APPENDIX E
THREATENED AND ENDANGERED SPECIES REPORT

THREATENED AND ENDANGERED SPECIES REPORT
CORPUS CHRISTI ARMY DEPOT

NUECES COUNTY, TEXAS

Prepared for

U.S. ARMY CORPS OF ENGINEERS TULSA DISTRICT
Contract No. W912BV-10-D-1004
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CORPUS CHRISTI ARMY DEPOT
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ADP	Area Development Plan
BMPs	best management practices
CCAD	Corpus Christi Army Depot
DCRF	Dynamic Component Repair Facility
EO	Executive Order
FEMA	Federal Emergency Management Agency
INRMP	Integrated Natural Resource Management Plan
MEP	Mechanical Electrical & Plumbing
NASCC	Naval Air Station Corpus Christi
NEPA	National Environmental Policy Act
NRCS	Natural Resources Conservation Service
PEA	Programmatic Environmental Assessment
ROW	Right-of-Way
SOC	species of concern
T&E	threatened and endangered
TPWD	Texas Parks and Wildlife Department
TXNDD	Texas Natural Diversity Database
US	United States
USACE	United States Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WESTON	Weston Solutions, Inc.

EXECUTIVE SUMMARY

Weston Solutions, Inc (WESTON®) has prepared this threatened and endangered (T&E) species habitat assessment for Corpus Christi Army Depot (CCAD), located in Nueces County, Texas, to determine the presence of species or their habitat as protected under the Endangered Species Act of 1973 (as currently amended). The survey area is characterized as developed urban land with maintained outdoor recreational areas including three water hazards (associated with the Navy Field Activity Area, or golf course) and a permitted temporary stormwater detention pond (associated with ongoing CCAD construction).

Field investigations were performed in July 2012 to evaluate the potential for Federal and State listed T&E species and species of concern (SOC) to occur on or in the vicinity of the survey area. These investigations identified preferred habitat features of T&E species and confirmed location and extent of habitat in the survey area based on literature review. Literature review included examination of the U.S. Fish and Wildlife Service (USFWS) Southwest Region lists of Federally-listed T&E species for Nueces County to identify potential species occurrences and their Federally-listed critical habitat in Nueces County. Additionally, a list of the State listed T&E species, State-designated SOC, and a description of their associated habitats were obtained from the Texas Parks and Wildlife Department (TPWD) website and from the Texas Natural Diversity Database (TXNDD). No specific survey techniques were followed to locate listed species.

A total of sixteen (16) T&E species are listed by USFWS for Nueces County, consisting of four (4) birds, four (4) mammals, five (5) reptiles, one (1) fish, and two (2) flowering plants. Additionally, the State of Texas T&E list included thirty (33) species for Nueces County. Texas has also listed a total of twenty-five (25) SOCs for Nueces County. Based on best professional judgment and review of Federal and State listed T&E species, WESTON identified no Federally-listed critical habitat within the survey area, and no bird nests were observed during the field survey.

While limited suitable habitat for the following T&E species was identified within the survey area, more abundant suitable habitat for several listed species is present within Corpus Christi Bay and Laguna Madre adjacent to the project area. Project mitigation measures can be implemented to effectively prevent adverse impacts to identified receptors. Therefore, it is anticipated that the project is **not likely to adversely affect** the following T&E species, as adjacent suitable habitat is present or mitigation measures can be effective: Atlantic hawksbill sea turtle (*Eretmochelys imbricate*), green sea turtle (*Chelonia mydas*), Kemp's Ridley sea turtle (*Lepidochelys kempii*), loggerhead sea turtle (*Caretta caretta*), Texas indigo snake (*Drymarchon melanurus erebennus*), Texas scarlet snake (*Cemophoa coccinea lineri*), Texas tortoise (*Gopherus berlandieri*), opossum fish (*Microphis barchyurus*), smalltooth sawfish (*Pristis pectinata*), American peregrine falcon (*Falco peregrines anatum*), Eskimo curlew (*Numenius borealis*), northern aplomado falcon (*falco femoralis septentrionalis*), peregrine falcon (*Falco peregrinus*), piping plover (*Charadrius melodus*), reddish egret (*Egretta rufescens*), sooty tern (*Sterna fuscata*), Texas Botteri's sparrow (*Aimophila botterii texana*), white-face ibis (*Plegadis chihi*), white-tailed hawk (*Buteo albicaudatus*), whooping crane (*Grus americana*), wood stork (*Mycteria americana*), and West Indian manatee (*Tricherus manatus*).

The project is anticipated to have **no effect** on the following T&E species because there is no suitable foraging and/or breeding habitat located in the survey area and/or because the species has been extirpated: leatherback sea turtle (*Dermochelys coriacea*), Gulf Coast jaguarondi (*Herpailurus yaguarondi cacomitli*), ocelot (*Leopardus pardalis*), red wolf (*Canis rufus*), white-nosed coati (*Nasua narica*), slender rushpea (*Hoffmannseggia tenella*), and south Texas ambrosia (*Ambrosia cheiranthifolia*).

Potential suitable habitat was identified in the survey area for the following State listed species: black-spotted newt (*Notophthalmus meridionalis*) and sheep frog (*Hypopachus* variolosus) in the form of roadside ditches, water hazards, and the permitted temporary stormwater detention pond. This low quality potential habitat will be relocated prior to construction. While these species could potentially be temporarily disturbed and displaced during construction, it is anticipated that the project is **not likely to adversely affect** the black-spotted newt and sheep frog due to the available surrounding suitable habitat.

- Based on findings in this report, WESTON recommends the implementation of mitigation measures to prevent or minimize potential adverse effects to T&E species to all extents practicable. Specific mitigation measures for the project should include the following: Implementation of best management practices (BMPs) and sediment erosion control measures for stormwater discharge to Corpus Christi Bay, just north of Laguna Madre.

- Personnel should be trained on a no-approach and no-kill policy toward all wildlife.

- USFWS should be consulted regarding impacts from project construction activities to the maritime pocket gopher population.

- Trained biologist should perform pre-construction surveys for migratory bird nests prior to any clearing activities, if clearing activities are scheduled during breeding season.

- The presence of an environmental monitor/wildlife control specialist should aid personnel in implementation of mitigation measures and provide professional advice on staging and timing of activities. Additionally, an environmental monitor/wildlife control specialist should monitor for the presence of wildlife during all stages of activities, especially during the initial site clearing and/or grading when most wildlife would be the most vulnerable.

1. INTRODUCTION

Weston Solutions, Inc (WESTON®) has prepared this threatened and endangered (T&E) species habitat assessment for Corpus Christi Army Depot (CCAD), located in Nueces County, Texas, to determine the presence of species protected under the Endangered Species Act of 1973 for the approximately 275 acres of outdoor recreational areas and undeveloped lots on CCAD. The environmental field investigation, including habitat assessments and evaluation of land use, was performed in July 2012. WESTON conducted the desktop assessment of historical T&E species to determine the potential location and extent of any T&E species and their habitat within the survey area, assess the potential project impact to those species, and evaluate mitigation alternatives.

1.1 PROJECT DESCRIPTION

CCAD is currently conducting analyses under the National Environmental Policy Act (NEPA) for proposed development plans at the depot. In 2009, CCAD finalized an EA for the construction of a Building 8 Replacement Facility to be erected over nine phases. Following completion of the EA, construction of the Dynamic Component Repair Facility (DCRF) (Phase 0 of the Building 8 Replacement Facility) began. This construction is currently ongoing. The Phase 1 and 2 Powertrain EA currently being prepared is for the next phase of construction, the proposed Powertrain Project.

Since completion of the 2009 Building 8 Replacement Facility EA, project-specific phasing and activities have been slightly modified to better meet CCAD needs and suit engineering demands. Therefore, CCAD is preparing a new analysis for the activities currently planned for the proposed combined Phases 1 and 2 of the Powertrain Project, the next phase of construction for the Building 8 Replacement Facility. Project specifications considered in this assessment are presented below:

- Construction of the combined Phase 1 and 2 Powertrain Facility Project, including the following:
  - The Powertrain building on the eastern side of the DCRF building (155,650 ft^2).
  - The Mechanical building (11,800 ft^2), a separate building to provide mechanical support to the DCRF building.
  - The Combustion Backup Turbine.
  - Limited parking facilities (for these phases only).
  - Associated utilities and stormwater facilities.
- Demolition of portions of the existing Building 8 that have been replaced by the DCRF (approximately 22,000 ft^2 of Transmission Test Cells).
- Demolition and relocation of a portion of the Navy Field Activity Area and facilities located in the footprint of the proposed Phase 1 and 2 Powertrain Project. The Navy

Field Activity Area and associated facilities will be relocated to an undeveloped area of NASCC, southwest of the front nine holes of the NASCC golf course.

- Demolition and relocation of NASCC facilities and associated utilities currently located within the footprint of the proposed Phase 1 and 2 Powertrain Project. NASCC facilities to be relocated include the Tire and Lube Facility, the Auto Hobby Shop, the Arts and Crafts Shop, the Navy/Marine Corps Relief Thrift Shop, the Ceramics Shop; and storage facilities.

Furthermore, CCAD is developing a Programmatic Environmental Assessment (PEA) in accordance with the National Environmental Policy Act (NEPA) for the CCAD campus located at the Navy Air Station in Corpus Christi, Texas. The PEA will assess the potential environmental impacts associated with the current and future CCAD missions and analyze implementation of the February 2012 CCAD Area Development Plan (ADP). This PEA will include an assessment of the developed CCAD ADP, activities in buildings currently occupied by CCAD, current CCAD missions, and potential changes to future missions, including those immediate activities proposed over the next 5 years in the ADP.

The July 2012 T&E survey conducted by WESTON focused primarily on impacts associated with the demolition and relocation of a portion of the Navy Field Activity Area as the areas directly impacted by these activities are the most likely to have suitable habitat for T&E species. The other areas of the project were also surveyed, but, as they were developed urban lands, no habitat was found.

1.1.1 Site Description and Location

CCAD is located on the Naval Air Station Corpus Christi (NASCC) southwest of in Corpus Christi, Nueces County, TX. The installation is bounded by Oso Bay, Corpus Christi Bay and Laguna Madre, just north of SH 358 (Figure 1-1).

The survey area covered approximately 275 acres of an existing golf course and undeveloped but mowed and maintained lands. The area of the T&E survey conducted by WESTON is bounded by 1st Street to the west and southwest, 9th street and the northern most extents of Laguna Madre and Corpus Christi Bay to the south and east, and D Street to the north. Figure 1-1 shows the boundaries of the study area.

1.2 LIMITATIONS

The findings and conclusions presented by WESTON are professional opinions based solely on visual observations of the facility and vicinity, and interpretation of information provided and reasonably available to WESTON. The results presented in this report were based on review of available current and historical information, a desktop evaluation, and site visits conducted in July 2012. This report identifies the potential for a species to be present within the survey area based on the presence of suitable habitat. If a species, or its habitat, was determined to potentially occur on the survey area, an assessment of potential impacts to that species was made based on the project information provided to WESTON by CCAD and included in this report.

Presence/absence surveys as defined by USFWS (USFWS Federal Regulation 77 FR 7175; USFWS, 2012) were not conducted for any species during this evaluation.

1.3 METHODOLOGY

The methodology applied in this T&E assessment was limited to desktop analyses and field investigation to evaluate the survey area for the suitability of habitats supporting State or Federally listed T&E species. Aerial maps provided by CCAD, satellite imagery using Bing Maps (ESRI, 2011), topographic maps (ESRI, 2006), and lists of species by county based on population distribution and occurrence data provided by the USFWS and TWPD were reviewed as part of the desktop analyses. Species specific surveys were not completed as part of this evaluation. Findings from the desktop analyses were applied to the field investigation to assist in the selection of locations within the survey area requiring detailed or more cursory evaluation.

Prior to conducting field investigations, a review of listed species at the county level was performed. The USFWS Southwest Region list of Federally-listed T&E species for Nueces (USFWS, 2012a) was reviewed to evaluate potential species occurrences and their critical habitat in the respective listed counties. A list of the State listed T&E species, State designated species of concern (SOC), and a description of their associated habitats were obtained from the Texas Parks and Wildlife Department (TPWD) website (TPWD, 2012a) and from the Texas Natural Diversity Database (TXNDD) (TPWD, 2012b). T&E species listed for Nueces are detailed in Table 3-1 and Table 3-2, while Texas-listed SOC are included in Appendix B.

Field investigations were performed by WESTON biologists in July 2012. Visual observation surveys were used to identify and characterize the habitat types and vegetation communities and to assess the potential for T&E species to occur within the survey area. Soil type was evaluated, as some T&E species only occur within specific soil types. The survey included visual observations extending beyond the specific survey area boundaries to adjacent lands. Land use and land cover designations were assigned using field observations, interpretation of current and historical aerial photography (ESRI, 2012), and interpretation of U.S. Geological Services (USGS) 7.5-minute topographic maps (ESRI, 2006).

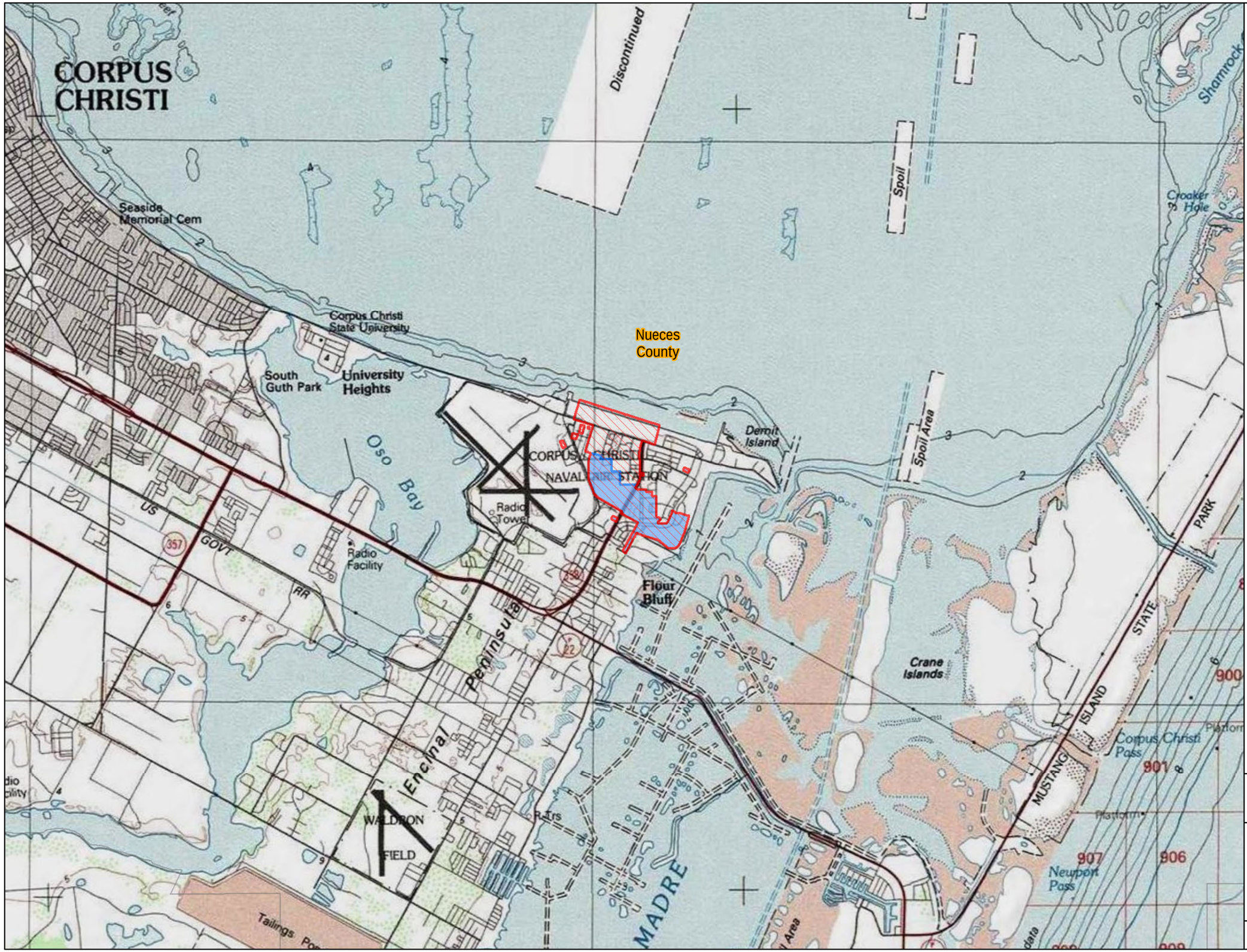

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FIGURE 1-1

SITE LOCATION MAP

CORPUS CHRISTI ARMY DEPOT
CORPUS CHRISTI, TEXAS

DATE	PROJECT NO	SCALE
AUGUST, 2012	14755.001.001.0001	AS SHOWN

FILE: I:\GIS Project Files\03886_Corps of Engineers\554_CCAD_EA And Eng Support\mxd\Figure 1-1 Site Location Map.mxd 3:18:33 PM 8/9/2012 Herrinm

2. HABITATS AND VEGETATIVE COMMUNITIES

2.1 AQUATIC HABITAT

As part of a separate report and analysis, WESTON performed a wetlands and waterbodies delineation of the survey area to assess the existing habitats and vegetative communities. Specific details of identified features can be found in the August 2012 Wetlands and Waterbodies Delineation Report for CCAD. Field investigations performed in July 2012 identified four (4) waterbodies within the survey area, all of which were determined to be wetlands. Features identified are depicted on aerial maps of the survey area (Figures 2-1). Photographic documentation of the survey area is included in Appendix A.

The survey area is located within the Nueces-Rio Grande Coastal Basin. This basin drains approximately 10,442 square miles of lands between the Rio Grande River and Nueces River into Corpus Christi Bay, Laguna Madre, Baffin Bay, and Oso Bay (TCEQ, 2004). All surface water features within the study area are manmade and maintained through artificially constructed hydrology. Surface water within the survey area includes three water hazards on the CCAD golf course and a detention pond adjacent to Building 1700. All four (4) surface water areas identified in the project area are associated with manmade palustrine wetlands. At the time of the surveys, two drainage areas identified on the current back nine of the NASCC golf course were dry. Additionally, a mosaic palustrine emergent wetland was identified in the undeveloped portion of the survey area. Figure 2-1 depicts the identified surface water locations along the survey area; a table of the identified surface water features is included in Table 2-1.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Maps, portions of the survey area are located within Zone-A and Zone-B, or within the 100-year and 500-year flood plains (FEMA, 2012).

Table 2-1
Aquatic Habitat within the Survey Area

Feature ID	Latitude[1]	Longitude[1]	Type	Size (acres)[2]
W1A	27.68168 N	-97.26576 W	Mosaic Wetland	7.58
W1B	27.68168 N	-97.26576 W	Mosaic Wetland	0.11
W2	27.68583 N	-97.26671 W	Water Hazard	0.98
W3	27.68842 N	-97.26753 W	Water Hazard	0.50
W5	27.68841 N	-97.27480 W	Water Hazard	1.11
W6	27.69238 N	-97.27581 W	Detention Pond[3]	4.38

1. Coordinates are in State Plane, NAD1983, CORS96, U.S. Feet, Texas South 4205 and represent the location of the identified features.
2. Feature acreages are calculated based on the surveyed boundaries within the survey area.
3. Feature W6 is a man-made permitted temporary stormwater detention pond.

2.2 UPLAND HABITAT

Upland habitat within the survey corridor was generally characterized as maintained lawns and overgrown lawn areas. Herbaceous/shrub uplands were observed to have typical herbaceous vegetation for the Western Gulf Coastal Plains eco-region that included bermuda grass (*Cynodon dactylon*), St. Augustine (*Stenotaphrum secundatum*), common sunflower (*Helianthus praecox*), and various wild flowers common to Texas. Several species of trees were observed in the lawn area, including mesquite (*Prosopis glandulosa*) and live oak (*Quercus virginiana*). Regular maintenance of the lawn areas has limited vegetation growth within the project area to common herbaceous species as described above.

2.3 SOILS

A desktop map review of the soils located within the survey area was performed, and results are provided in Table 2-2. Soils in many areas within the survey area were observed to be disturbed and the topography had been altered with earth moving equipment.

According to the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) Soil Surveys for Nueces County (USDA 1965), there are three (3) soil series within the survey area. While these soils are typically associated with barrier flats and depressions, flats, and tidal flat landforms; the survey area is heavily disturbed and comprised of man-made developed areas built up with fill materials.

Table 2-2
Soil Series and Associations within the Survey Area

Map Unit	Map Unit Symbols	Soil Series	% of Survey Habitat	Hydric	Landform	Drainage Class
Galveston and Mustang Fine Sands	Gm	Galveston	78.3	Yes	Barrier flats and depressions	Poorly drained
Ijam Clay Loam	Ma	Ijam	20.3	Yes	Flats	Poorly drained
Tidal Flats	Ta	Tidal flats	1.4	Yes	Tidal flats	Very poorly drained

Source: USDA, 1965

Field verification of soils was accomplished through soil test pits ranging from 6 to 12 inches in diameter and 16 inches deep in areas exhibiting different plant communities. These hydric soils contained low chroma soils, typically Munsell notations of very dark gray (10 YR 3/1), and dark gray (10 YR 4/1) sandy clay loam (Kollmorgen Corporation, 1990). Indicators of hydric soils were present within the survey area. Findings from the field surveys were generally consistent with those described in the USDA NRCS County Soil Survey (USDA, 1965).

LEGEND

- Surveyed Wetlands
- Powertrain EA Area
- Mission and Master Plan Area

PEM1A = palustrine, emergent, persistent, and temporarily flooded.

PUBHx = palustrine unconsolidated bottom, permanently flooded, and excavated.

PEM1Cd = palustrine, emergent, persistent, seasonally flooded, and partially drained and/or ditched.

N

0 500 1,000

Feet

SOURCE:(c) 2010 Microsoft Corporation and its data suppliers

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FIGURE 2-1

IDENTIFIED WATERBODIES MAP

CORPUS CHRISTI ARMY DEPOT
CORPUS CHRISTI, TEXAS

DATE	PROJECT NO	SCALE
AUG 2012	03886.544.005.0200	AS SHOWN

FILE: I:\GIS Project Files\03886_Corps of Engineers\554_CCAD_EA And Eng Support\mxd\Wetland Delineation Report\FIG 3-3 Wetland Delineation Map.mxd 10:17:30 AM 8/24/2012 Herrinm

3. FINDINGS

The results of field investigations conducted in July 2012 by WESTON are presented in the following sections. Surveys were conducted during a mixture of clear sunny days and cloudy days resulting from rain showers, with temperatures ranging from 70^{o} to 100^{o} F. Photographic documentation of the survey area is included in Appendix A.

The potential for Federally-listed and State listed T&E species and SOC to occur on or in the vicinity of the survey area was evaluated based on the presence or absence of suitable habitat and identification of any species actively using the survey area during field investigations. Trees identified to be adjacent or within the survey area were inspected for bird nests.

A total of sixteen (16) species are Federally-listed as T&E by USFWS for Nueces County, consisting of four (4) birds, four (4) mammals, five (5) reptiles, one (1) fish, and two (2) flowering plants. Table 3-1 includes Federally -listed T&E species that are known to occur or may potentially occur in Nueces County and summarizes their listing status and potential to occur in the survey area. Table 3-2 includes State listed T&E species that are known to occur or may potentially occur in Nueces County in the survey area. State listed SOCs are included in Appendix B. No critical habitat was identified in the survey area (USFWS, 2012b), and no nests for any bird species were observed during the field survey.

Potential effects on T&E species from the proposed action can be classified as short-term, long-term, and permanent. Short-term effects last less than 5 years and include impacts to suitable habitat, disturbance to wildlife from project activities (i.e., noise disturbance or increases in human presence), and displacement of individuals. Long-term impacts consist of changes to wildlife habitats lasting 5 years or longer. The severity of both short- and long-term impacts depends on factors such as the sensitivity of the species impacted, seasonal use patterns, type and timing of construction activities, and physical parameters (e.g., topography, cover, forage, and climate). Permanent impacts include habitat loss resulting from construction of aboveground facilities, including permanent removal of habitat.

Potential effects to T&E species can also be classified as direct or indirect. A direct effect may include individual injury or mortality. Indirect effects may alter the survivorship or reproductive capacity of a species changing the quantity and/or continuity of available suitable habitat, altering the quality and availability of resources used by the species, or altering intraspecific or interspecific competition dynamics.

The following subsections provide a species summary and evaluation of the effects of the proposed project upon T&E species in Nueces, if they have a potential to occur in the survey area. Project effects determinations are defined as follows by the USFWS and National Marine Fisheries Service (USFWS, 2012e):

- **No effect** – Project activities will have no adverse or beneficial effect on the listed species;

- **Not likely to adversely affect** – Project activities may directly or indirectly affect the listed species or its habitat. However, the effects are likely to be discountable, insignificant, or beneficial; and
- **Likely to adversely affect** – Project activities are anticipated to have significant adverse effects (direct or indirect) on the listed species or its habitat.

Table 3-1
Federally Listed Threatened and Endangered Species within the Survey Area

Common Name	Scientific Name	Federal Status	State Status	Suitable Habitat Occurrence in the Survey Area	Potential Species Presence
BIRDS					
Eskimo Curlew	*Numenius borealis*	E	E	**Yes** - grasslands, pastures, plowed fields, and less frequently, marshes and mudflats.	Likely Present during Winter Months
Northern Aplomado Falcon	*Falco femoralis septentrionalis*	E	E	**Yes** - Open country, especially savanna and open woodland, and sometimes in very barren areas; grassy plains and valleys with scattered mesquite, yucca, and cactus.	Possible Migrant Over Area
Piping Plover	*Charadrius melodus*	T	T	**No** - beaches and bayside mud or salt flats.	Possible Transient over Area
Whooping Crane	*Grus americana*	E	E	**Yes** - potential migrant via plains throughout most of state to coast.	Possible Migrant Over Area
FISH					
Smalltooth Sawfish	*Pristis pectinata*	E	E	**No** - young found very close to shore in muddy and sandy bottoms; in sheltered bays, on shallow banks, and in estuaries or river mouths; adult sawfish are encountered in various habitats such as mangrove reef, seagrass, and coral in varying salinity regimes and temperatures at various depths.	Not Likely in Project Area, but possible in immediately adjacent areas.
MAMMALS					
Gulf Coast Jaguarundi	*Herpailurus yagouaroundi cacomitli*	E	--	**No -** typically dense, thorny shrublands near water.	Not Likely
Ocelot	*Leopardus pardalis*	E	E	**No** - dense chaparral thickets; mesquite-thorn scrub and live oak mottes; avoids open areas.	Not Likely
Red Wolf	*Canis rufus*	E	E	**No** - extirpated; formerly known throughout eastern half of Texas in brushy and forested areas, as well as coastal prairies.	Not Likely

Common Name	Scientific Name	Federal Status	State Status	Suitable Habitat Occurrence in the Survey Area	Potential Species Presence
West Indian manatee	*Tricherus manatus*	E	E	**No -** Gulf and bay system.	Not Likely in Project Area, but possible in immediately adjacent areas.
PLANTS					
Slender Rushpea	*Hoffmannseggia tenella*	E	E	**No** - Texas endemic; coastal prairie grasslands on level uplands and gentle slopes along drainages, usually in areas of shorter or sparse vegetation; soils often described as Blackland clay, but at some of these sites soils are coarser textured and a lighter color than typical heavy clay of the coastal prairies.	Not Likely
South Texas Ambrosia	*Ambrosia cheiranthifolia*	E	E	**No** - grasslands and mesquite-dominated shrublands on various soils ranging from heavy clays to lighter textured sandy loams, mostly over Beaumont Formation on the Coastal Plain; in modified unplowed sites such as railroad and highway right-of-ways, cemeteries, mowed fields, and erosion areas along small creeks.	Not Likely
REPTILES					
Atlantic hawksbill Sea Turtle	*Eretmochelys imbricate*	E	E	**No** - wide range of tropical and subtropical habitats, including shallow coast waters with rocky bottoms, coral reeds, beds of sea grass or algae, mangrove bordered bays and estuaries, and submerged mudflats. Nesting occurs on undisturbed, deep-sand, insular or mainland beaches, from high energy ocean beaches to tiny pocket beaches.	Not Likely in Project Area, but possible in immediately Adjacent Areas.
Green Sea Turtle	*Chelonia mydas*	T	T	**No** - feeding occurs in shallow, low-energy waters with abundant submerged vegetation and in the convergence zone of the open ocean. Migration traverses open seas. Adults are tropical in distribution whereas juveniles prefer temperate waters. Nesting occurs on beaches, usually on islands but also on the mainland. Most nesting occurs on high energy beaches with deep sand.	Not Likely in Project area, but possible in immediately adjacent areas.
Kemp's Ridley Sea Turtle	*Lepidochelys kempii*	E	E	**No** - shallow coastal and estuarine waters, often over sandy or muddy bottoms where crabs are numerous. Most adults stay in Gulf of Mexico. Nesting occurs on well-defined elevated dune areas, especially on beaches backed up by large swamps or bodies of open water having seasonal, narrow ocean connections.	Not Likely in Project Area, but possible in immediately adjacent areas.

Common Name	Scientific Name	Federal Status	State Status	Suitable Habitat Occurrence in the Survey Area	Potential Species Presence
Leatherback Sea Turtle	*Dermochelys coriacea*	E	E	**No** - marine, open ocean, often near edge of continental shelf; also seas, gulfs, bays, and estuaries. Mainly pelagic, seldom approaching land except for nesting. Nests on sloping sandy beaches backed up by vegetation, often near deep water and rough seas.	Not Likely in Project Area or Adjacent Areas
Loggerhead Sea Turtle	*Caretta caretta*	T	T	**No** - Open sea to more than 500 miles from shore, mostly over continental shelf, and in bays, estuaries, lagoons, creeks, and mouths of rivers; mainly warm temperate and subtropical regions not far from shorelines.	Not Likely in Project Area, but possible in immediately adjacent areas.

Source: USFWS, 2012a; TPWD, 2012a

E = Endangered
T = Threatened

3.1 BIRDS

3.1.1 Eskimo Curlew

The Eskimo curlew (*Numenius borealis*) is a wintering migrant along the Texas Gulf Coast (TPWD, 2012c) and southern Texas (USGS, 2012) that is a Federally listed threatened and State listed threatened species in Nueces County (USFWS, 2012c). Eskimo curlews can be found in grasslands, pastures, plowed fields, and, less frequently, marshes and mudflats. While suitable foraging habitat may be present in the project area during the winter months, this species is more likely to occur as a possible migrant through the survey area, as there is more abundant habitat outside the project area along the shoreline of Oso Bay, Corpus Christi Bay, and Laguna Madre. Furthermore, indirect disturbance of any on-site suitable foraging habitats and displacement of individual species by project construction activities would be minimal and temporary, as foraging habitats are available in nearby areas.

The project is **not likely to adversely affect** the Eskimo curlew because of discountable indirect and temporary effects due to potential disturbance of non-breeding adults during construction activities.

3.1.2 Northern Aplomado Falcon

The northern aplomado falcon (*Falco femoralis septentrionalis*) is a non-migratory raptor with a rust colored underside and a distinctive black and white facial pattern found throughout Texas. This species is Federally and State listed as endangered for the survey area in Nueces County (USFWS, 2012c; TPWD, 2012a). The northern aplomado falcon prefers open habitat with scattered trees with relatively little ground cover and availability of nest sites. This species uses abandoned stick nests of other species, and the mating pair remains near the nest site throughout the year for hunting, roosting, and display (TPWD, 2012c). Suitable foraging habitat was

identified within the survey area, and this species could occur as a possible transient species through the survey area. Disturbance of hunting habitats by project construction activities would be indirect and temporary, as suitable hunting areas are available in nearby areas.

The project is **not likely to adversely affect** the northern aplomado falcon because of discountable indirect and temporary effects due to potential disturbance of non-breeding adults during construction activities.

3.1.3 Piping Plover

The piping plover (*Charadrius melodus*) is a wintering migrant along Gulf coastal areas of the U.S. This species is Federally and State listed as endangered for the survey area (USFWS, 2012c; TPWD, 2012a). They can be found on open, sandy beaches and bayside mud or salt flats. There is critical habitat on the far western end of the NASCC installation, but it falls well outside of the project area (USFWS, 2012b). There was very little appropriate foraging habitat for this species identified for this survey, though this species could occur as a possible transient species through the survey area (TPWD, 2012a). More abundant and higher quality habitat for the piping plover exists outside of the project area along the shoreline of Oso Bay, Corpus Christi Bay, and Laguna Madre. Disturbance of any potential foraging habitats by project construction activities would be indirect and temporary as suitable foraging habitats are available in nearby areas.

The project is **not likely to adversely affect** the piping plover because of discountable indirect and temporary effects due to potential disturbance of non-breeding adults during construction activities.

3.1.4 Whooping Crane

The whooping crane (*Grus americana*) is a wintering migrant along the Texas coastal plains near Rockport, Texas, and in and around the salt flat and marshes of the Aransas National Wildlife Refuge (TPWD, 2012c). Additionally, the whooping crane is Federally and State listed as endangered for the survey area (USFWS, 2012c; TPWD, 2012a). They can be found on wetlands, marshes, mudflats, wet prairies, and fields. While minimal suitable foraging habitat was found within the survey area adjacent to wetlands, this species is likely to occur as a possible migrant through the survey area, as there is more abundant suitable habitat outside of the project area along the shoreline of Oso Bay, Corpus Christi Bay, and Laguna Madre. Disturbance of any foraging habitats by project construction activities would be indirect and temporary, as suitable roosting and foraging areas are available on nearby properties. Additionally, the historic migratory flyway of the whooping crane is located north of the survey area and the closest know population is located approximately 50 miles north at the Aransas National Wildlife Refuge (TPWD, 2012c).

The project is **not likely to adversely affect** the whooping crane because of discountable indirect and temporary effects due to potential disturbance of non-breeding adults during construction activities.

3.2 FISH

3.2.1 Smalltooth Sawfish

The smalltooth sawfish (*Pistis pectinata*) belongs to a group of fish called elasmobranchs whose skeletons are made of cartilage (NOAA). They commonly reach 18 feet in length and can grow up to 25 feet long. Little is known of their life history. They are known to inhabit shallow coastal waters of tropical seas and estuaries over muddy and sandy bottoms. Though no suitable habitat exists for the species within the project area, there is suitable habitat in the waters around CCAD. Stormwater discharge from CCAD into Corpus Christi-Nueces Bay, just north of Laguna Madre could indirectly impact suitable smalltooth sawfish habitat. As determined during the permitting process for outfalls, BMPs would be implemented to minimize impacts from sedimentation and runoff from stormwater.

The project is **not likely to adversely affect** the smalltooth sawfish, as there is no suitable habitat in the project area and BMPs will be implemented to reduce indirect impacts from potential stormwater discharge into Corpus Christi-Nueces Bay.

3.3 MAMMALS

3.3.1 West Indian Manatee

The West Indian manatee (*Tricherus manatus*) is an aquatic mammal that has been observed in marine, estuarine, and freshwater environments (USFWS, 2012c). They are herbivorous and opportunistic with foraging habits, feeding on a wide range of aquatic plants, including submerged, floating, and emergent vegetation. Though there is no suitable habitat for the species in the project area, suitable habitat exists in the waters around CCAD. Stormwater discharge from CCAD into Corpus Christi-Nueces Bay, just north of Laguna Madre could indirectly impact potential suitable manatee habitat. As determined during the permitting process for outfalls, BMPs would be implemented to minimize impacts from sedimentation and runoff from stormwater.

The project is **not likely to adversely affect** the West Indian manatee as there is no suitable habitat in the project area, and BMPs will be implemented to reduce indirect impacts from potential stormwater discharge into Corpus Christi-Nueces Bay.

3.4 REPTILES

3.4.1 Green Sea Turtle

The green sea turtle (*Chelonia mydas*) is a small to medium-sized marine turtle that is generally found in shallow waters inside reefs, bays, and inlets (USFWS, 2012g). During migration they venture into deeper waters. The species has been observed in the waters of the Corpus Christi-Nueces Bay system north of CCAD. Though there is no suitable habitat for this species within the project area, stormwater discharge from CCAD into Corpus Christi-Nueces Bay, just north of Laguna Madre could indirectly impact potential suitable habitat. As determined during the

permitting process for outfalls, Best management practices (BMPs) would be designed and implemented to minimize impacts from sedimentation and runoff from stormwater.

The project is **not likely to adversely affect** the green sea turtle as there is no suitable habitat in the project area, and BMPs will be implemented to reduce indirect impacts from potential stormwater discharge into Corpus Christi-Nueces Bay.

3.4.2 Hawksbill Sea Turtle

The hawksbill sea turtle (*Eretmochelys imbricata*) is a small to medium-sized marine turtle that frequents rocky areas, coral reefs, shallow coastal areas, lagoons or ocean islands, and narrow creeks and passes (USFWS 2012g). The species has been observed in the waters of the Corpus Christi-Nueces Bay system north of CCAD. Though the project area does not have any suitable habitat for the species, stormwater runoff from CCAD flowing into Corpus Christi-Nueces Bay, just north of Laguna Madre could indirectly impact potential suitable habitat for this species. As determined during the permitting process for outfalls, BMPs would be implemented to minimize impacts from sedimentation and runoff from stormwater.

The project is **not likely to adversely affect** the hawksbill sea turtle as there is no suitable habitat in the project area, and BMPs will be implemented to reduce indirect impacts from potential stormwater discharge into Corpus Christi-Nueces Bay.

3.4.3 Kemp's Ridley Sea Turtle

The Kemp's Ridley sea turtle (*Lepidochelys kempii*) is one of the smallest sea turtles, with adults only reaching up to the two feet in length and weighing up to 100 pounds. Suitable habitat for the species includes near-shore and inshore waters of the northern Gulf of Mexico. The species has been observed in the waters of the Corpus Christi-Nueces Bay system adjacent to CCAD. Though there is no suitable habitat for this species in the project area, stormwater discharge from CCAD into Corpus Christi-Nueces Bay, just north of Laguna Madre could indirectly impact potential suitable habitat. As determined during the permitting process for outfalls, BMPs would be implemented to minimize impacts from sedimentation and runoff from stormwater.

The project is **not likely to adversely affect** the Kemp's Ridley sea turtle as there is no suitable habitat in the project area, and BMPs will be implemented to reduce indirect impacts from potential stormwater discharge into Corpus Christi-Nueces Bay.

3.4.4 Loggerhead Sea Turtle

The loggerhead sea turtle (*Caretta caretta*) is a large sea turtle that can grow up to three feet in length and weigh up to 200 pounds (USFWS, 2012g). It is widely distributed within its range, having been observed hundreds of miles out to sea as well as in inshore areas such as bays, lagoons, salt marshes, creeks, ship channels, and the mouths of large rivers. Though there is no suitable habitat for the loggerhead sea turtle in the project area, the species has been observed in the waters of the Corpus Christi-Nueces Bay system north of CCAD. Stormwater discharge from CCAD into Corpus Christi-Nueces Bay, just north of Laguna Madre could indirectly impact potential suitable habitat for this species. As determined during the permitting process

for outfalls, BMPs would be implemented to minimize impacts from sedimentation and runoff from stormwater.

The project is **not likely to adversely affect** the loggerhead sea turtle as there is no suitable habitat in the project area, and BMPs will be implemented to reduce indirect impacts from potential stormwater discharge into Corpus Christi-Nueces Bay.

3.5 OTHER LISTED FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES

Project construction activities will have **no effect** on the following listed species because there is no suitable foraging and/or breeding habitat located in the survey area or on the adjacent landscape: Gulf Coast jaguarondi (*Herpailurus yaguarondi cacomitli*), ocelot (*Leopardus pardalis*), red wolf (*Canis rufus*), slender rushpea (*Hoffmannseggia tenella*), and south Texas ambrosia (*Ambrosia cheiranthifolia*).

Additionally, the leatherback sea turtle (*Dermochelys coriacea*) is the only species of sea turtle listed in Nueces County that has not been observed in the Corpus Christi-Nueces Bay system. It is more likely for the leatherback sea turtle to be found on the seaward side of North Padre Island, rather than the shallow waters or beaches associated with Corpus Christi Bay or Laguna Madre. Therefore the project is also anticipated to have **no effect** on the leatherback sea turtle, as there is no suitable habitat in the project area or immediately adjacent areas.

3.6 STATE-LISTED SPECIES

The State of Texas has listed eighteen (17) additional T&E species for Nueces County. Table 3-2 includes State-listed T&E species that are known to occur or may potentially occur in the survey area.

Table 3-2
State-Listed Threatened and Endangered Species within the County

Common Name	Scientific Name	Federal Status	State Status	Potential Occurrence in the Survey Area	Potential Species Presence
AMPHIBIANS					
Black-spotted Newt	*Notophthalmus meridionalis*	--	T	**Yes** - wet or sometimes wet areas, such as arroyos, canals, ditches, or even shallow depressions; aestivates in the ground during dry periods.	Possible Resident in Area
Sheep Frog	*Hypopachus variolosus*	--	T	**Yes** - open woodlands or pasturelands with abundant short-grass cover. Also are commonly found in vegetative debris near ponds and irrigation ditches.	Possible Resident in Area

Common Name	Scientific Name	Federal Status	State Status	Potential Occurrence in the Survey Area	Potential Species Presence
BIRDS					
American Peregrine Falcon	*Falco peregrinus anatum*	--	T	**Yes** - winters along coast and farther south; occupies wide range of habitat during migration, including urban, concentrations along coast and barrier islands	Possible Migrant Over Area
Peregrine Falcon	*Falco peregrinus*	--	T	**Yes** - include grain croplands and riparian areas along rivers, ponds, marshes, and meadows.	Possible Migrant Over Area
Reddish Egret	*Egretta rufescens*	--	T	**Yes** - brackish marshes and shallow salt ponds and tidal flats; nests on ground or in trees or bushes, on dry coastal islands and brushy thickets of yucca and prickly pear.	Possible Migrant Over Area
Sooty Tern	*Sterna fuscata*	--	T	**Yes** - rarely lands except when roosting; does not dive but snatches small fish and squid with bill as it flies or hovers over water.	Possible Migrant Over Area
Texas Botteri's Sparrow	*Aimophila botterii texana*	--	T	**Yes** - grassland and short-grass plains with scattered bushes and shrubs, sagebush, mesquite, or yucca.	Possible Migrant Over Area
White-face Ibis	*Plegadis chihi*	--	T	**Yes** - freshwater wetlands, including ponds, swamps, and marshes with pockets of emergent vegetation; also use flooded hay meadows and agricultural fields as feeding locations.	Possible Migrant Over Area
White-tailed Hawk	*Buteo albicaudatus*	--	T	**Yes** - near coast on prairies, cordgrass flats, and scrub-live oak; further inland on prairies, mesquite and oak savannas, and mixed savanna-chaparral.	Possible Migrant Over Area
Wood Stork	*Mycteria americana*	--	T	**Yes** - forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt water; usually roosts communally in snags.	Possible Migrant Over Area
FISH					
Opossum Fish	*Microphis brachyurus*	--	T	**No** - brooding adults found in fresh or low salinity waters and young move into or are carried into more saline waters after birth.	Not Likely in Project Area, but possible in immediately adjacent areas.
MAMMALS					
Southern Yellow Bat	*Lasiurus ega*	--	T	**Yes** - associated with trees, such as palm trees, which provide them with daytime roosts.	Possible Transient Over Area
White-nosed Coati	*Nasua narica*	--	T	**No** - woodlands, riparian corridors and canyons.	Not Likely
REPTILES					
Texas Horned Lizard	*Phrynosoma cornutum*	--	T	**No -** open, arid, and semi-arid regions with sparse vegetation, including grass, cactus, and scattered brush or scrubby trees.	Not Likely

Common Name	Scientific Name	Federal Status	State Status	Potential Occurrence in the Survey Area	Potential Species Presence
Texas Indigo Snake	*Drymarchon melanurus erebennus*	--	T	**No** - thornbush-chapparal woodlands of south Texas; in particular dense riparian corridors; can do well in suburban and irrigated croplands if not molested or poisoned; requires moist microhabitats such as rodent burrows.	Not Likely
Texas Scarlet Snake	*Cemophora coccinea lineri*	--	T	**No -** mixed hardwood scrub on sandy soils.	Not Likely
Texas Tortoise	*Gopherus berlandieri*	--	T	**No** - open brush with a grass understory is preferred; open grass and bare ground are avoided.	Not Likely

Source: TPWD, 2012a

T = Threatened

Potential suitable habitat was identified within the survey area for the following State listed species: black-spotted newt (*Notophthalmus meridionalis*) and sheep frog (*Hypopachus variolosus*). Though no individuals of these species were observed during the July 2012 survey conducted by WESTON, there is the possibility that these species reside within the freshwater habitats within the project area. Potential habitat for these species in the study area is low quality areas that include roadside ditches, water hazards, and the permitted temporary stormwater detention pond. All features are man-made features that typically undergo routine maintenance activities, such as mowing. Two of the water hazards on the front nine of the golf course are anticipated to remain untouched by the project, while the temporary stormwater detention pond and another water hazard (on the back nine of the golf course) will be removed. However, the project will create new stormwater features and will relocate ditches and water hazards currently located on the back nine of the golf course. Construction of new water hazards would occur prior to the demolition of the old facilities. While these species could be temporarily disturbed and displaced during construction, it is anticipated that the project is **not likely to adversely affect** the black-spotted newt and sheep frog.

The project is **not likely to adversely affect** the following State listed T&E species, as adjacent suitable habitat is present, and/or mitigation measures can be effective: American peregrine falcon (*Falco peregrines anatum*), peregrine falcon (*Falco peregrinus*), reddish egret (*Egretta rufescens*), sooty tern (*Sterna fuscata*), Texas Botteri's sparrow (*Aimophila botterii texana*), white-face ibis (*Plegadis chihi*), white-tailed hawk (*Buteo albicaudatus*), wood stork (*Mycteria americana*), opossum fish (*Microphis barchyurus*), Texas indigo snake (*Drymarchon melanurus erebennus*), Texas scarlet snake (*Cemophoa coccinea lineri*), and Texas tortoise (*Gopherus berlandieri*).

The project will have **no effect** on the white-nosed coati (*Nasua narica*) because there is no suitable foraging and/or breeding habitat located in the survey area.

3.7 TEXAS SPECIES OF CONCERN

The TPWD designates plant and wildlife species with limited distribution and/or rare occurrence as SOC, and seeks to identify and minimize potential conservation threats. SOC do not receive regulatory protection; therefore, a determination of species presence was not conducted. A list of Texas SOC and the likely presence within the survey area is included in Appendix B. Based on the 2006 Integrated Natural Resource Management Plan (INRMP) for NASCC given to WESTON by CCAD (NASCC 2006), one SOC is known to exist within the survey area.

3.7.1 Maritime Pocket Gopher

The maritime pocket gopher (*Geomys personatus maritimus*) is a fossorial, herbivorous rodent that prefers to dig its extensive burrows in deep, sandy soils (TPWD, 2012). The gophers forage primarily within their burrows on roots and other plant parts, preferring grasses to other forage. The species is ecologically important not only as a prey species for other animals but for the role it plays in influencing soils, microtopography, habitat heterogeneity, and plant diversity (TPWD, 2102). However, these same activities can have negative impacts, as gophers have been known to gnaw underground cables, and their burrows can damage lawns and golf courses (NASCC, 2006). Their burrows may even act as conduits for irrigation water.

During the July 2012 survey, WESTON personnel did not observe any individual maritime pocket gophers during the general survey; however, it should be noted that WESTON did not conduct a species specific survey for the maritime pocket gopher. However, several areas with burrows were observed within the general survey area, but those burrows appeared to be utilized by spotted ground squirrels (*Spermophilus spilosoma*), which were frequently observed. The 2006 Integrated Natural Resource Management Plan (INRMP) for NASCC shows the locations of gopher mounds on the installation at the time (NASCC 2006). Though the vast majority of mound locations fall outside of the survey area, three mound locations are indicated on the south, west, and north sides of the golf course, respectively, two are in the area immediately adjacent to Building 1700, and four fall on the eastern edge of the proposed site of the relocated back nine of the golf course. During the survey, WESTON was informed by NASCC personnel that maritime pocket gophers are present on the CCAD installation and that consultation with USFWS would be required before any construction could take place in areas with suspected gopher activity (NASCC, 2012). Therefore, a final determination regarding project impacts upon the maritime pocket gopher cannot be made until consultation with the USFWS has been completed. It is anticipated that the USFWS will be consulted during the NEPA review of these projects and prior to any construction activities.

3.8 MIGRATORY BIRDS

The project is located within the Central Migratory Flyway of North America (USFWS, 2012f). The flyway is bounded by the Mississippi River to the east and the Rocky Mountains to the west. Migratory species typically use this flyway to travel from wintering grounds in the south to summering grounds in the north, though migratory patterns vary by species. Approximately 53% of the 629 species of birds documented as occurring in Texas are classified as temperate to tropical latitude migrants (Shackelford et al., 2005).

Migratory birds are protected by the Migratory Bird Treaty Act (16 U.S.C.§703) as well as Executive Order (EO) 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds). Illegal actions against migratory bird species are defined by the Migratory Bird Treaty act as any "attempt at hunting, pursuing, wounding, killing, possessing, or transporting any migratory bird, nest, egg, or part thereof" (USFWS, 2012d).

The most common open field nesting species in Texas are the killdeer (*Charadrius vociferus*) and meadowlark (*Sturnella spp*). Although these species are not Federally or State listed as threatened and endangered, they are protected by the Migratory Bird Treaty Act. These species have a propensity to nest in freshly cleared soils (i.e., cleared land at construction sites), as well as plains and prairies, whether grassy or bare; fields or pastures, whether cultivated or fallow; and marshes, beaches, bays, and lagoon flats of the coast (TPWD, 2012d). Nesting season for the killdeer occurs in the spring between late February through August (CDFG, 2012), and between late April through early August for the meadowlark (Jones et al, 2010). Special precautions should be taken to prevent impacts and avoid the nests of these species once they have been established, as the birds are very sensitive to human disturbance during the breeding season (Seattle Audubon Society, 2012).

No active nests were identified within the survey area. However, nesting sites for some species of migratory birds can change from year to year. Nests for migratory birds could be constructed within the survey area during future breeding seasons. Therefore, if construction activities may take place during breeding season, WESTON recommends pre-construction surveys for breeding nests be conducted by a trained biologist prior to any clearing activities. Additionally, mitigation measures implemented for Federally and State listed species would be anticipated to protect and minimize any potential impact to these migratory birds.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

WESTON completed a T&E species habitat assessment for the approximately 275 acres recreational area and undeveloped lot on CCAD in Nueces County, Texas. The survey area is characterized as developed urban land with maintained lawn and outdoor recreational areas including three water bodies and a detention pond.

Field investigations performed in July 2012 identified four (4) waterbodies within the survey area, all of which were determined to be wetlands. Field investigations also identified the potential for Federally and State listed T&E species and SOC to occur on or in the vicinity of the survey area.

A total of sixteen (16) T&E species are Federally listed by USFWS for Nueces County, consisting of four (4) birds, four (4) mammals, five (5) reptiles, one (1) fish, and two (2) flowering plants. Additionally, Texas has listed twenty-two (22) threatened and endangered species for Nueces County as well as twenty five (25) SOCs. Based on best professional judgment and review of Federally and State listed T&E species, WESTON concluded the following:

No Federally listed critical habitat was identified within the survey area, and no nests were observed during the field survey.

While limited suitable habitat was identified within the survey area, more abundant suitable habitat for several listed species is present within the Laguna Madre adjacent to the project area. Project mitigation measures can be implemented to effectively prevent adverse impacts to identified receptors. The project is **not likely to adversely affect** the following T&E species, as adjacent suitable habitat is present or mitigation measures can be effective: Atlantic hawksbill sea turtle (*Eretmochelys imbricate*), green sea turtle (*Chelonia mydas*), Kemp's Ridley sea turtle (*Lepidochelys kempii*), leatherback sea turtle (*Dermochelys coriacea*), loggerhead sea turtle (*Caretta caretta*), Texas indigo snake (*Drymarchon melanurus erebennus*), Texas scarlet snake (*Cemophoa coccinea lineri*), Texas tortoise (*Gopherus berlandieri*), opossum fish (*Microphis barchyurus*), smalltooth sawfish (*Pristis pectinata*), American peregrine falcon (*Falco peregrines anatum*), Eskimo curlew (*Numenius borealis*), northern aplomado falcon (*falco femoralis septentrionalis*), peregrine falcon (*Falco peregrinus*), piping plover (*Charadrius melodus*), reddish egret (*Egretta rufescens*), sooty tern (*Sterna fuscata*), Texas Botteri's sparrow (*Aimophila botterii texana*), white-face ibis (*Plegadis chihi*), white-tailed hawk (*Buteo albicaudatus*), whooping crane (*Grus americana*), wood stork (*Mycteria americana*), and West Indian manatee (*Tricherus manatus*).

The project will have **no effect** on the following T&E species because there is no suitable foraging and/or breeding habitat located in the survey area and/or because the species has been extirpated: Gulf Coast jaguarondi (*Herpailurus yaguarondi cacomitli*), ocelot (*Leopardus pardalis*), red wolf (*Canis rufus*), white-nosed coati (*Nasua narica*), slender rushpea (*Hoffmannseggia tenella*), and south Texas ambrosia (*Ambrosia cheiranthifolia*).

Suitable habitat was identified for the following species: black-spotted newt (*Notophthalmus meridionalis*) and sheep frog (*Hypopachus variolosus*). However, it is anticipated that the project is **not likely to adversely affect** these species as the low quality potential habitat will be relocated by the project prior to construction and these species will be temporarily disturbed and displaced during construction.

4.2 RECOMMENDATIONS

Based on findings in this report, WESTON recommends the implementation of mitigation measures to prevent or minimize potential adverse effects to T&E species to all extents practicable. Specific mitigation measures for the project should include the following:

- USFWS should be consulted regarding impacts from project construction activities to the maritime pocket gopher population.
- Implement BMPs for stormwater discharge into Corpus Christi Bay, just north of Laguna Madre.
- Personnel should continue to be trained on a no-approach and no-kill policy toward all wildlife.
- Trained biologist should perform pre-construction surveys for migratory bird nests prior to any clearing activities, if clearing activities are scheduled during breeding season. Breeding season for migratory birds can last from late February through early August.
- The presence of an environmental monitor/wildlife control specialist could aid personnel in implementation of these mitigation measures and provide professional advice on staging and timing of activities. Additionally, an environmental monitor/wildlife control specialist could monitor for the presence of wildlife during all stages of activities, especially during the initial site clearing and/or grading, when most wildlife would be the most vulnerable.

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6. QUALIFICATIONS

WESTON utilized qualified professional staff, trained in performing the scope of work required for this wetland delineation report. This team included a senior technical reviewer, project leader, and technical support team. Their roles are described in detail as follows:

- Project Leader – Erin Johnson has over 9 years' experience conducting environmental research and sampling, with over 6 years of conducting extensive NEPA project management and environmental documentation. Ms. Johnson has performed and supervised environmental assessment activities including wildlife surveys, State and Federally listed threatened and endangered species consultations, Phase I Environmental Site Assessments, Environmental Assessment documentation preparation, regulatory compliance and permitting, and public presentations. Work by Ms. Johnson has included analyzing environmental factors with project impacts, mitigation, and alternatives, including biological resources; threatened and endangered species; wetlands and water resources; and archeological, cultural, and historical resources.

- Senior Project Scientist – Carla Kartman has over 15 years of scientific surveys including threatened and endangered species surveys, waters of U.S. determinations, and wetland delineations. Experience with field surveys, documentation, permitting, compliance, restoration and mitigation related to U.S. waters. National Environmental Policy Act (NEPA) project management, data collection/surveys, and documentation/ document production; Clean Water Act (CWA) project management, data collection, delineation/determination, documentation, permitting, and mitigation; Endangered Species Act (ESA) project management, presence/absence surveys, coordination, and documentation.

- Associate Project Scientist – Mary Tibbets has performed environmental consulting for over a year. Ms. Tibbets has worked on a variety of projects, including data gathering and writing for NEPA reports. Ms. Tibbets has a Bachelor's degree in Biology from Knox College and a Master's degree in Wildlife Ecology from Texas State University. In pursuit of her Master's degree, she wrote and defended a thesis examining the impact of anthropogenic noise on the avian community of suburban greenspace. She has professional experience in threatened and endangered species surveys and wetland delineations.

- Principal Project Professional – Douglas Hagemeier, responsible for project QA/QC and oversight, has over 30 years' experience assessing and managing environmental aspects of linear projects (pipeline, rail, highway, and transmission); successfully developing permitting and mitigation strategies or plans; and implementing project construction monitoring and inspection programs for pipeline projects under Federal and State regulatory programs across the United States. Mr. Hagemeier is an aquatic ecologist by training and a member in good standing of the Ecological Society of America since 1980.

APPENDIX A

SITE PHOTOGRAPHIC LOG

PHOTOGRAPH NO. 1

Date: 07/10/12
Direction: NW

Description:

Sandy soil evident to the bottom left and gopher/sand squirrel mounds to the right.

PHOTOGRAPH NO. 2

Date: 07/10/12
Direction: NW

Description:

Mowed lawn area of proposed location of new back nine for NASCC golf course.

PHOTOGRAPH NO. 3

Date: 07/10/12
Direction: NW

Description:

Mowers maintaining lawn areas.

PHOTOGRAPH NO. 4

Date: 07/10/12
Direction: W

Description:

Detention pond providing freshwater suitable habitat for various avian and reptile species.

PHOTOGRAPH NO. 5

Date: 07/10/12
Direction: N

Description:

Potential habitat at detention pond.

PHOTOGRAPH NO. 6

Date: 07/11/12
Direction: SW

Description:

Suitable freshwater habitat at water hazard on golf course for various avian and reptile species.

PHOTOGRAPH NO. 7

Date: 07/11/12
Direction: SE

Description:

Suitable freshwater habitat for various avian and reptile species at water hazard on the golf course.

PHOTOGRAPH NO. 8

Date: 07/11/12
Direction: NE

Description:

Suitable freshwater habitat for various avian and reptile species at water hazard on the golf course.

PHOTOGRAPH NO. 9

Date: 07/11/12
Direction: SE

Description:

Suitable freshwater habitat for various avian and reptile species at water hazard on the golf course.

PHOTOGRAPH NO. 10

Date: 07/11/12
Direction: NW

Description:

Gopher/ground squirrel mounds in maintained lawn area to the left.

PHOTOGRAPH NO. 11

Date: 07/11/12
Direction: W

Description:

Suitable freshwater habitat for various avian and reptile species at water hazard on the golf course.

APPENDIX B

TEXAS-LISTED SPECIES OF CONCERN

Texas Listed Species of Concern for Nueces County	
Common Name	**Scientific Name**
BIRDS	
Arctic Peregrine Falcon	*Falco peregrinus anatum*
Brown Pelican	*Pelecanus occidentalis*
Mountain Plover	*Charadrius montanus*
Sennets Hooded Oriole	*Icterus cucullatus sennetti*
Snowy Plover	*Charadrius alexandrius*
Southeastern Snowy Plover	*Charadrius alexandrius tenuirostris*
Sprague's Pipit	*Anthus spragueii*
Western Burrowing Owl	*Athene cunicularia hypugaea*
Western Snowy Plover	*Charadrius alexandrinus nivosus*
FISH	
American Eel	*Anguilla rostrata*
Texas Pipefish	*Syngnathus affinis*
INSECTS	
Manfreda giant-skipper	*Stallingsia maculosus*
MAMMALS	
Maritime Pocket Gopher	*Geomys personatus maritimus*
Plains Spotted Skunk	*Spilogale putorius interrupta*
PLANTS	
Buckley’s spiderwort	*Tradescantia buckleyi*
Elmedorf's Onion	*Allium elmendorfii*
Lila de los Llanos	*Echeandia chandleri*
Mexican mud-plantain	*Heteranthera mexicana*
Plains Gumweed	*Grindelia oolepis*
Texas Windmill-Grass	*Chloris texensis*
Welder Machaeranthera	*Psilactis heterocarpa*
REPTILES	
Gulf Saltmarsh Snake	*Nerodia clarkii*
Keeled Earless Lizard	*Holbrookia propinqua*
Spot-tailed Earless Lizard	*Holbrookia lacerata*
Texas Diamondback Terrapin	*Malaclemys terrapin littoralis*