such resources in the construction and transport area of each project site will be visibly marked prior to start of construction. Material would be transported to the island from the borrow site area via a hydraulic dredge pipeline or by barge if a mechanical dredge (dragline) is used.

All environmental reviews required for the placement of the material obtained as part of a beneficial use process would be completed by the other project (e.g. a navigation improvement project). If a beneficial use site under NOAA's jurisdiction is selected, documentation of the environmental reviews and relevant consultations will be provided to NMFS, as appropriate. If a direct dredge borrow source area is used, the borrow area would be located in close proximity of the project site as feasible and would use surface bay bottom sediments. If earthen fill material is obtained from a more distant borrow area such as upland site, the material would meet engineering requirements and the site would be reviewed and approved by state and federal resource agencies for cultural and sensitive resources including protected and at-risk species, wetlands, contaminants, and cultural resources.

Measures to control turbidity caused by construction activities, decant water, and sediment movement would be in place to ensure sensitive habitats are protected, water quality standards are met, and sensitive resources are not affected. These measures may include appropriate water control structures to decant water (structures that allow water to exit the placement area while at the same time retain sediments within the placement area), as well as the installation of silt fences/curtains, and/or temporary levees to control sediments and avoid negative impacts associated with the fill placement.

In general, construction may require the use of barges, small watercraft, large track hoe excavators, earth moving equipment, hydraulic or mechanical dredges, and a dockside staging area. The type of dredge chosen for use will not affect sea turtles. For example, a cutterhead dredge is the hydraulic dredge that is anticipated for use. Hopper dredges will not be used for the project. The mechanical dredge used by this project would be a dragline. Methods and tools will be approved by the professional engineer and the project team prior to implementation.

Equipment and materials for the construction activities would be transported via roads and via marine waterways. The nearest boat launch to the project site is at San Leon (April Fool's Point) and is approximately 1 mile away (Figure 4). This dock may be used to load material for transport to the project area. There are other facilities present that may serve this purpose. If barges are used, they will likely enter the project area from the Houston Ship Channel or Dickinson Bay Channel (Figures 4 and 5). The Texas General Land Office has identified places to access to coastal waterways at [http://www.glo.texas.gov/texas-beach-access/beach\\_bay.html](http://www.glo.texas.gov/texas-beach-access/beach_bay.html). Information specific to Galveston County is located at <http://www.glo.texas.gov/texas-beach-access/pdf/beach-bay/Galveston.pdf>.

The island restoration area and the location where fill material will be obtained will have a staging area identified. The locations for staging sites will be placed to avoid sensitive resource areas such as oyster reefs and seagrass beds. Equipment may be staged at these locations for a period of time up to several weeks and or months. The staging areas will be adjacent to the location where sediment sources are obtained (Mid-Bay Reach of the Houston Ship Channel, the direct dredge borrow source area, or the upland borrow area).

*Direct Dredge Borrow source area*

A direct borrow source may be used to obtain the earthen fill material required to build the island. The location of the direct dredge borrow source area is shown on Figure 4. Within that area, the specific location chosen will be based on several factors including the absence of sensitive resources (e.g. oyster reef or seagrasses), geotechnical and sediment quality, nearby commercial and/or recreational activities, and lateral extent of available material (avoiding a deep borrow site). Within the direct dredge borrow source area, the PE will perform geotechnical investigations to determine potential sources of preferred and suitable sediments. Any potential sources that contain sensitive resources such as oyster reef or seagrass beds will be avoided. The resulting footprint of the borrow site within the direct dredge borrow source area will be no larger than about 562,500 square feet in area with a depth of no more than 5 feet below grade. Although this direct dredge source area is much larger than needed, it is anticipated that approximately only 76,000 cubic yards of material would be dredged to provide the fill material needed for island construction. The shallow depth of 5 feet below grade shall minimize the potential for anoxic conditions occurring within the borrow site.

Material from a direct dredge borrow source would be mechanically excavated or hydraulically dredged. Excavators used may include a dragline or long-arm excavator to place material on barges for transport to the island site. Cutter-head dredges or mechanical draglines pose minimal risk to pelagic aquatic organisms. If hydraulic dredging is used, the dredge pipe will avoid disturbance to sensitive resource areas such as oyster reefs and seagrass beds. The pipe would be routed to avoid laying on top of these resource areas and any equipment will avoid them as well. Any areas containing such resources in the construction and transport area of each project site will be visibly marked prior to start of construction. Material would be transported to the island via a hydraulic dredge pipeline or by barge if a dragline is used.

#### *Other sources of fill material*

An alternative source other than that from the direct dredge borrow source area may be used. For an upland borrow site, the contractor will be required to provide documentation that the borrow site meets all engineering, environmental and cultural resource requirements. No upland borrow will be used that affects wetlands or listed species and to the max extent practicable, at-risk species. Additionally, critical habitat will be avoided. Mechanical dredges and barges will be used to borrow and transport upland material used for fill. Mechanically excavated material would be placed on barges and transported to the island site using predesignated access routes depicted in Figure 5.

If earthen fill material is obtained as part of a beneficial use project, that project would be from the Mid-Bay Reach of the Houston Ship Channel between Redfish Island and Morgan's Point. Work for this reach of the Houston Ship Channel is currently under planning by the USACE Operations and Maintenance Division. Cutter-head or hydraulic dredges may be used. Material would not be obtained from any dredging projects using hopper dredges. If a beneficial use site under NOAA's jurisdiction is selected, documentation of the environmental reviews and relevant consultations will be provided to NMFS, as appropriate.

#### *Construction on Dickinson Bay Island*

Breakwaters, armored levees, and/or other levees would be used to protect the island from erosion and to act as containment for the earthen fill material. Graded stone, typically limestone will be used to construct the breakwaters or armoring. The amount and size of rock used will be dependent on several factors including expected wave and current energy, whether the breakwaters or armored levees will be used for containment and dewatering of sediments or only for erosion protection. Those for containment are typically higher in elevation and larger than those used solely for erosion protection. These considerations along with physical data from the site will be evaluated by a qualified coastal professional engineer and the project team prior to selection of design. The project team may include staff from Texas Parks and Wildlife Department (TPWD), USFWS, and Galveston Bay Foundation. The source for the material is expected to be from known and existing limestone quarries used for coastal construction projects across the western Gulf of Mexico. During construction, open tidal water areas of the site may need to be enclosed to contain material. Any such affected open water areas would follow: Measures for Reducing Entrapment Risk to Protected Species, May 22, 2012.

[http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/entrapment\\_bmps\\_final.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/entrapment_bmps_final.pdf).

#### Vegetation Planting

Once the earthen fill has dewatered and sediments have settled, three acres of the area that received earthen fill are proposed to be planted with shrub-scrub vegetation to help promote desired vegetation establishment. Plants used will be species documented from similar island sites and be propagated from stock located on the upper Texas coast. Species under consideration include but are not limited to those shown in Table 2. A Vegetation Planting Plan modified from and based on the Natural Resources Conservation Service (NRCS) Publication NRCS-TX-612 would be developed prior to implementation (NRCS 2013). This plan will provide specifications for the species of native vegetation to be used; acceptable source stock; planting densities and locations on the island for planting; survival targets and adaptive management strategies. The plan will be used by the contractor and the project team. Expected plant survival is approximately 60% at the end of the 5-year monitoring period. Protective measures may include trunk collars or wire exclusion cages to protect saplings from herbivory or trampling during the first few years after planting. Time of year as well as substrate salinity will determine the timing for planting. It is anticipated that this will take place approximately one year after construction, depending on environmental conditions.

Table 2. Examples of native scrub shrub species proposed for transplanting.

Common Name	Scientific Name
Colima	<i>Zanthoxylum fagara</i>
Woollybucket Bumelia	<i>Sideroxylon lanuginosum</i>
Prickly Pear Cactus	<i>Opuntia dillenii</i>

Common Name	Scientific Name
Desert Olive	<i>Forestiera augustifolia</i>
Huisache	<i>Acacia farnesiana</i>
Jerusalem Thorn	<i>Parkinsonia aculeata</i>

Construction Schedule

Construction would take approximately 6 months to complete and occur any time of year.

Describe permanent and temporary impacts, duration of temporary impacts, dust, erosion, and sedimentation controls

Permanent impacts result from an alteration in habitat type which will benefit nesting birds in the long term.

Construction activities for this project may cause temporary impacts to aquatic fauna that use the area. If an upland borrow site is chosen, there may be temporary impacts to wildlife. Critical habitat will not be impacted. This primarily includes the proposed island site and direct dredge borrow source area. The presence of vessels, equipment and people in the area may disturb animals using the water’s surface (birds) and aquatic organisms below the water surface. These impacts would last for the duration of construction, which is estimated to be less than 6 months. Permanent impacts will include establishment of a 4 acre islands in the area.

If the direct dredge borrow source area is used, a borrow site no larger than approximately 562,500 square feet in area and no deeper than 5 feet below grade would be excavated. This site would accrete sediments delivered from the surrounding bay waters. Some temporary turbidity would take place but be minimized through the use of silt fences and other water quality BMPs. Impacts associated with beneficial use of dredged material would include some turbidity; however, it would be minimized through the use of appropriate BMPs. These measures include appropriate water control structures to decant water such as silt fences, hay bales, filter-fabric, and temporary levees to control sediments and avoid negative impacts associated with the fill placement.

There will be no significant impacts due to dust because sediments deposited will be mixed with water, keeping airborne particles to a minimum. Impacts due to dust and erosion would also be minimized by the best management practices that were discussed above. No hazardous waste would be created during construction. All hazardous substances (e.g. oils, hydraulic fluids, and fuels) handled during construction would be contained and appropriate barriers would be in place to ensure the protection of adjacent water resources from potential spills and leaks. In the event of a discharge of oil or release of hazardous substances, the release would be reported to the National Response Center (800-424-8802) and Texas Emergency Oil Spill and Hazardous Substance Reporting line (800-832-8224) as required.

BMPs in accordance with Occupational Safety and Health Administration and state and local requirements would be incorporated into construction activities on site to ensure the proper handling, storage, transport and disposal of all hazardous materials.

Permanent impacts result from an alteration in habitat type which will benefit nesting birds in the long-term. Permanent impacts would result from the conversion of 4 acres of subtidal bay and bay bottom habitat into upland and intertidal habitat. Additionally, a maximum of about 12 acres of bay bottom habitat would be excavated and moved to an alternate location in the bay. The site would recolonize by benthic organisms and would accrete with sediments over time. Beyond the vegetated plantings, natural colonization will occur and will provide, in part, grassy substrate which could be used by the colonial nesting birds. The breakwaters, armored levees, other levee and land height would protect the site from erosion.

Is the project part of a larger project or plan?

This project is one of four bird rookery restoration projects to occur in Texas as part of Phase IV Early Restoration funding from the BP oil spill (Figure 1). Restoration and protection of Dickinson Bay Island II in Galveston Bay supports the needs or goals of multiple conservation plans. Plans include but are not limited to the following national, state and regional planning documents:

- The Galveston Bay Plan: The Comprehensive Conservation and Management Plan for the Galveston Bay Ecosystem (Galveston Bay Estuary Program [GBEP] 1994);
- Galveston Bay Habitat Conservation Blueprint: A Plan to Restore the Habitats and Heritage of Galveston Bay Habitat (Galveston Bay Foundation 1998);
- Waterbird Conservation for the Americas: The North American Waterbird Conservation Plan, Version 1 (Kushlan et. al. 2002);
- Southeast United States Regional Waterbird Conservation Plan (U.S. Fish and Wildlife Service [USFWS] and North Carolina Audubon Society 2006);
- Strategic Plan: The Coastal Program Stewardship of Fish and Wildlife Through Voluntary Conservation Regional Step-Down Plan Region 2 (Texas) Part 2 of 3 FY 2006-2010 (USFWS 2006);
- Charting the Course to 2015: Galveston Bay Strategic Action Plan (GBEP 2009);
- Gulf Coast Joint Venture Conservation Planning for Reddish Egret (Vermillion and Wilson 2009);
- Texas Conservation Action Plan 2012 – 2016: Gulf Coast Prairies and Marshes Handbook (Texas Parks and Wildlife Department [TPWD] 2012);
- Texas Mid-Coast Initiative Area Fact Sheet (Gulf Coast Joint Venture 2012);
- Reddish Egret Conservation Action Plan (Wilson et. al. 2014); and
- Draft Texas Colonial Waterbird Rookery Island Conservation Plan (Audubon Texas 2014).



What permits will need to be obtained?

USACE Section 10 and Section 404 (combined) permit will be needed for this project. The lands are managed by the State of Texas and would be leased to Galveston Bay Foundation for management of the island. Any required leases or modifications will be acquired prior to construction.

**#3 Attach a separate map showing project footprint, avoidance areas, construction accesses, stanging/laydown areas. \*\*If construction involves overwater structures, pilings and sheetpiles, boat slips, boat ramps, shoreline armoring, dredging, blasting, or artificial reefs, list the method here, but complete the next section(s) in detail.**

Dickinson Bay Island II may be constructed in either a northern location or a southern location and the major portion of the potential impact area is identified in Figures 3 thru 5. The nearest boat launch to the project site is at San Leon (April Fool's Point) and is approximately 1 mile away. This dock may be used to load material for transport to the project area. There are other facilities present that may serve this purpose. If barges are used, they will likely enter the project area from the Houston Ship Channel or Dickinson Bay Channel (Figure 5). The Texas General Land Office has identified places to access to coastal waterways at [http://www.glo.texas.gov/texas-beach-access/beach\\_bay.html](http://www.glo.texas.gov/texas-beach-access/beach_bay.html). Information specific to Galveston County is located at <http://www.glo.texas.gov/texas-beach-access/pdf/beach-bay/Galveston.pdf>. The existing channel will be used for navigation. The nearby pipelines will be avoided and not impacted (Figure 8). Although there are oyster reefs and other shell substrate in Dickinson Bay, there are no reefs or shell substrates present within the project footprint or expected within the direct dredge borrow area.

The area that may be directly or indirectly affected includes the transportation corridors; breakwater, armored levee, or other structure; direct dredge borrow site, Mid-Bay Reach of the Houston Ship Channel, or upland borrow site; vegetation plantings; earthen fill; construction area; and staging areas (Figures 3 thru 5).

**Part 3: Specific In-Water Construction Methods (Provide a detailed account of construction methods. It is important to include step-by-step descriptions of how demolition or removal of structures is conducted and if any debris will be moved and how. Describe how construction will be implemented, what type and size of materials will be used and if machines will be used, manual labor, or both. Indicated if work will be done from upland, barge, or both.)**

See above.

**a. Overwater Structures**

**#1 Is the proposed use of this structure for a docking facility or an observation platform? No**

**#2 If no, is this a fishing pier? Public or Private? How many people are expected to fish per day? How do you plan to address hook and line captures? This is not a fishing pier.**

**#3 Use of "Dock Construction Guidelines"?**

<http://sero.nmfs.noaa.gov/pr/Endangered%20Species/Section%207/DockGuidelines.pdf>

This is not applicable. No dock is being constructed.

**#4 Type of decking: Grated – 43% open space; Wooden planks or composite planks – proposed spacing? There is no decking**

**#5 Height above Mean High Water (MHW) elevation?**

The target elevation for the restored island would place the crown at least 4 feet above mean tide level post-settlement sloping to existing grades. These elevations could be adjusted once the designs are finalized. Land heights will be appropriate for ground nesting birds.

**#6 Directional orientation of main axis of dock?**

Not applicable.

**#7 Overwater area (sqft)?**

Not applicable.

**# 8 Use of "Sea Turtle and Smalltooth Sawfish Construction Conditions, March 2006"**

<http://sero.nmfs.noaa.gov/pr/Endangered%20Species/Sea%20Turtle%20and%20Smalltooth%20Sawfish%20Construction%20Conditions%203-23-06.pdf>

These construction guidelines will be followed for the in-water work.

- b. Pilings & Sheetpiles (What type of material is the piling or sheetpiles? What size and how many will be used? Method used to install: impacthammer, vibratory hammer, jetting, etc.?)** Not applicable.
- c. Boat Slips (Describe the number and size of slips and if the number of new slips changes from what is currently available at the project. Indicate how many are wet slips and how many are dry slips. Estimate the shadow effect of the boats - the area (sqft) beneath the boats that will be shaded.)** Boat slips are not part of this project.
- d. Boat Ramp (Describe the number and size of boat ramps, the number of vessels that can be moored at the site (e.g., staging area) and if this is a public or private ramp. Indicate the boat trailer parking lot capacity, and if this number changes from what is currently available at the project.)** Boat ramps are not part of this project.
- e. Shoreline Armoring (This includes all manner of shoreline armoring (e.g., riprap, seawalls, jetties, groins, breakwaters, etc.). Provide specific information on material and construction methodology used to install the shoreline armoring materials. Include linear footage and square footage. Attach a separate map showing the location of the shoreline armoring in the project area.)**

Figure 3 shows the potential island site location. Figure 6 shows preliminary shoreline armoring design. See above for a description of shoreline armoring and a typical design can be considered in Figure 7.

Measures for Reducing Entrapment Risk to Protected Species, dated May 22, 2012 will be followed ([http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/entrapment\\_bmps\\_final.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/entrapment_bmps_final.pdf)).

- f. Dredging or digging (Provide details about dredge type (hopper, cutterhead, clamshell, etc.), maximum depth of dredging, area (ft<sup>2</sup>) to be dredged, volume of material (yd<sup>3</sup>) to be produced, grain size of material, sediment testing for contamination, spoil disposition plans, and hydrodynamic description (average current speed/direction)). See Section D, Part 2.**

Construction activities at the site would include the placement of approximately 76,000 cubic yards of earthen fill to create an island. Temporary levees would be constructed to contain earthen material. The shoreline would be armored to protect the island. Any open water areas enclosed by construction activities would follow the guidelines indicated in 8.e. above. Appropriate measures to reduce impacts from decant water will be used (see below). Material placed to create the island may require a drying period prior to shaping and sculpting with earth moving equipment.

A direct dredge borrow site may be used to obtain the source material. A borrow source area has been identified and is bounded by the following coordinates: 29.46000° E, 94.91140° W; 29.45790° E, 94.90400° W; 29.45520° E, 94.90500° W; 29.45720° E, 94.91230° W (NAD 83). A small area within the direct dredge borrow source area would be used to provide fill material for this project. The area excavated would be no larger than about 562, 500 square feet in area and would be no deeper than 5 feet below grade. The most desirable material used as fill for the island would have a relatively high sand content. However, material comprised of silts and clays would also be acceptable. Sensitive resources would be avoided as described in relevant environmental reviews and consultations. Over time the excavated area would accrete sediments delivered from surrounding bay waters. Some temporary turbidity would take place but be minimized by operation through the use of silt fences and other water quality BMPs. Impacts associated with beneficial use of dredged material would include turbidity impacts; however, these would be minimized through the use of appropriate BMPs. These measures include appropriate water control structures to decant water such as silt fences, hay bales, filter-fabric, and temporary levees to control sediments and avoid negative impacts associated with the fill placement.

There are no known contaminants associated with the direct dredge borrow source area. Screening for potential chemical contaminants will be conducted on a case-by-case basis. For sediments from federally-maintained navigation channels or associated dredged material placement areas, previously collected contaminant analysis and bio-assay data will be obtained from the U.S. Army Corps of Engineers Galveston District (USACE) - Operations Branch records. For bay bottom borrow sites, local and regional knowledge of historical industrial activities as well as regulatory documentation on past and existing facilities in the vicinity of potential sediment borrow sources will be used to determine the likelihood and type of contaminants that might be expected to be encountered during construction. Based upon this information, USACE and state and federal

resource agency personnel will be consulted to determine the amount of sampling and the type of chemical analyses that may be needed.

Equipment and materials for the construction activities would be transported via roads and via marine waterways. The nearby boat docks on April Fool's Point may be used to load and transport materials. Large equipment and materials moved by barges will use the established interconnected waterways. This may include the Dickinson Bay Channel, the Houston Ship Channel and other navigation channels (Figure 5). The island restoration area and the location where fill material will be obtained will have a staging area. The locations for staging sites will be placed to avoid impacting sensitive resource areas such as seagrass beds. Equipment may be staged at these locations for a period of time up to several weeks and or months. The staging areas will be adjacent to the location where construction activities are taking place (Dickinson Bay, Houston Ship Channel, the direct dredge borrow source area, or the upland borrow location).

There will be no significant impacts due to dust because sediments deposited will be mixed with water, keeping airborne particles to a minimum. In addition, the area proposed to restore the island is in open water in Dickinson Bay, and therefore, will not be affecting any residences. Impacts due to dust and erosion would also be minimized by the best management practices that were discussed above. No hazardous waste would be created during construction. All hazardous substances, such as oils, hydraulic fluids, and fuels, handled during construction would be contained and appropriate barriers would be in place to ensure the protection of adjacent water resources from potential spills and leaks. In the event of a discharge of oil or release of hazardous substances, the release would be reported to the National Response Center (800-424-8802) and Texas Emergency Oil Spill and Hazardous Substance Reporting line (800-832-8224) as required. BMPs in accordance with Occupational Safety and Health Administration and state and local requirements would be incorporated into construction activities on site to ensure the proper handling, storage, transport and disposal of all hazardous materials.

Permanent impacts result from an alteration in habitat type which will benefit nesting birds in the long term. Beyond the vegetated plantings, natural colonization will occur and will provide, in part, grassy substrate which could be used by the colonial nesting birds. The breakwaters, armored levees, other levee and land height may decrease wave energy. Oyster reefs will be avoided during construction.

The construction activities including transportation, mining and transportation of fill material, and staging areas associated with the restoration of Dickinson Bay Island will not adversely affect any sensitive resources. Sediment and turbidity controls will be in place so that nearby sensitive habitats (e.g., oyster reefs) are not significantly affected. Although there will be noise and equipment activity associated with movement of construction materials, mobile organisms may avoid the area which will eliminate the chance for significant impacts to these resources. Some sessile organisms may be affected; however, best management practices will be employed to

minimize or prevent any significant impacts to fish and wildlife and/or sensitive resources such as oyster reef beds. Refer to descriptions below for further details.

Several different types of barges and vessels may be used in construction operations. A hydraulic cutter-head dredge vessel would be used in conjunction with this method for moving material from the borrow site to the island construction site. Smaller water craft may also be used to transport personnel and small quantities of material between larger barges and vessels. In general, all types of barges will be operated to avoid depths inconsistent with their draft. Barges bearing significant amounts of material from source sites, e.g. limestone rock, will be staged near but outside of navigation channels. When appropriate and practical, material will be transferred to barges of shallower draft (placement barges) in order to reach the site. Barges containing work equipment such as excavators and/or draglines would also be used. Propeller wash of the bay bottom and substrate will be avoided. No access channels are anticipated for this site.

- g. Blasting (Projects that use blasting might not qualify as “minor projects,” and a Biological Assessment (BA) may need to be prepared for the project. Arrange a technical consultation meeting with NMFS Protected Resources Division to determine if a BA is necessary. Please include explosive weights and blasting plan.)**. This project does not involve blasting activities.
  
- h. Artificial Reefs (Provide a detailed account of the artificial reef site selection and reef establishment decisions (i.e., management and siting considerations, stakeholder considerations, environmental considerations), deployment schedule, materials used, deployment methods, as well as final depth profile and overhead clearance for vessel traffic. For additional information and detailed guidance on artificial reefs, please refer to the artificial reef program websites for the particular state the project will occur in.** Artificial reef creation is not part of this project.

## Section E.

### #1 List all species, critical habitat, proposed species and proposed critical habitat that may be found in the action area.

There is no critical habitat within the action area.

Attwater's Greater prairie chicken, *Tympanuchus cupido attwaterii* – Endangered

Piping plover, *Charadrius melodus* – Threatened

Red knot, *Caladris canutus rufa* - Threatened

Sprague's Pipit, *Anthus spragueii* – Candidate Species

West Indian Manatee, *Trichechus manatus* – Endangered

Green Sea Turtle, *Chelonia mydas* – Endangered\*

DRAFT/DELIBERATIVE; ATTORNEY WORK PRODUCT; ATTORNEY CLIENT COMMUNICATION; PRIVILEGED AND/OR CONFIDENTIAL

Hawksbill Sea Turtle, *Eretmochelys imbricata* – –Endangered\*

Kemp's Ridley Sea Turtle, *Lepidochelys kempii* — Endangered\*

Leatherback Sea Turtle, *Demochelys coriacea* – –Endangered\*

Loggerhead Sea Turtle, *Caretta caretta* – –Threatened\*

Smalltooth Sawfish, *Pristis pectinata* – Endangered

\* - This biological assessment is limited to potential impacts to these species within the bay and outside of their nesting habitat (beaches) since there is no nesting habitat within the action area. This project will have no impacts or influence to Gulf beach front.

## **#2 Attach a separate map identifying species/critical habitat locations within the action area.**

Maps below are indicative of species locations as displayed by USFWS. There is no critical habitat for any species within the project area. Distribution maps were downloaded from the USFWS Ecological Services webpage for Region 2 on 27 February 2015;

[http://www.fws.gov/southwest/es/ES\\_ListSpecies.cfm](http://www.fws.gov/southwest/es/ES_ListSpecies.cfm) (see attached figures). **Section F**

### **Part 1:**

**Explain the potential beneficial and adverse effects to each species listed above (Describe what, when, and how the species will be impacted and the likely response to the impact. Be sure to include direct, indirect, interdependent, interrelated, connected actions, and cumulative impacts. Where possible, quantify effects. If species are present (or potentially present) and will not be adversely affected describe your rationale. If species are unlikely to be present in the general area or action area, explain why. This justification provides documentation for your administrative record, avoids the need for additional correspondence regarding the species, and helps expedite review.)**

#### Attwater's Greater prairie-chicken:

There will be no effects to this species. The species occupies large expanses of coastal prairie. Appropriate habitat for this species does not occur in the open waters of Dickinson Bay (where Dickinson Bay Island II is proposed to be constructed). An upland borrow site would not be used if Attwater's greater prairie-chickens are using the area.

#### Piping Plover:

There will be no effect to this species. Habitat is not present on the open waters of Dickinson Bay. Upland excavation activities will not occur in habitat used by this species.

#### Red Knot:

There will be no effect to this species. Habitat is not present on the open waters of Dickinson Bay. Upland excavation activities will not occur in habitat used by this species.

Sprague's Pipit:

The project may affect but is not likely to adversely affect this species. Habitat is not present on the open waters of Dickinson Bay. If upland borrow source is used, the site may provide winter habitat for this species. Construction activities associated with an upland borrow site may occur in the winter when the species could be present. Sprague's pipit, if present and disturbed by the upland borrow site activities would have access to nearby habitat that is within their normal flying distances for daily foraging movement.

West Indian Manatee:

The project is not likely to adversely affect this species. This species is uncommon in Texas waters and is not likely to occur in the action area (Fertl and others 2005). If present, the conservation measures below in Section G will be followed.

Green Sea Turtle:

This project may affect but is not likely to adversely affect this species. No sea turtle nesting activities are expected to occur here since there is no beach habitat. Green Sea Turtles do occur in Galveston Bay and may be in the water during construction activities including excavation of island building material on submerged lands near the island. However, methods used to remove material from the borrow site will be with a mechanical dredge (dragline) and barge or a hydraulic dredge (cutter-head) and pipeline dragline, both of which would have minimal impacts to pelagic species. Impacts to bay bottom would have minimal impacts to foraging habitat for this species because this project will avoid and/or minimize impacts to seagrass beds and oyster reef habitats. Green sea turtles are specialist feeders that target sponges and seagrass or macroalgae. Substrate at the aquatic borrow areas largely consists of unvegetated sandy bottom.

Hawksbill Sea Turtle:

This project may affect but is not likely to adversely affect this species. No sea turtle nesting activities are expected to occur here since there is no beach habitat. This species is rarely seen in Galveston Bay. These sea turtles may be in the water during construction activities including excavation of island building material on submerged lands near the island. However, methods used to remove material from the borrow site will be with mechanical dredge (dragline) and barge or a hydraulic dredge (cutter-head) and pipeline, both of which would have minimal impacts to pelagic species. Impacts to bay bottom would have minimal impacts to foraging habitat for this species because this project will avoid and/or minimize impacts to seagrass beds and oyster reef habitats. Hawksbill sea turtles are specialist feeders that target sponges and seagrass or macroalgae. Substrate at the dredging and disposal sites largely consists of unvegetated sandy bottom.

Kemp's Ridley Sea Turtle:

This project may affect but is not likely to adversely affect this species. No sea turtle nesting activities are expected to occur here since there is no beach habitat. Kemp's Ridley sea turtles do occur in Galveston Bay and may be in the water during construction activities including excavation of island building material on submerged lands near the island. However, methods used to remove material from the borrow site will be with a mechanical dredge (dragline) and barge or a hydraulic dredge (cutter-head) and pipeline, both of which would have minimal impacts to pelagic species.

The effects due to loss of foraging habitat on Kemp's ridley sea turtles are insignificant. This species is a generalist carnivore, typically preying on benthic mollusks and crustaceans in the nearshore environment. Kemp's ridley can be found foraging in shallow sandy habitat. However, any impacts to foraging habitat for Kemp's ridleys will be temporary and would only affect a small area relative to the foraging habitat available in the nearshore marine environment off Texas.

Leatherback Sea Turtle:

This project may affect but is not likely to adversely affect this species. No sea turtle nesting activities are expected to occur here since there is no beach habitat. This species is rarely seen in Galveston Bay. These sea turtles may be in the water during construction activities including excavation of island building material on submerged lands near the island. However, methods used to remove material from the borrow site will be with a mechanical dredge (dragline) and barge or a hydraulic dredge (cutter-head) and pipeline, both of which would have minimal impacts to pelagic species. Impacts to bay bottom would have minimal impacts to foraging habitat for this species since it is a pelagic feeder.

Loggerhead Sea Turtle:

This project may affect but is not likely to adversely affect this species. No sea turtle nesting activities are expected to occur here since there is no beach habitat. This species is rarely seen in Galveston Bay. These sea turtles may be in the water during construction activities including excavation of island building material on submerged lands near the island. However, methods used to remove material from the borrow site will be with a mechanical dredge (dragline) and barge or a hydraulic dredge (cutter-head) and pipeline, both of which would have minimal impacts to pelagic species.

The effects due to loss of foraging habitat on loggerhead sea turtles are insignificant. This species is a generalist carnivore, typically preying on benthic mollusks and crustaceans in the nearshore environment. Loggerheads can be found foraging in shallow sandy habitat. However, any impacts to foraging habitat for loggerheads will be temporary and would only affect a small area relative to the foraging habitat available in the nearshore marine environment off Texas.

Smalltooth Sawfish:

There will be no impacts to this species from this project. This species is considered extirpated in Texas.



## Part 2:

**Explain the potential beneficial and adverse effects to critical habitat listed above (Describe what, when, and how the critical habitat will be impacted and the likely response to the impact. Be sure to include direct, indirect, interdependent, interrelated, connected actions, and cumulative impacts. Where possible, quantify effects (e.g. acres of habitat, miles of habitat). Describe your rationale if designated or proposed critical habitats are present and will not be adversely affected.**

There is no critical habitat in the action area.

## Section G

### Part 1

**Explain the actions to reduce adverse effects to each species listed above (For each species for which impacts were identified, describe any conservation measures (e.g. BMPs) that will be implemented to avoid or minimize the impacts. Conservation measures are designed to avoid or minimize effects to listed species and critical habitats or further the recovery of the species under review. Conservation measures are considered part of the proposed action and their implementation is required. Any changes to, modifications of, or failure to implement these conservation measures may result in a need to reinitiate this consultation.)**

#### Attwater's Greater prairie-chicken:

There will be no effects to this species. No additional actions are necessary.

#### Piping Plover:

There will be no effects to this species. No additional actions are necessary.

#### Red Knot:

There will be no effects to this species. No additional actions are necessary.

#### Sprague's Pipit:

The project may affect but is not likely to adversely affect this species. Construction activities associated with an upland borrow site may occur in the winter when the species could be present. Sprague's pipit, if present and disturbed by the upland borrow site activities would have access to nearby habitat that is within their normal flying distances for daily foraging movement. No additional actions are necessary.

#### West Indian Manatee:

The project may affect but is not likely to adversely affect this species. All construction personnel will be notified of the potential presence of West Indian Manatee in the water and reminded of the criminal and civil penalties associated with harassing, injuring, or killing West Indian Manatees. All workers will

be educated that there could be West Indian manatees in the water and will be advised to look for manatees and, if observed, wait until manatees leave the area to put the equipment in the water. Care will be taken when using equipment in the water to ensure that no harm is caused to any West Indian Manatee that may be nearby. Should a West Indian Manatee come within 50 foot of the project area during construction activities, work would immediately cease until the West Indian Manatee has moved away from the project area on its own. Construction noise will be kept to the minimum feasible.

Green Sea Turtle:

The project may affect but is unlikely to adversely affect this species. Sea turtle and smalltooth sawfish construction conditions and measures for reducing entrapment risk to protected species will be followed for all aspects of this project

([http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/sea\\_turtle\\_and\\_smalltooth\\_sawfish\\_construction\\_conditions\\_3-23-06.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/sea_turtle_and_smalltooth_sawfish_construction_conditions_3-23-06.pdf);

[http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/entrapment\\_bmps\\_final.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/entrapment_bmps_final.pdf)).

Methods used to remove material from the borrow site will be with a hydraulic dredge (cutter-head design) or a mechanical dredge (dragline) both of which would have minimal impacts to pelagic species. Sea turtles may be affected by dredging activities if they were to be struck by the transit and anchoring of the dredge at the project site or by the placement of fill material below mean high water. However, these effects are discountable because sea turtles are highly mobile and can avoid the area during dredging and sand placement activities and through the implementation of NMFS' Sea Turtle and Smalltooth Sawfish Construction Conditions. Application of fill material is a slow process allowing time for sea turtles to leave the area.

NMFS has previously determined that non-hopper-type dredging activities are unlikely to adversely affect sea turtles. Hydraulic dredges are not known to take sea turtles whereas hopper dredges are known to take sea turtles. Therefore hopper dredges will not be used in this project.

Hawksbill Sea Turtle:

The project may affect but is unlikely to adversely affect this species. Sea turtle and smalltooth sawfish construction conditions and measures for reducing entrapment risk to protected species will be followed for all aspects of this project

([http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/sea\\_turtle\\_and\\_smalltooth\\_sawfish\\_construction\\_conditions\\_3-23-06.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/sea_turtle_and_smalltooth_sawfish_construction_conditions_3-23-06.pdf);

[http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/entrapment\\_bmps\\_final.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/entrapment_bmps_final.pdf)).

Methods used to remove material from the borrow site will be with a hydraulic dredge (cutter-head design) or a mechanical dredge (dragline) both of which would have minimal impacts to pelagic species. Sea turtles may be affected by dredging activities if they were to be struck by the transit and anchoring of the dredge at the project site or by the placement of dredged material below mean high water.

However, these effects are discountable because sea turtles are highly mobile and can avoid the area during dredging and sand placement activities and through the implementation of NMFS' Sea Turtle and Smalltooth Sawfish Construction Conditions. Application of fill material is a slow process allowing time for sea turtles to leave the area.

NMFS has previously determined that non-hopper-type dredging activities are unlikely to adversely affect sea turtles. Hydraulic dredges are not known to take sea turtles whereas hopper dredges are known to take sea turtles. Therefore hopper dredges will not be used in this project.

#### Leatherback Sea Turtle:

The project may affect but is unlikely to adversely affect this species. Sea turtle and smalltooth sawfish construction conditions and measures for reducing entrapment risk to protected species will be followed for all aspects of this project

([http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/sea\\_turtle\\_and\\_smalltooth\\_sawfish\\_construction\\_conditions\\_3-23-06.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/sea_turtle_and_smalltooth_sawfish_construction_conditions_3-23-06.pdf);  
[http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/entrapment\\_bmps\\_final.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/entrapment_bmps_final.pdf)).

Methods used to remove material from the borrow site will be with a hydraulic dredge (cutter-head design) or a mechanical dredge (dragline) both of which would have minimal impacts to pelagic species. Sea turtles may be affected by dredging activities if they were to be struck by the transit and anchoring of the dredge at the project site or by the placement of dredged material below mean high water. However, these effects are discountable because sea turtles are highly mobile and can avoid the area during dredging and sand placement activities and through the implementation of NMFS' Sea Turtle and Smalltooth Sawfish Construction Conditions. Application of fill material is a slow process allowing time for sea turtles to leave the area.

NMFS has previously determined that non-hopper-type dredging activities are unlikely to adversely affect sea turtles. Hydraulic dredges are not known to take sea turtles whereas hopper dredges are known to take sea turtles. Therefore hopper dredges will not be used in this project.

#### Kemp's Ridley Sea Turtle

The project may affect but is unlikely to adversely affect this species. Sea turtle and smalltooth sawfish construction conditions and measures for reducing entrapment risk to protected species will be followed for all aspects of this project

([http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/sea\\_turtle\\_and\\_smalltooth\\_sawfish\\_construction\\_conditions\\_3-23-06.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/sea_turtle_and_smalltooth_sawfish_construction_conditions_3-23-06.pdf);  
[http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/entrapment\\_bmps\\_final.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/entrapment_bmps_final.pdf)).

Methods used to remove material from the borrow site will be with a hydraulic dredge (cutter-head design) or a mechanical dredge (dragline) both of which would have minimal impacts to pelagic species.

Sea turtles may be affected by dredging activities if they were to be struck by the transit and anchoring of the dredge at the project site or by the placement of dredged material below mean high water. However, these effects are discountable because sea turtles are highly mobile and can avoid the area during dredging and sand placement activities and through the implementation of NMFS' Sea Turtle and Smalltooth Sawfish Construction Conditions. Application of fill material is a slow process allowing time for sea turtles to leave the area.

NMFS has previously determined that non-hopper-type dredging activities are unlikely to adversely affect sea turtles. Hydraulic dredges are not known to take sea turtles whereas hopper dredges are known to take sea turtles. Therefore hopper dredges will not be used in this project.

Loggerhead Sea Turtle:

The project may affect but is unlikely to adversely affect this species. Sea turtle and smalltooth sawfish construction conditions and measures for reducing entrapment risk to protected species will be followed for all aspects of this project

([http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/sea\\_turtle\\_and\\_smalltooth\\_sawfish\\_construction\\_conditions\\_3-23-06.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/sea_turtle_and_smalltooth_sawfish_construction_conditions_3-23-06.pdf);

[http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/entrapment\\_bmps\\_final.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/entrapment_bmps_final.pdf)).

Methods used to remove material from the borrow site will be with a hydraulic dredge (cutter-head design) or a mechanical dredge (dragline) both of which would have minimal impacts to pelagic species. Sea turtles may be affected by dredging activities if they were to be struck by the transit and anchoring of the dredge at the project site or by the placement of dredged material below mean high water. However, these effects are discountable because sea turtles are highly mobile and can avoid the area during dredging and sand placement activities and through the implementation of NMFS' Sea Turtle and Smalltooth Sawfish Construction Conditions. Application of fill material is a slow process allowing time for sea turtles to leave the area.

NMFS has previously determined that non-hopper-type dredging activities are unlikely to adversely affect sea turtles. Hydraulic dredges are not known to take sea turtles whereas hopper dredges are known to take sea turtles. Therefore hopper dredges will not be used in this project.

Smalltooth Sawfish:

This project will have no effect on this species. It is considered extirpated from Texas.

## Part 2

**Explain the actions to reduce adverse effects to critical habitat listed above (For critical habitat for which impacts were identified, describe any conservation measures (e.g. BMPs) that will be implemented to avoid or minimize the impacts. Conservation measures are designed to avoid or minimize effects to listed species and critical habitats or further the recovery of the species under**

**review. Conservation measures are considered part of the proposed action and their implementation is required. Any changes to, modifications of, or failure to implement these conservation measures may result in a need to reinitiate this consultation.)**

There is no critical habitat within the project area.

## **Section H. Effect Determination Requested**

Attwater's Greater prairie chicken – No Effect

Piping plover – No Effect

Red knot – No Effect

Sprague's Pipit – May affect, Not Likely to Adversely Effect

West Indian Manatee – May Affect, Not Likely to Adversely Affect

Green Sea Turtle – May Affect, Not Likely to Adversely Affect

Hawksbill Sea Turtle – May Affect, Not Likely to Adversely Affect

Kemp's Ridley Sea Turtle – May Affect, Not Likely to Adversely Affect

Leatherback Sea Turtle – May Affect, Not Likely to Adversely Affect

Loggerhead Sea Turtle – May Affect, Not Likely to Adversely Affect

Smalltooth Sawfish – No Effect

## **Section I. Bald Eagles**

Are bald eagles present in the action area? No eagles nest within 660 feet of Dickinson Bay Islands Phase II. The island is being constructed in open water. If Bald Eagles are observed, these conservation measures will be followed:

1. If bald eagle breeding or nesting behaviors are observed or a nest is discovered or known, all activities (e.g., walking, camping, clean-up, use of a UTV, ATV, or boat) should avoid the nest by a minimum of 660 feet. If the nest is protected by a vegetated buffer where there is *no* line of sight to the nest, then the minimum avoidance distance is 330 feet. This avoidance distance shall be maintained from the onset of breeding/courtship behaviors until any eggs have hatched and eaglets have fledged (approximately 6 months).
2. If a similar activity (e.g., driving on a roadway) is closer than 660 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated activity.

3. If a vegetated buffer is present and there is no line of sight to the nest and a similar activity is closer than 330 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated activity.

4. In some instances activities conducted within 660 feet of a nest may result in disturbance, particularly for the eagles occupying the Mississippi barrier islands. If an activity appears to cause initial disturbance, the activity shall stop and all individuals and equipment will be moved away until the eagles are no longer displaying disturbance behaviors.

If these measures cannot be implemented, then you must contact the Service's Migratory Bird Permit Office.

Texas – (505) 248-7882 or by email: [permitsR2MB@fws.gov](mailto:permitsR2MB@fws.gov)

## **Section J. Migratory Birds**

The Dickinson Bay Island II site is located in open water. The area does support aquatic dependent migratory birds. The different bird taxonomic guilds and their use of the areas are listed below:

Loons and Grebes – This group of birds may use surrounding waters during the fall, winter, and spring to forage. Presence in the area would be based on available forage fish and invertebrates. Construction activities may cause the birds to move out of nearby foraging areas, however, no take is anticipated

Waterfowl – Surrounding bay waters are used by several species of wintering waterfowl primarily bay ducks. This group may be affected by construction activities. The temporary nature of construction and this bird group's use of other available waters nearby will avoid take.

Pelicans and Cormorants – These may be affected when foraging in the area. Birds foraging may be disturbed by activities but available habitat is present at other locations of the bay and the birds will move to other nearby sites.

Terns and Gulls – Birds foraging may be disturbed by activities but available habitat is present at other locations of the bay and the birds will move to other nearby sites.

The project goal is to increase the number of nesting pairs for colonial waterbirds. The enhancements would also provide more opportunity for many of the above listed bird groups during the non-nesting season.

### **Pre-existing NEPA Documents?**

Yes

**If tiered from a programmatic EIS or EA, then provide the programmatic document or a link below.**

Tiered from the DWH ER Phase III ERP/PEIS which can be found at:

<http://www.gulfspillrestoration.noaa.gov/restoration/early-restoration/phase-iii/>

DRAFT/DELIBERATIVE; ATTORNEY WORK PRODUCT; ATTORNEY CLIENT COMMUNICATION; PRIVILEGED  
AND/OR CONFIDENTIAL

**Name of Person Completing this Form:** Angela Schrift

**Name of Project Lead:**

**Date Form Completed:** 4/2/2015

**Date Form Updated:** 6/30/2015

## References

Audubon Texas. 2014. Draft Texas Colonial Waterbird Rookery Island Conservation Plan.

Fertl, D., A.J. Schiro, G.T. Regan, C.A. Beck, N. Adimey, L. Price-May, A. Amos, G.A.J. Worthy, and R. Crossland. 2005. Manatee Occurrence in the Northern Gulf of Mexico, West of Florida. *Gulf and Caribbean Research* 17: 69-94.  
[http://www.researchgate.net/profile/Graham\\_Worthy/publication/240618487\\_MANATEE\\_OCCURRENCE\\_IN\\_THE\\_NORTHERN\\_GULF\\_OF\\_MEXICO\\_WEST\\_OF\\_FLORIDA/links/00b7d5256a21444796000000.pdf](http://www.researchgate.net/profile/Graham_Worthy/publication/240618487_MANATEE_OCCURRENCE_IN_THE_NORTHERN_GULF_OF_MEXICO_WEST_OF_FLORIDA/links/00b7d5256a21444796000000.pdf)

Galveston Bay Estuary Program (GBEP). 1995. The Galveston Bay Plan: The Comprehensive Conservation and Management Plan for the Galveston Bay Ecosystem. Publication No. GBNEP-49. October.  
<http://gbic.tamug.edu/GBPlan/sections/PrePages.pdf>

GBEP. 2009. Charting the Course to 2015: Galveston Bay Strategic Action Plan.  
<https://www.tceq.texas.gov/publications/gi/gi-385.html>

Galveston Bay Foundation. 1998. Galveston Bay Habitat Conservation Blueprint: A Plan to Restore the Habitats and Heritage of Galveston Bay. <http://gbic.tamug.edu/hcb/hab.htm> Accessed April 2, 2015.

Gulf Coast Joint Venture. 2012. Texas Mid-Coast Initiative Area Fact Sheet.  
[http://www.gciv.org/docs/Texas\\_Mid\\_Coast\\_IA\\_fact\\_sheet\\_Final\\_6\\_18\\_12.pdf](http://www.gciv.org/docs/Texas_Mid_Coast_IA_fact_sheet_Final_6_18_12.pdf)

HDR. 2014. Dickinson Bay Bird Nesting Islands Alternatives Analysis. Prepared for Galveston Bay Foundation.

Kushlan, J.A., M.J. Steinkamp, K.C. Parsons, J. Capp, M.A. Cruz, M. Coulter Davidson, L. Dickson, N. Edelson, R. Elliot, R.M. Erwin, S. Hatch, S. Kress, R. Milko, S. Miller, K. Mills, R. Paul, R. Phillips, J.E. Saliva, B. Syderman, J.L. Trapp, J. Wheeler, K. Wohl. 2002. Waterbird Conservation for the Americas: The North American Waterbird Conservation Plan, Version 1, I.J. Washington, D.C. 78pp. <http://www.waterbirdconservation.org/pubs/complete.pdf>

National Oceanic and Atmospheric Administration (NOAA). 2012. Measures for Reducing Entrapment Risk to Protected Species.  
[http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/guidance\\_docs/documents/entrapment\\_bmps\\_final.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/guidance_docs/documents/entrapment_bmps_final.pdf)

NOAA. 2007. Revision 2 to the National Marine Fisheries Service (NMFS) November, 19, 2003, Gulf of Mexico Regional Biological Opinion (GRBO) to the U.S. Army Corps of Engineers (COE) on Hopper Dredging of Navigation Channels and Borrow Areas in the U.S. Gulf of Mexico.

Texas Parks and Wildlife Department (TPWD). 2012. Texas Conservation Action Plan 2012 – 2016: Gulf Coast Prairies and Marshes Handbook. Editor, W. Connally, Texas Conservation Action Plan



Coordinator. Austin, Texas.

[https://tpwd.texas.gov/landwater/land/tcap/documents/gcpm\\_tcap\\_2012.pdf](https://tpwd.texas.gov/landwater/land/tcap/documents/gcpm_tcap_2012.pdf)

Wilson, T. E., J. Wheeler, M. C. Green, and E. Palacios. (eds.). 2014. Reddish Egret Conservation Action Plan. Reddish Egret Conservation Planning Workshop, October 2012. Corpus Christi, TX.

[http://www.reddishegret.org/REEG\\_plan\\_final\\_single.pdf](http://www.reddishegret.org/REEG_plan_final_single.pdf)

U.S. EPA. 2007. National Estuary Program Coastal Condition Report. Report No. EPA-842/B-06/001 2006. Pgs 288-301.

[http://water.epa.gov/type/oceb/nep/upload/2007\\_05\\_09\\_oceans\\_nepccr\\_pdf\\_nepccr\\_nepccr\\_gom\\_partg.pdf](http://water.epa.gov/type/oceb/nep/upload/2007_05_09_oceans_nepccr_pdf_nepccr_nepccr_gom_partg.pdf)

U.S. Fish and Wildlife Service (USFWS). 2006. Strategic Plan: The Coastal Program Stewardship of Fish and Wildlife Through Voluntary Conservation. Regional Step-Down Plan Region 2 (Texas) Part 2 of 3 FY 2006-2010. <http://www.fws.gov/coastal/strategicPlan.html>.

USFWS and North Carolina Audubon Society. 2006. Southeast United States Regional Waterbird Conservation Plan. Compiled by: W.C. Hunter (USFWS Region 4), W. Golder (North Carolina Audubon Society), S. Melvin (USFWS Region 4), and J. Wheeler (USFWS Region 9). September.

<http://www.waterbirdconservation.org/pdfs/regional/seusplanfinal906.pdf>

Vermillion, W.G., and B.C. Wilson. 2009. Gulf Coast Joint Venture Conservation Planning for Reddish Egret. Gulf Coast Joint Venture, Lafayette, LA. 18pp. <http://www.gciv.org/documents.php>.

White, W. A., T. R. Calnan, R. A. Morton, R. S. Kimble, T. G. Littleton, J. H. McGowen, H. S. Nance, and K. E. Schmedes. 1985. Submerged Lands of Texas: Galveston – Houston Area: Sediments, Geochemistry, Benthic Macroinvertebrates, and Associated Wetlands. Bureau of Economic Geology. University of Texas. 145 pp plus maps.

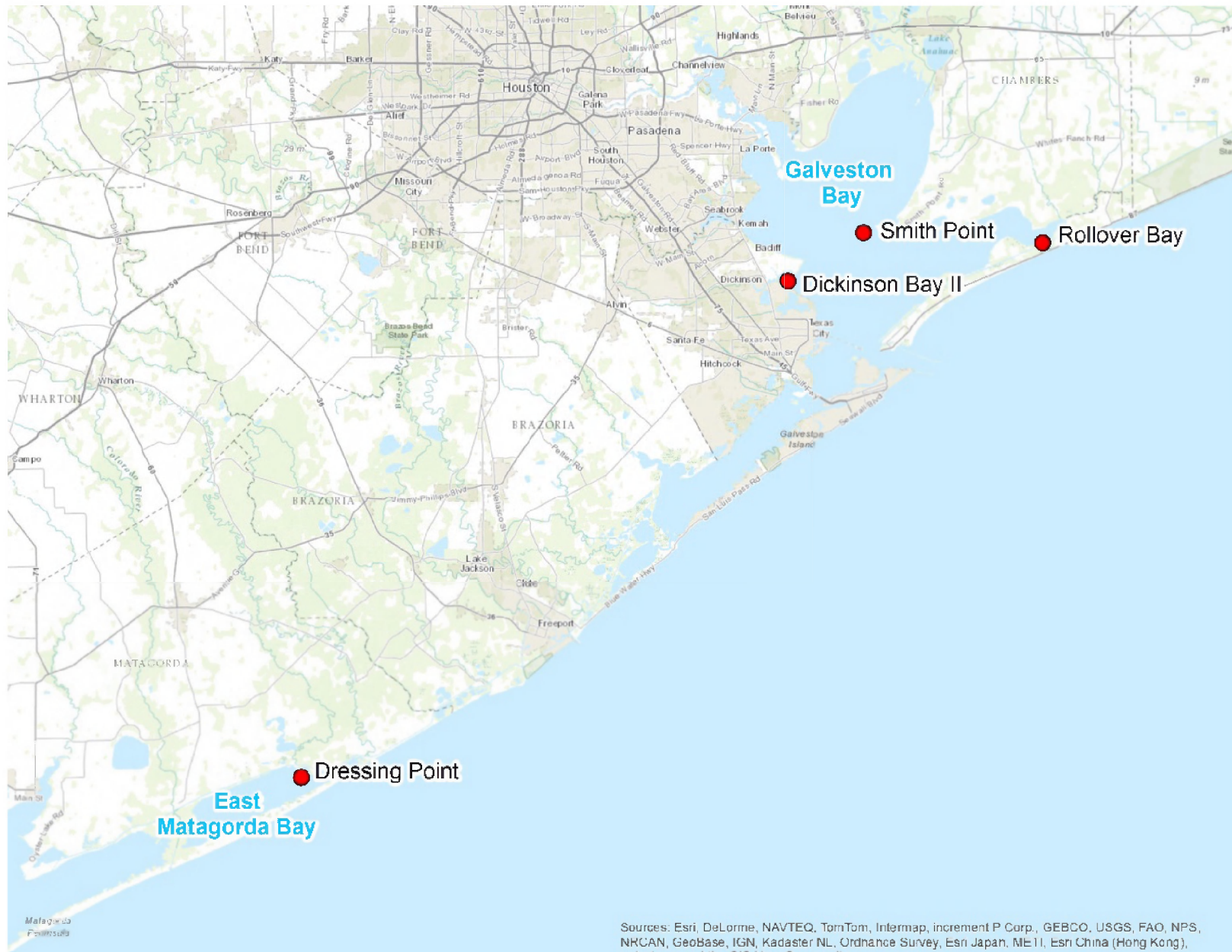


Figure 1. Location of proposed rookery island restoration and protection projects in Texas.

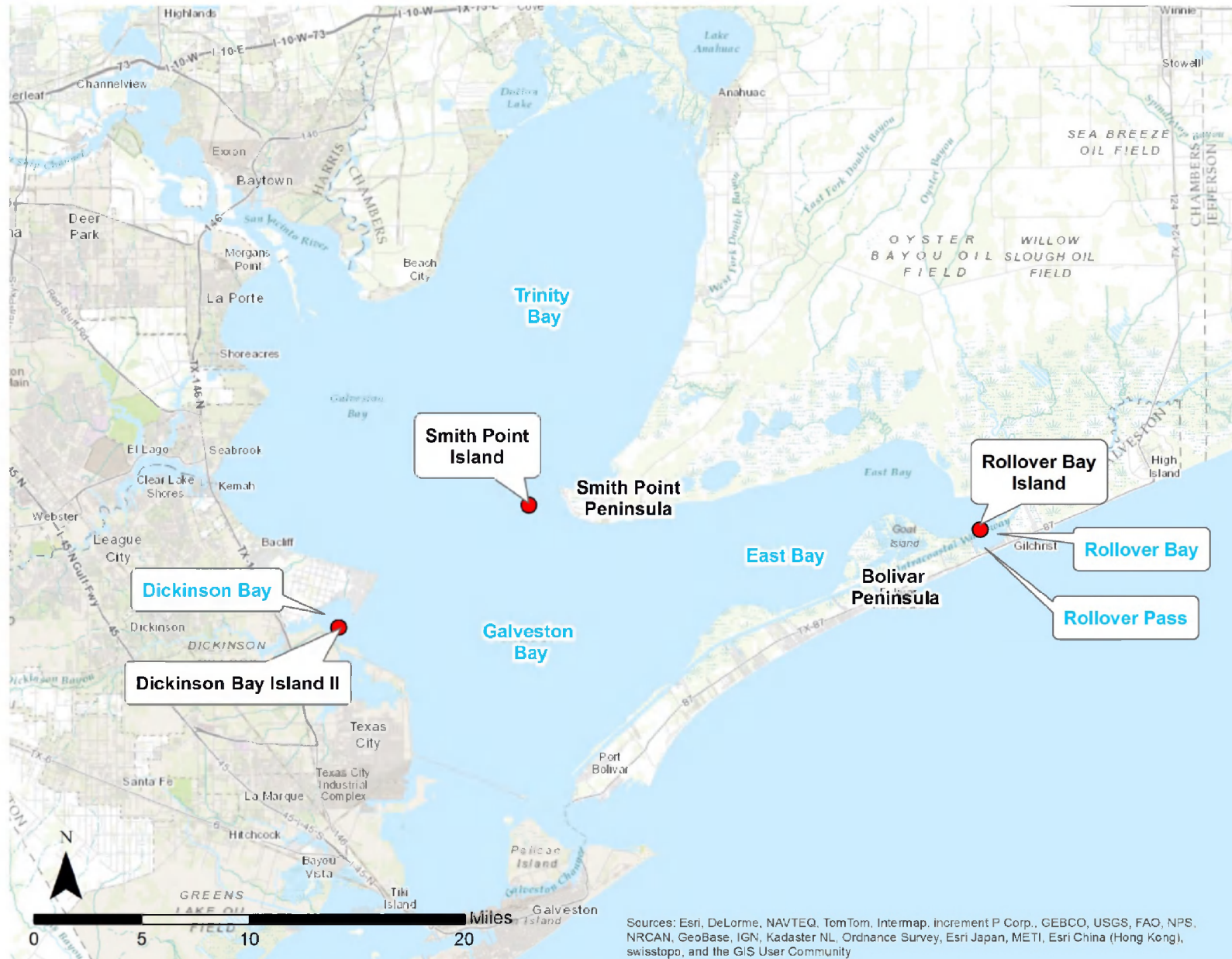


Figure 2. Location of proposed rookery island restoration and protection projects in Galveston Bay.



Figure 3. Proposed site locations for Dickinson Bay Islands II and III (specific project and site association to be determined).

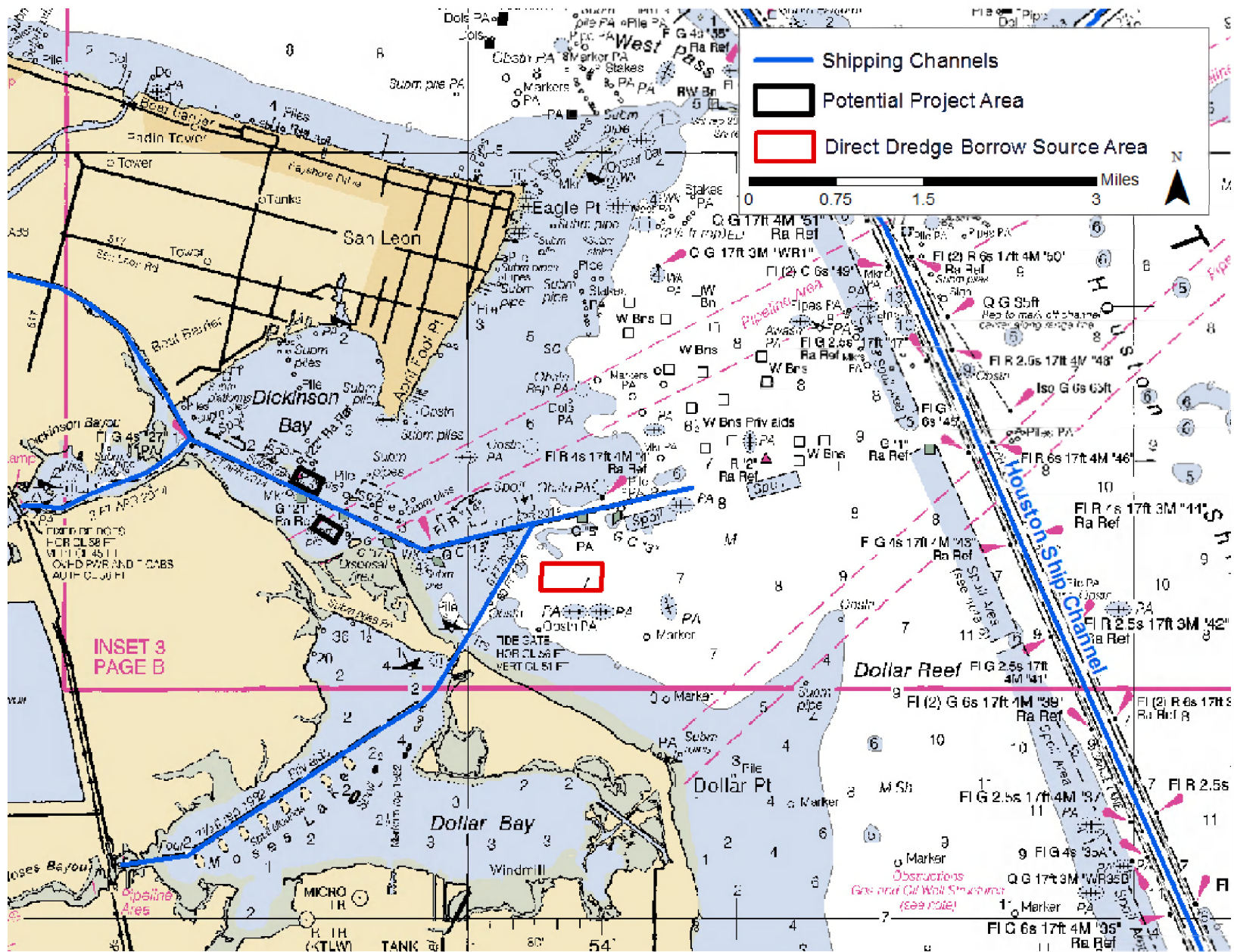


Figure 4. Direct dredge borrow source area

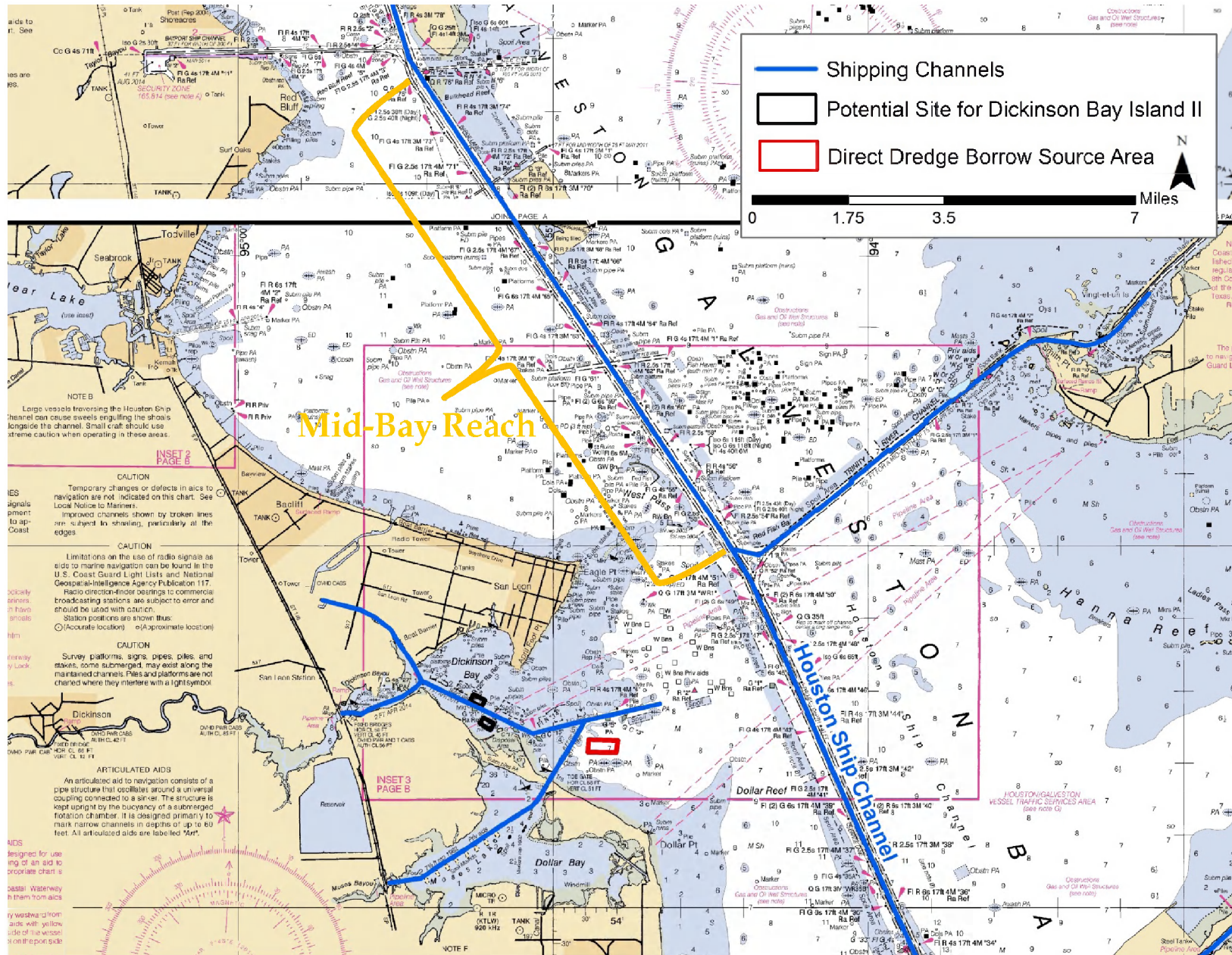


Figure 5. Potential source of beneficial use material from the Mid-Bay Reach of the Houston Ship Channel.

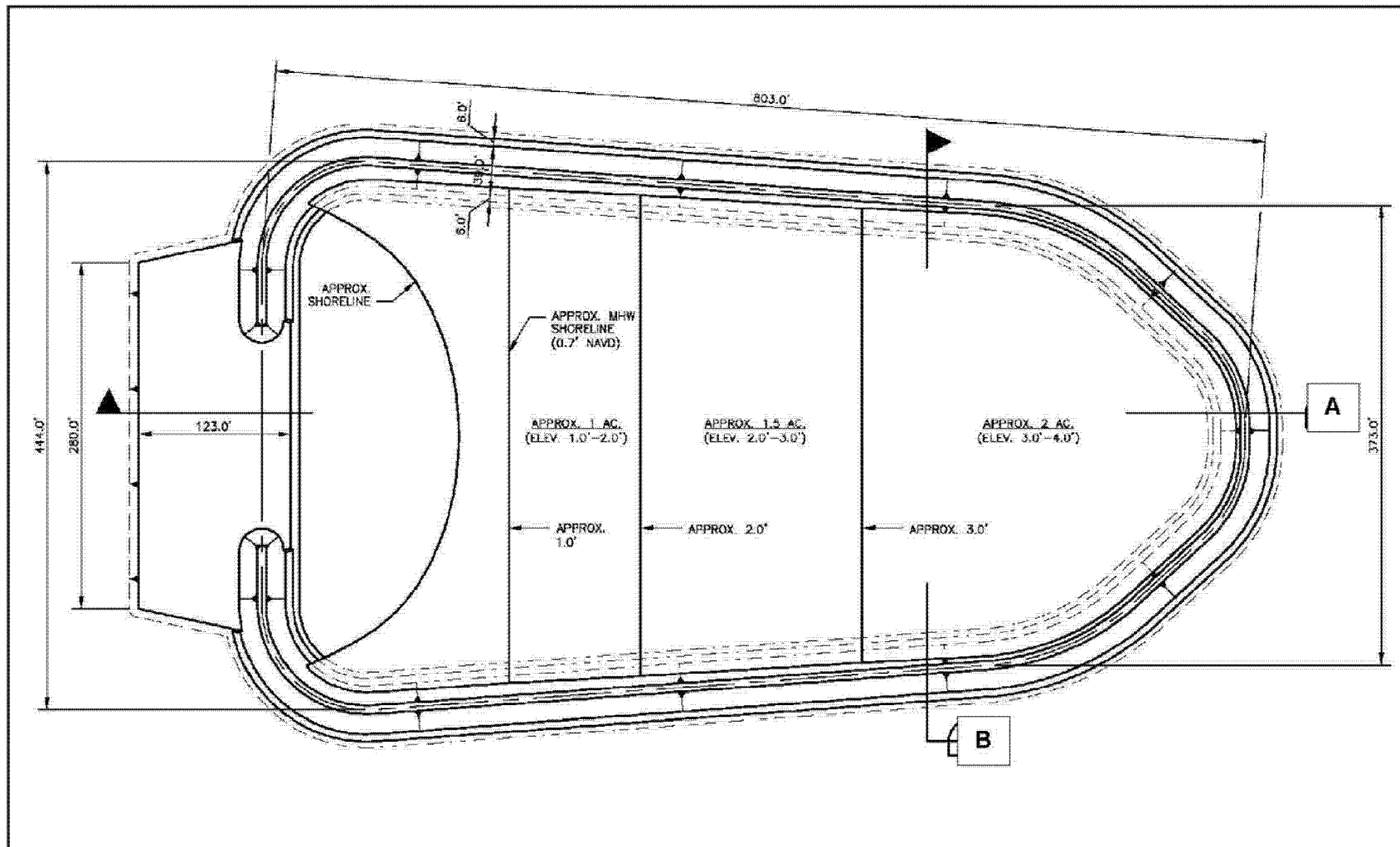


Figure 6. Preliminary design of Dickinson Bay Island II.

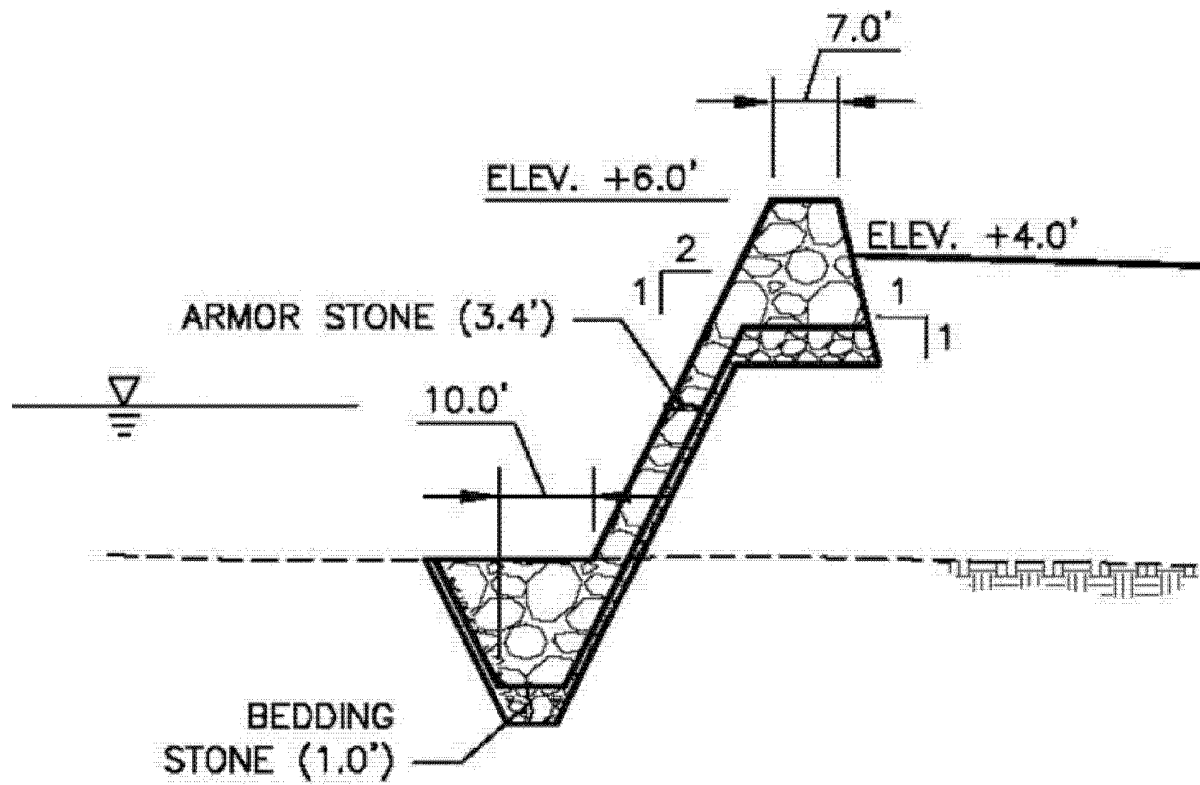


Figure 7. Typical shoreline armoring design (HDR 2014).



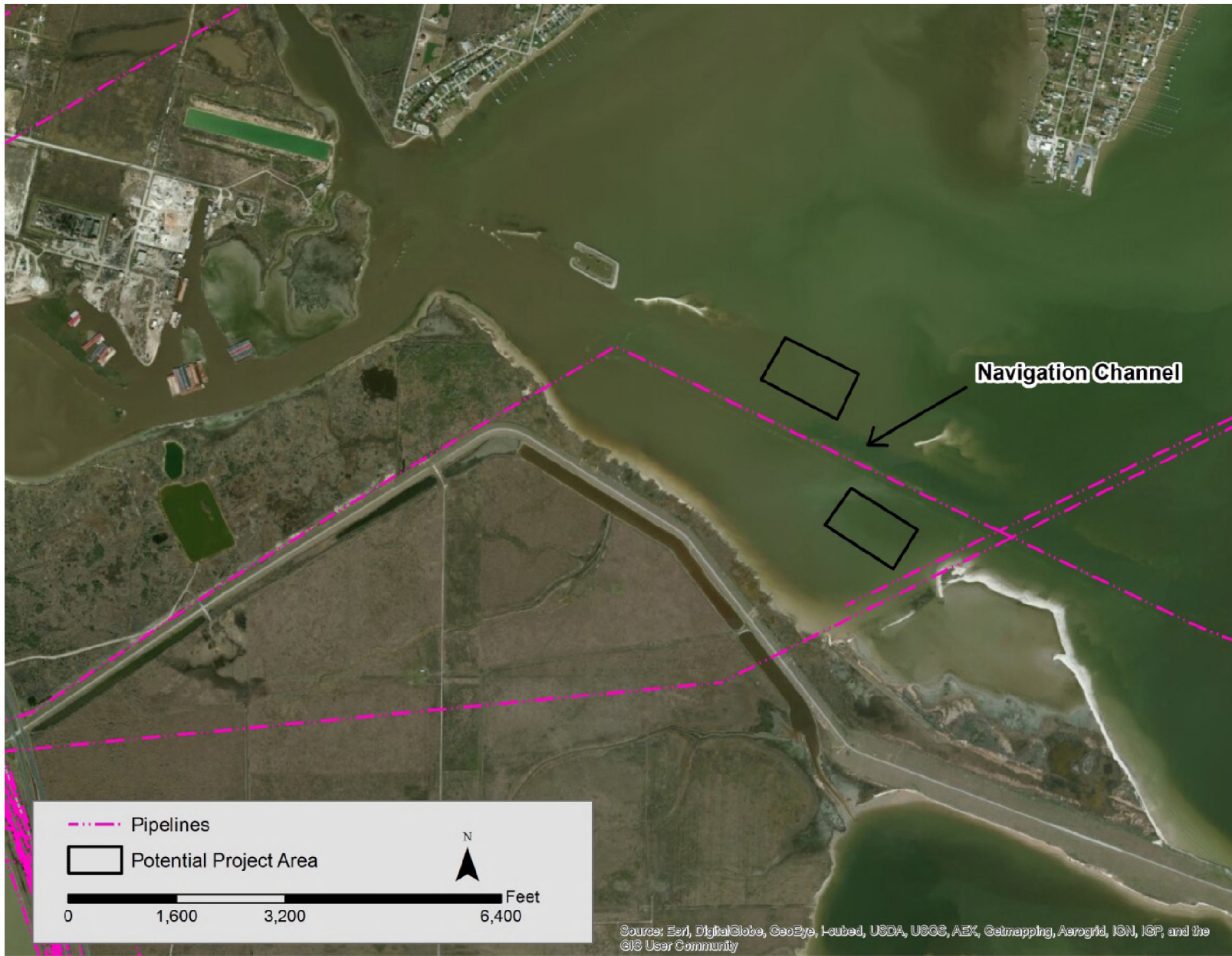


Figure 8. Dickinson Bay Island II potential sites and pipelines associated with the project area.

# Attwater's greater prairie-chicken

*Tympanuchus cupido attwateri*

B000

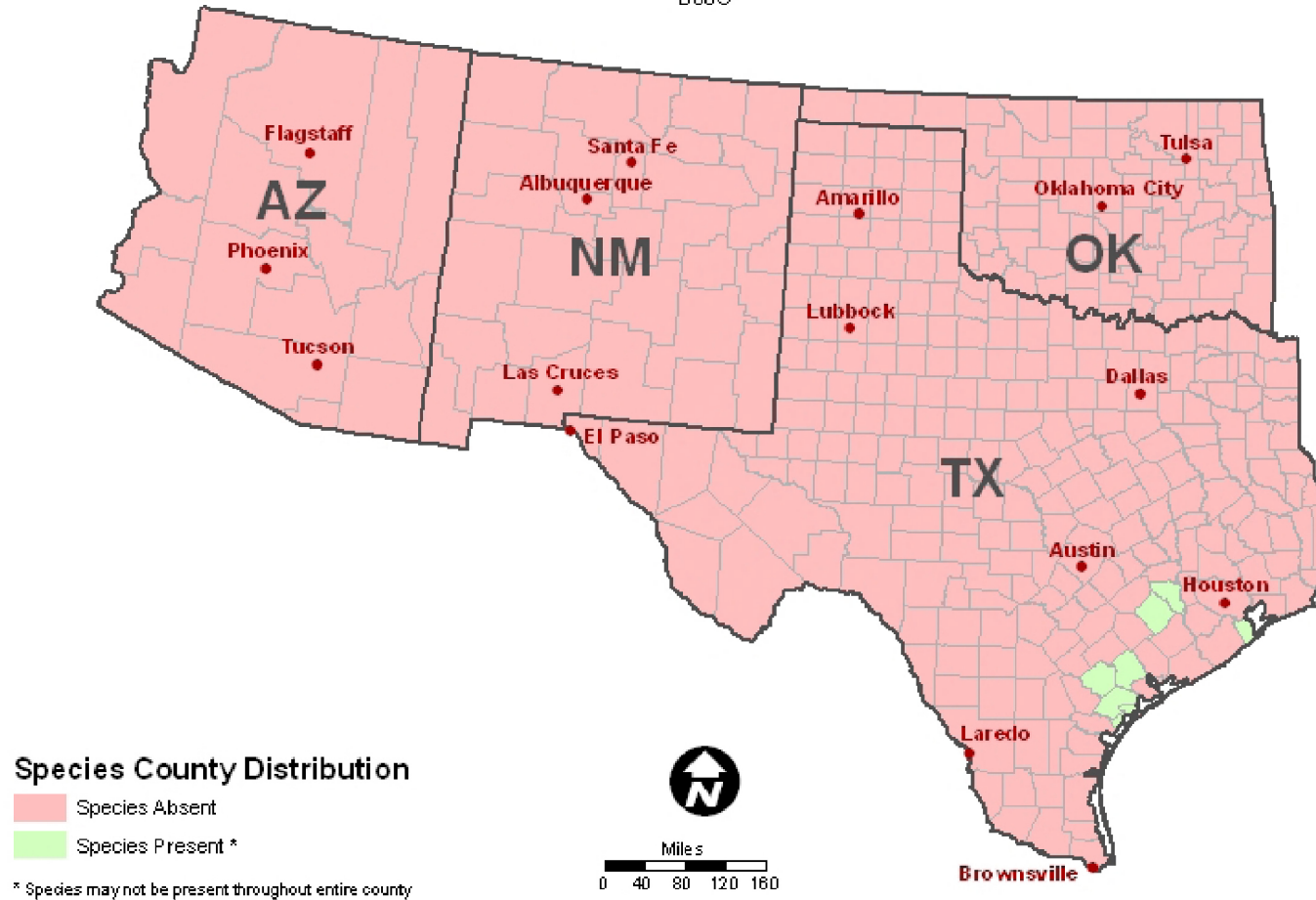


Figure 9. Location map of the county distribution of Attwater's greater prairie-chicken. Map was created by USFWS.

# piping plover

*Charadrius melodus*

B079

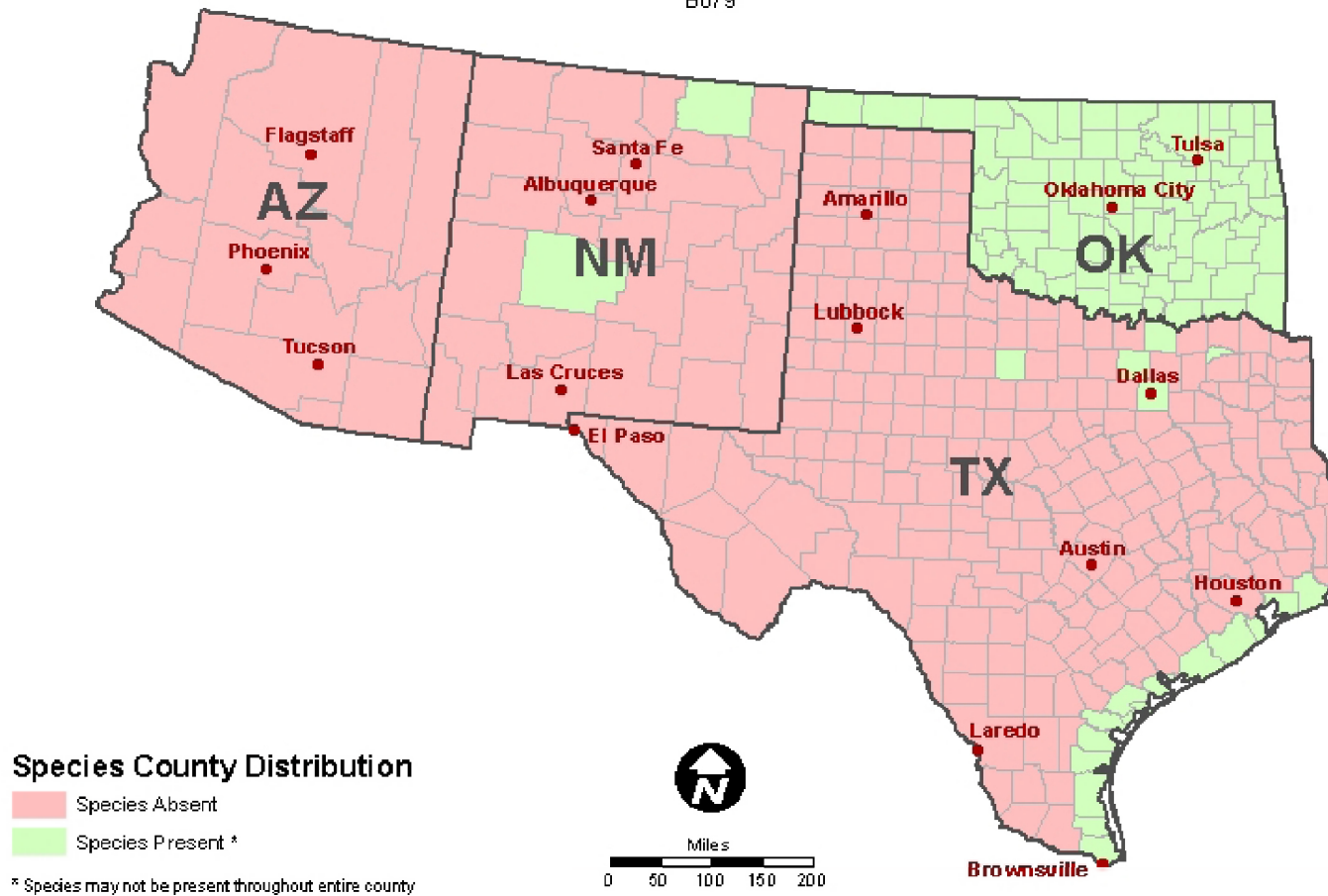


Figure 10. Location map of the county distribution of piping plover. Map was created by USFWS.

# red knot

*Calidris canutus rufa*

BODM

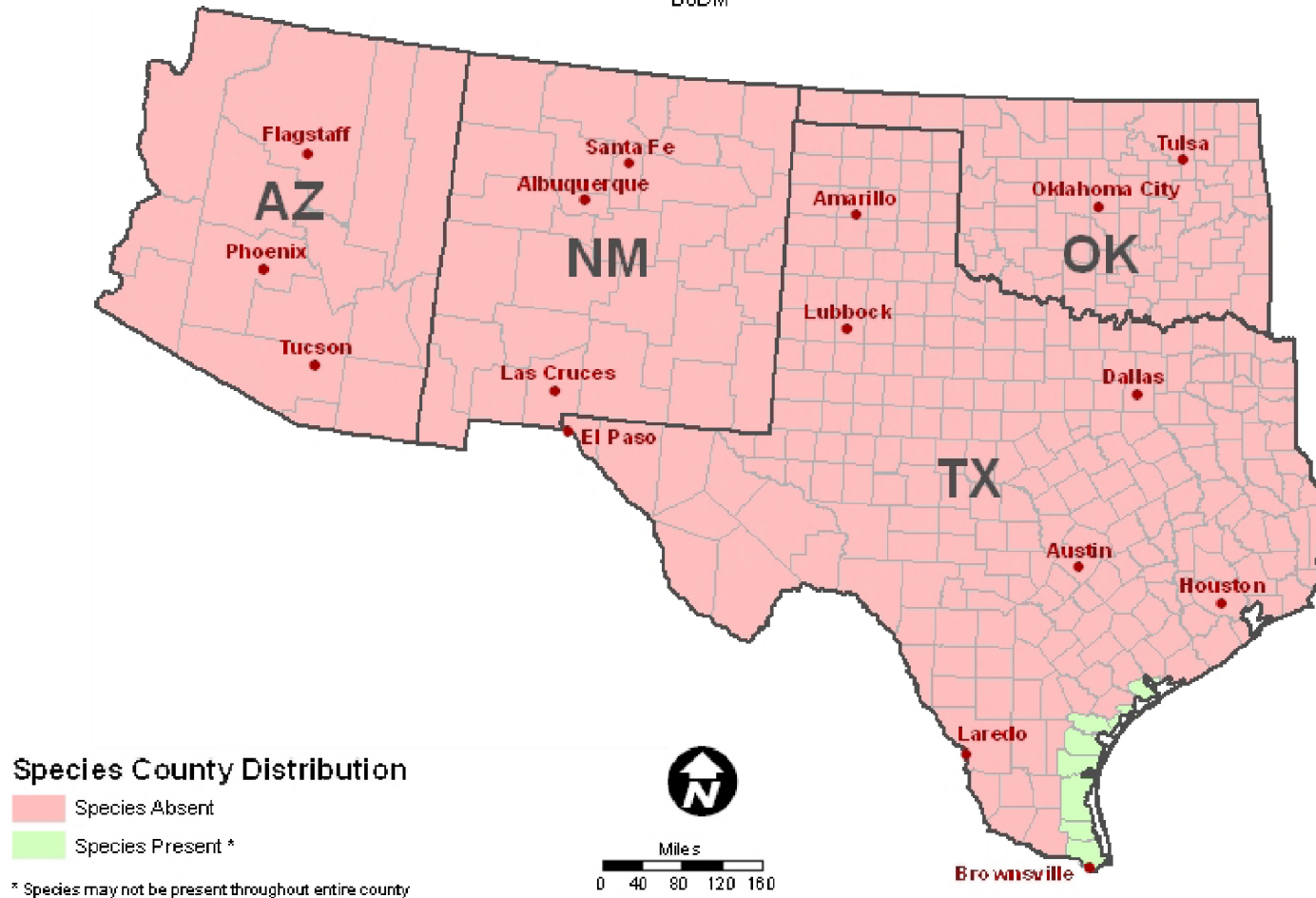


Figure 11. Despite the USFWS map showing red knot distribution, red knots have been found to occur in Galveston County (<http://ebird.org/ebird/map/>).

# Sprague's pipit

*Anthus spragueii*

BGD

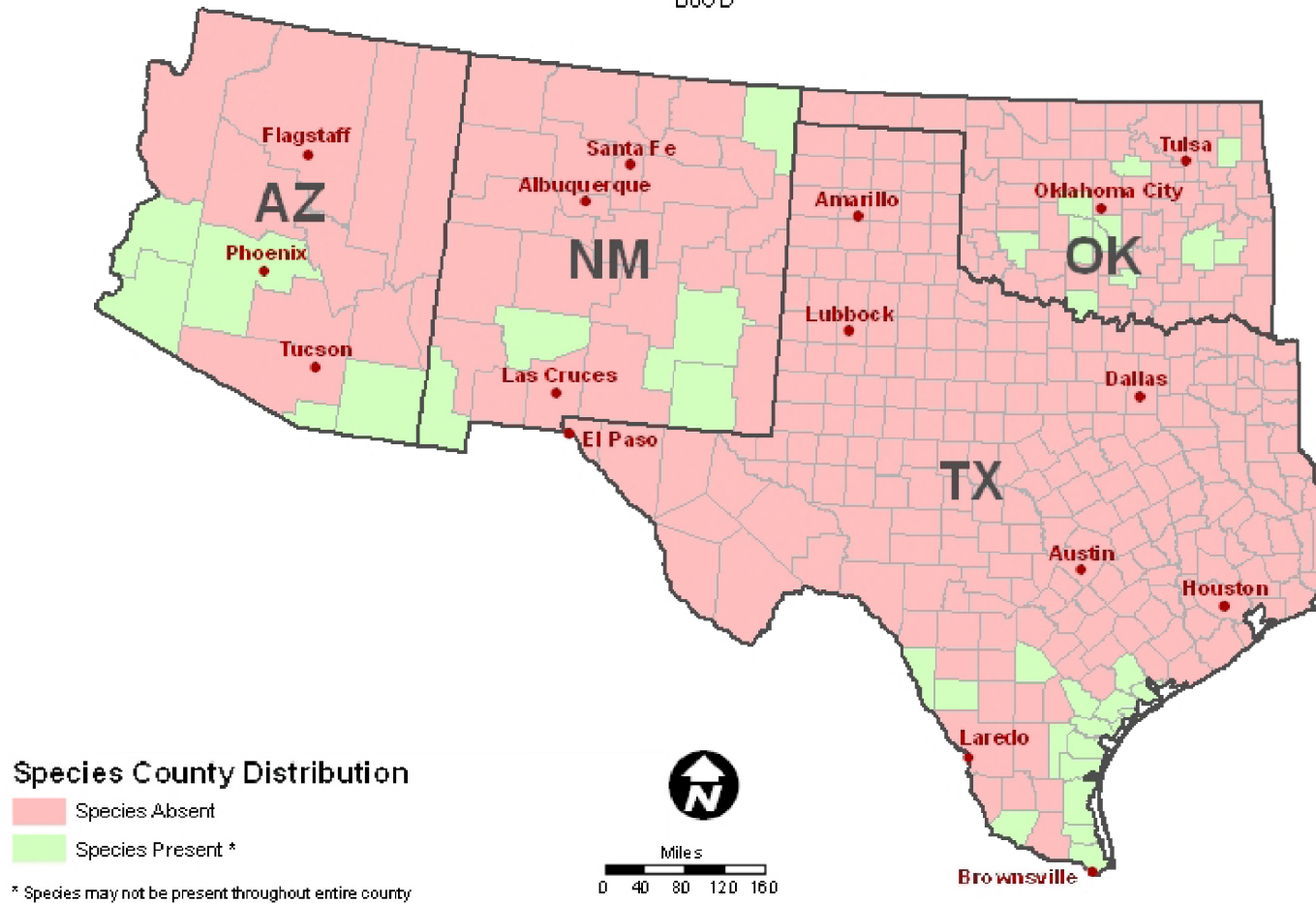


Figure 12. Despite the USFWS map showing Sprague's pipit distribution, Sprague's pipits have been found to occur in Galveston County (<http://ebird.org/ebird/map/>).

# West Indian manatee

*Trichechus manatus*

A007

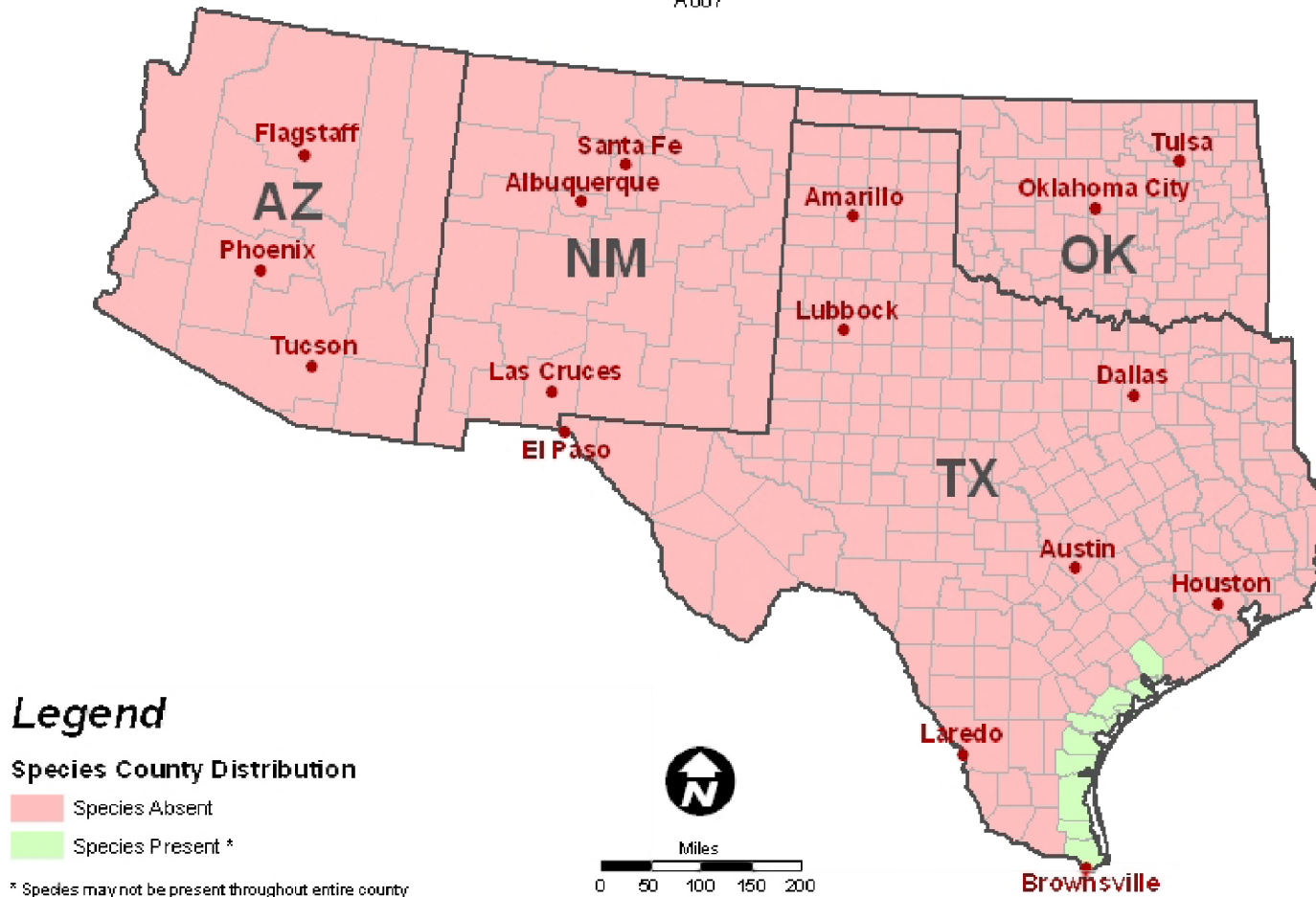


Figure 13. Despite the USFWS map showing the West Indian manatee distribution, on rare occasions they have been sighted in Galveston Bay.

# green sea turtle

*Chelonia mydas*

C00S

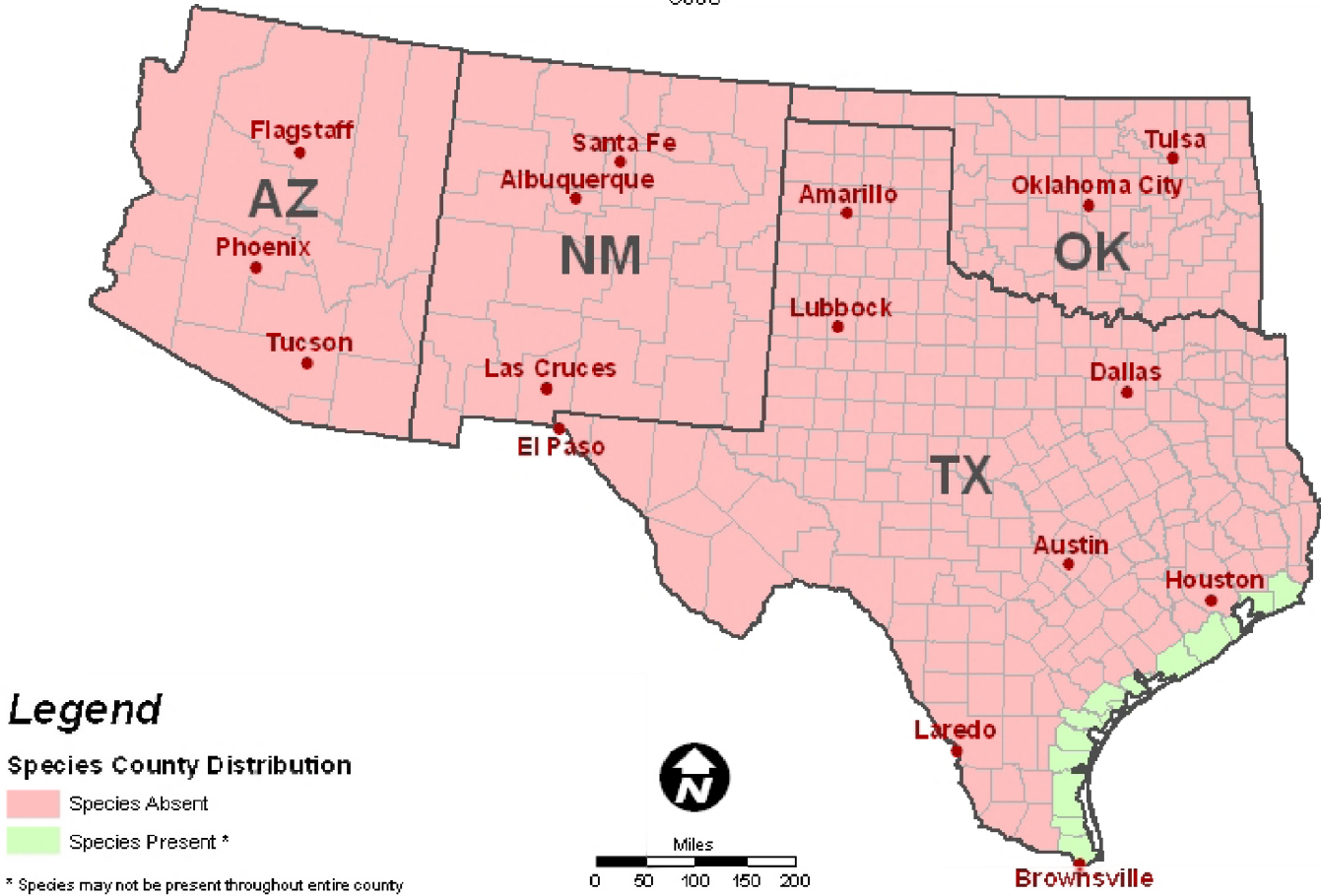


Figure 14. Location map of the county distribution of green sea turtle. Map was created by USFWS.

# Kemp's Ridley sea turtle

*Lepidochelys kempii*

C000

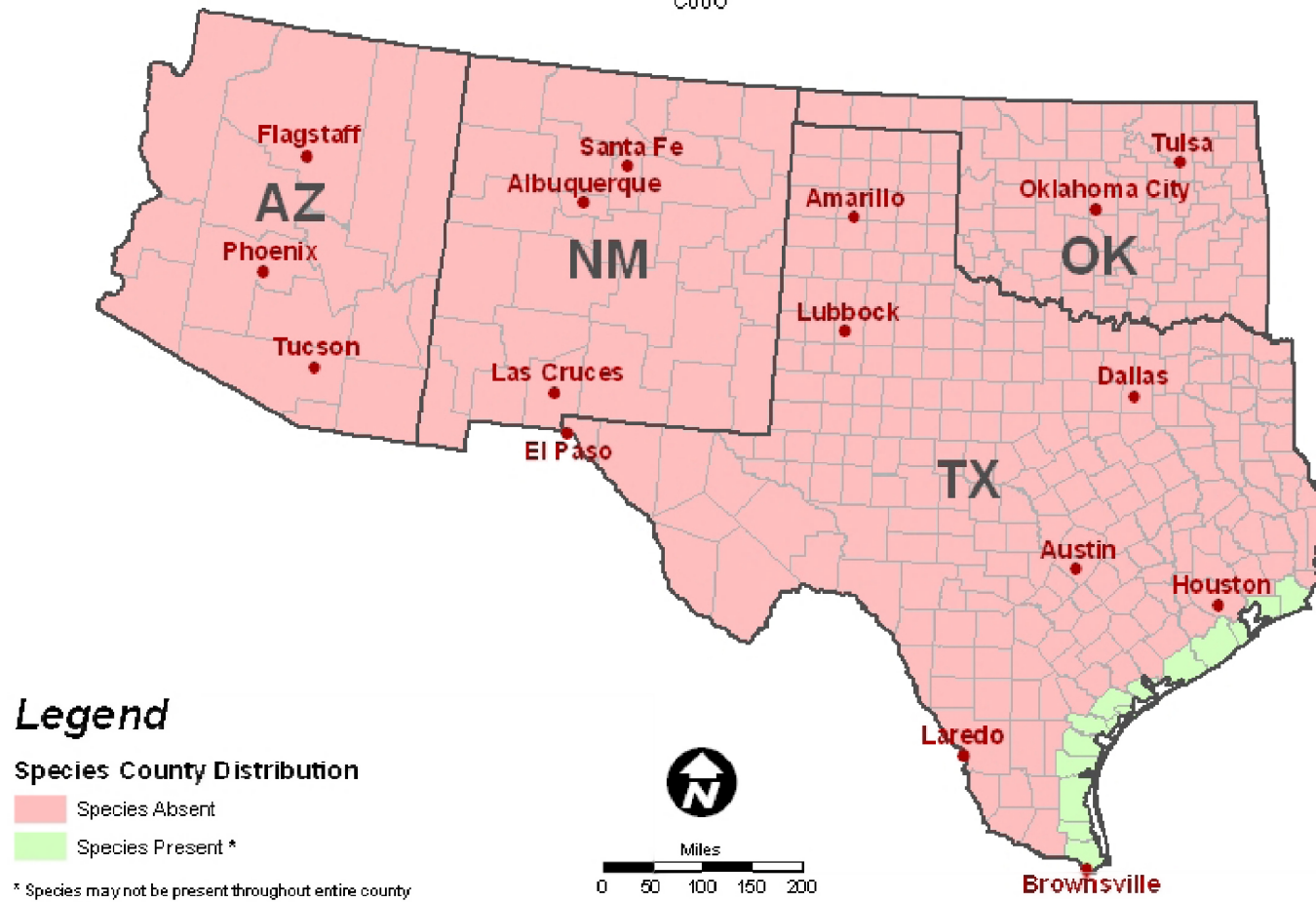


Figure 15. Location map of the county distribution of Kemp's ridley sea turtle. Map was created by USFWS.



# hawksbill sea turtle

*Eretmochelys imbricata*

C00E

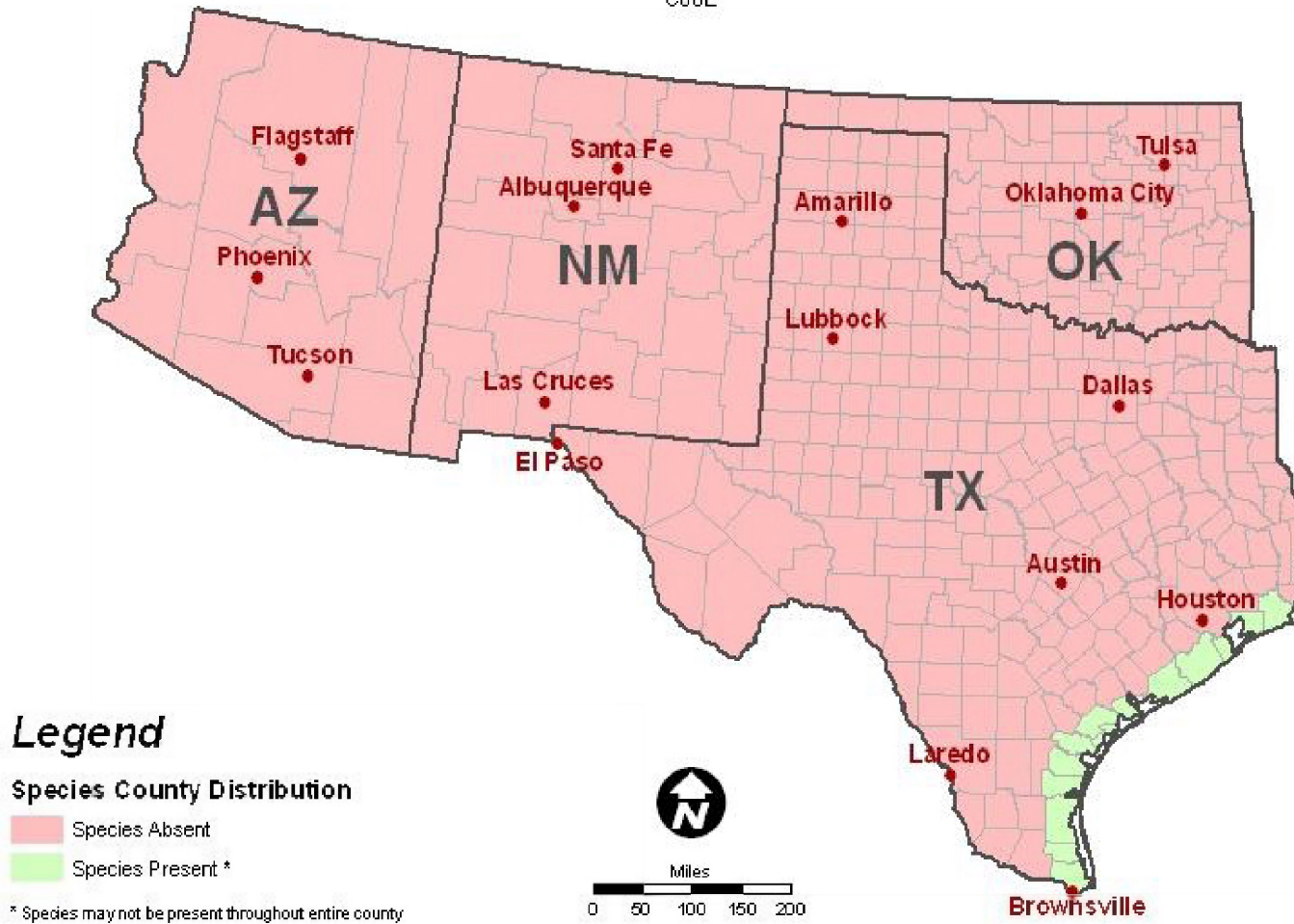


Figure 16. Location map of the county distribution of hawksbill sea turtle. Map was created by USFWS.

# leatherback sea turtle

*Dermochelys coriacea*

C00F

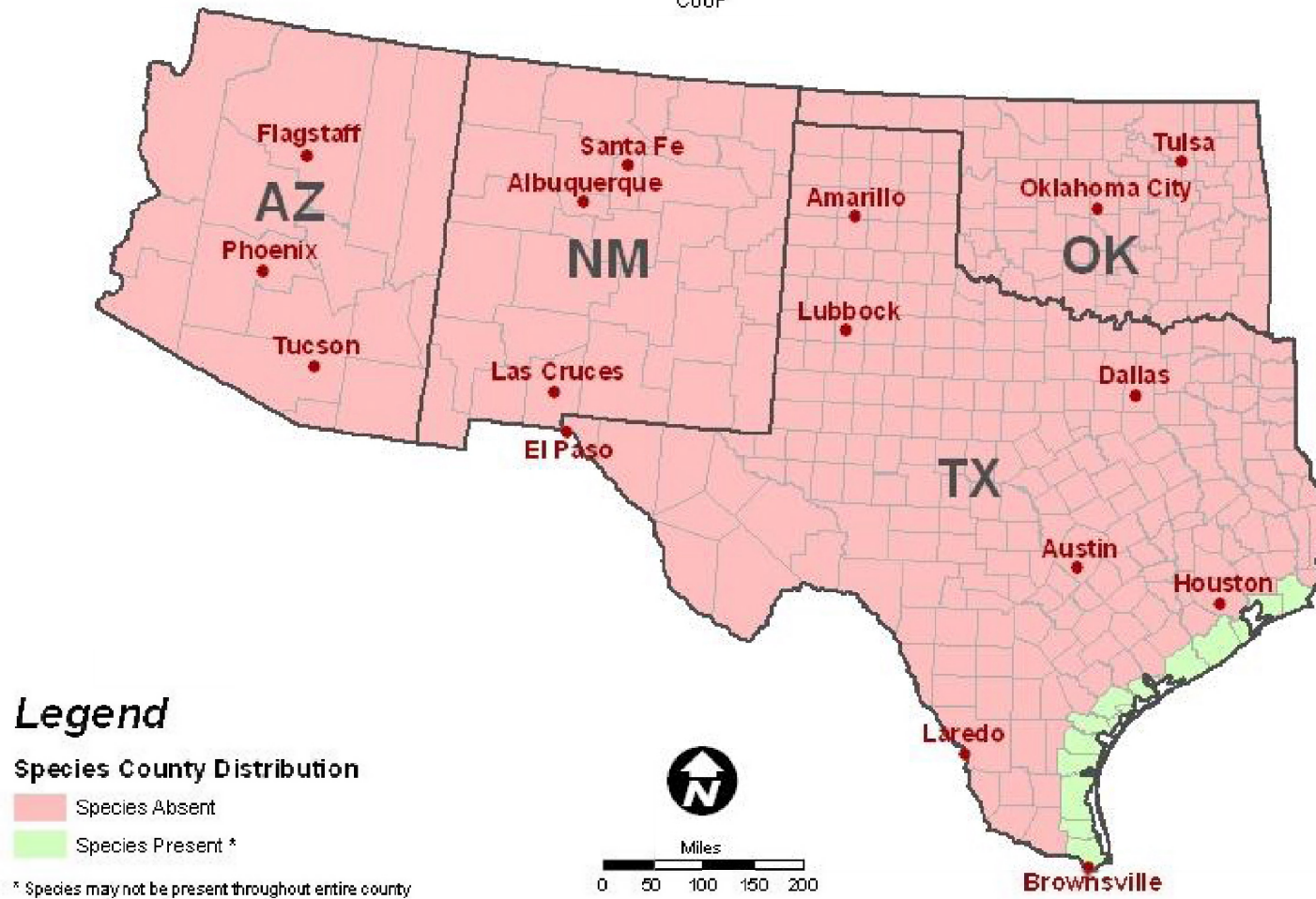


Figure 17. Location map of the county distribution of leatherback sea turtle. Map was created by USFWS.

# loggerhead sea turtle

*Caretta caretta*

C00U

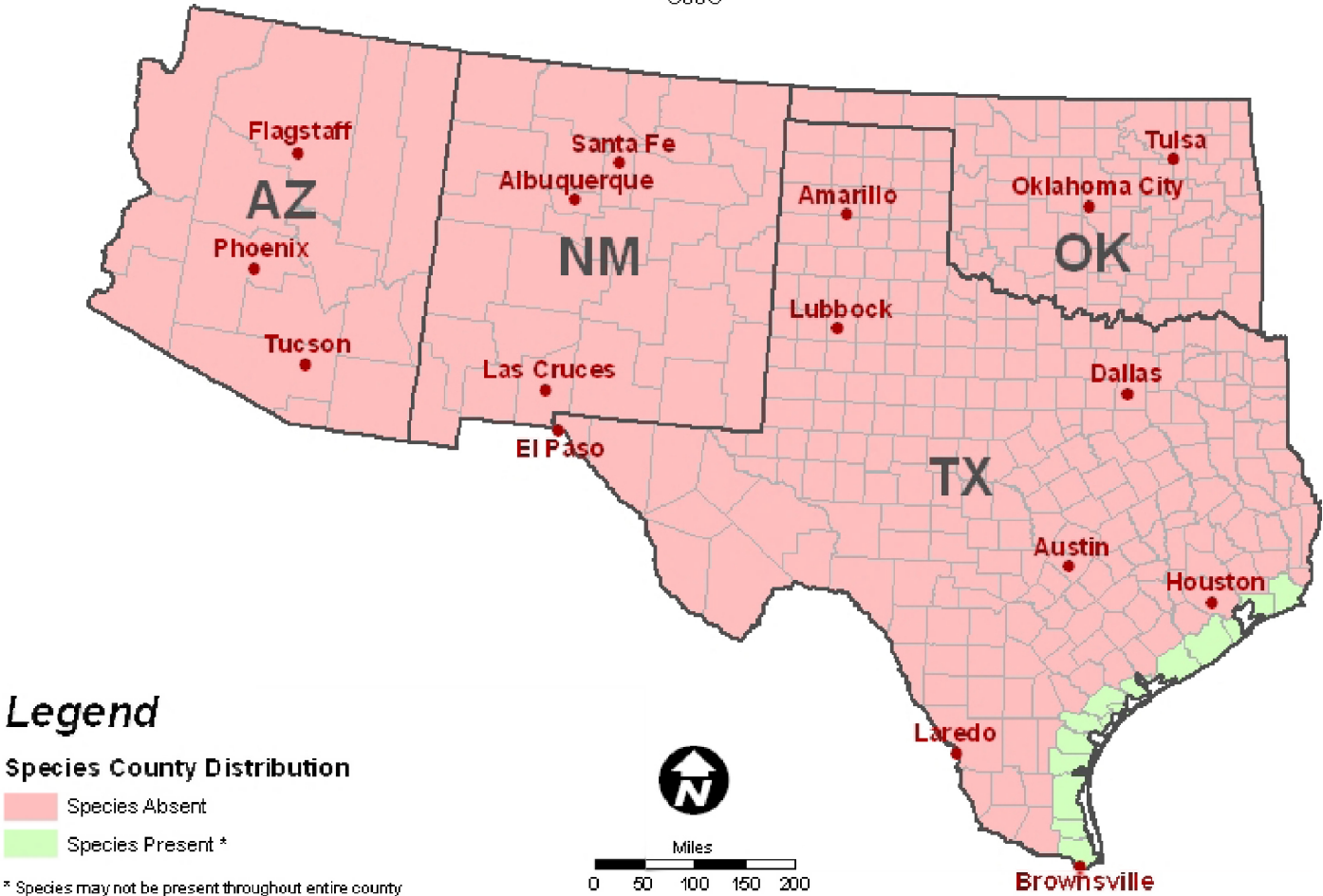


Figure 18. Location map of the county distribution of loggerhead sea turtle. Map was created by USFWS.