



Biological Evaluation Form

Main CSJ: 0028-13-135 and 0739-02-140

Form Prepared By: EPR/TxDOT

Date of Evaluation: June 17, 2019

Project has no Federal nexus.

Proposed Letting Date: August 2020

Project not assigned to TxDOT under the NEPA Assignment MOU

District(s): Beaumont

County(ies): Jefferson

Roadway Name: Interstate 10 and United States 69

Limits From: Interstate 10: from Walden Road to 7th Street
United States 69: from Fannett Road to 11th Street

Limits To: Interstate 10: from Walden Road to 7th Street
United States 69: from Fannett Road to 11th Street

Project Description: The proposed 10/69 Interchanges Project (the project) includes reconstructing and expanding I-10 and US 69 where they converge in the city of Beaumont, Jefferson County, Texas. The project would widen the existing I-10 from Walden Road (County Road 131) to 7th Street and existing US 69 from Fannett Road (State Highway 124) to 11th Street. Between the Cardinal Drive and Eastex Freeway interchanges, the roadway would be widened in each direction from four lanes to five lanes. The roadway approaches to the Cardinal Drive and Eastex Freeway interchanges on I-10 and US 69 would be widened in each direction from two lanes to three lanes. The project also includes new frontage roads for continuity throughout the limits, relocating I-10 ramps, and constructing two-lane direct connectors in each direction where I-10 and US 69 converge within the project limits. In addition, the project includes changes to the Maury Meyers Bridge (Liberty/Laurel Overpass) to address a height constraint for freight movements and includes upgrading drainage infrastructure to current design standards.

The proposed project has independent utility, in that it is not interdependent of larger actions, and does not require prior or simultaneous actions to be taken for this project to proceed. The logical termini is I-10 from Walden Road (County Road 131) to 7th Street and existing US 69 from Fannett Road (State Highway 124) to 11th Street. This project will complete an initiative to provide six lanes of interstate traffic from Houston to Louisiana.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT.

Endangered Species Act (ESA)

Yes Is the action area of the proposed project within the range of federally protected species?

Yes Did the USFWS IPaC system identify any endangered species that may occur or could potentially be affected by the proposed project activities?

Date that the [IPaC system](#) was accessed: June 19, 2019

No Is the action area of the proposed project in suitable habitat of federally protected species?



*Explain:

The Official Species List letter indicated that no critical habitat lies within the study area and identified eight threatened or endangered species which needed further evaluation for this project: piping plover (Charadrius melodus) (T), red knot (Calidris canutus rufa)(T), West Indian manatee (Trichechus manatus)(T), green sea turtle (Chelonia mydas)(T), Hawksbill sea turtle (Eretmochelys imbricata)(E), Kemp's ridley sea turtle (Lepidochelys kempii)(E), leatherback sea turtle (Dermochelys coriacea)(E), and loggerhead sea turtle (Caretta caretta)(T).

The study area does not contain suitable habitat for piping plover or red knot. Piping plovers and red knots are migratory species that utilize coastal bays, mud flats, and coastal wetlands. No tidal inlets, mud flats, or appropriate habitat for these birds was observed within the project area. Therefore, the proposed project would have no effect on the piping plover or red knot.

West Indian manatees prefer shallow, slow-moving waters of rivers, estuaries, saltwater bays, canals in coastal areas. Manatee sightings are extremely rare in Texas. While the project area has channelized waterways and canals, suitable estuary or bay habitat was not observed within the proposed area. Streams in the project area are not large enough to support the size of a manatee and do not provide appropriate aquatic vegetation for feeding. A saltwater barrier is present downstream of the project area on Taylor's Bayou preventing upstream travel by a manatee. The project area is too far inland. Suitable habitat for West Indian manatees is not present within the project area. Therefore, the proposed project would have no effect on the West Indian manatee.

Green sea turtles, Hawksbill sea turtles, Kemp's ridley sea turtles, leatherback sea turtles, and loggerhead sea turtles are all known to inhabit the Gulf of Mexico and specifically Texas waters. While several species are known to nest on Texas beaches, the majority of the nesting occurs on beaches in the southern part of the state. Sea turtles are pelagic species inhabiting the Gulf of Mexico. No sandy beaches, bays, estuaries or suitable habitat exists within the project area for sea turtles. While the project is near the Gulf of Mexico, no appropriate open water or beach habitat was identified within the project area. A saltwater barrier is present downstream of the project area on Taylor's Bayou preventing upstream travel by a sea turtle. Therefore, the proposed project would have no effect on the five species of sea turtle listed in this report.

Resources consulted or activities conducted to make effect determination (if applicable):

- TPWD County List USFWS Critical Habitat Maps Species Expert Consulted
- Aerial Photography Coastal Areas Maps Site Visit
- Topographic Map Species Study Conducted Karst Zone Maps
- Ecological Mapping System of Texas (EMST) Natural Diversity Database (NDD)

Other:

Site visit conducted in June of 2019 by qualified biologists.

Essential Fish Habitat (EFH)

 No Are tidally influenced waters in the action area of the proposed project?

Date that the NOAA EFH Mapper was accessed: June 18, 2019



Coastal Barrier Resources Act (CBRA)

No Is the action area of the proposed project located within a designated CBRA map unit?

Date USFWS CBRA Mapper Accessed: June 18, 2019

Marine Mammal Protection Act (MMPA)

No Is the project within range of marine mammals and their habitat?

Migratory Bird Treaty Act (MBTA)

Yes Is there potential for nesting birds to be present in the project action area during construction?

No Were active nests identified during the site survey?

Yes Will BMPs will be incorporated to protect migratory bird nests?

Bald and Golden Eagle Protection Act (BGEPA)

No Does the proposed project have the potential to impact Bald or Golden Eagles?

Comments:

The project area is largely urban and no eagles or eagle nests were observed during the field investigation. The project area does not contain suitable nesting habitat for bald or golden eagles. Mature trees in the project area are within highway median and are not immediately adjacent to a large body of water.

Fish and Wildlife Coordination Act (FWCA)

Yes Does the project have impacts on one or more Waters of the U.S. or wetlands?

Yes Is the project covered by a Nationwide Permit?

No Is the project covered by an Individual Permit from the USACE?

Comments:

The proposed project is likely to be covered under a Nationwide Permit 14. However, an Individual Permit may be necessary pending an Approved Jurisdictional Determination from the USACE.



Executive Order 13112 on Invasive Species

Yes Would the proposed project be in compliance with EO 13112?

Executive Memorandum on Environmentally and Economically Beneficial Landscaping

No Would landscaping be included in the proposed projects?

Farmland Protection Policy Act (FPPA)

Yes Would the project require new ROW or permanent easements (Do not include temporary easements)?

Yes Is the project located in a "non-urbanized area" that contain areas mapped as prime, unique, statewide important or locally important farmland by the NRCS Web Soil Survey or Census Bureau?

Yes Is the proposed action a linear project?

No Was the score on Part IV of FPPA Form SCS-CPA 106 equal to or greater than 60?

Comments:

Part VI was completed and is included in the attachments.

General Comments



Findings

Endangered Species Act (ESA)

No suitable habitat was observed for any federally listed species. Therefore, there would be no effect on federally listed species. However, measures to avoid harm to any threatened and endangered species would be taken should they be observed during construction of the proposed project. Coordination with the USFWS would not be required. The USFWS IPaC website was accessed on June 19, 2019.

Essential Fish Habitat (EFH)

Tidally influenced waters do not occur within the project action area. Coordination with National Marine Fisheries Service is not required.

Coastal Barrier Resources Act (CBRA)

The Coastal Barrier Resources Act (CBRA) established the Coastal Barrier Resources System to protect a defined set of geographic units along the coast of the U.S.

This project is not located within a designated CBRA map unit. Coordination with the U.S. Fish and Wildlife Service (USFWS) is not required.

Marine Mammal Protection Act (MMPA)

Marine mammals are protected under the Marine Mammal Protection Act (MMPA). The Texas coast provides suitable habitat and is within range of several marine mammals including the West Indian Manatee (*Trichechus manatus*), and bottlenose dolphin (*Tursiops truncatus*).

The project area does not contain suitable habitat for marine mammals. Coordination with NMFS is not required.

Migratory Bird Treaty Act (MBTA)

The Migratory Bird Treaty Act (MBTA) states that it is unlawful to kill, capture, collect, possess, buy, sell, trade, or transport any migratory bird, nest, young, feather, or egg in part or in whole, without a federal permit issued in accordance within the Act's policies and regulations.

A site survey did not identify active nests within the project action area. While no impact to migratory birds is expected, TxDOT will take all appropriate actions to prevent the take of migratory birds, their active nests, eggs, or young should they be discovered on the project site. Direction to contractors is provided on the standard EPIC sheet.

Bald and Golden Eagle Protection Act (BGEPA)

The proposed project does not have the potential to impact Bald or Golden Eagles.

Fish and Wildlife Coordination Act (FWCA)

The Fish and Wildlife Coordination Act (FWCA) of 1958 requires that federal agencies obtain comments from USFWS and TPWD. This coordination is required whenever a project involves impounding, diverting, or deepening a stream channel or other body of water.

The proposed project is authorized under a Section 404 of the Clean Water Act Nationwide Permit; therefore, no coordination under FWCA would be required.



Executive Order 13112 on Invasive Species (EO 13112)

Re-vegetation of disturbed areas would be in compliance with the Executive Order on Invasive Species (EO 13112). Regionally native and non-invasive plants will be used to the extent practicable in landscaping and re-vegetation.

Executive Memorandum on Beneficial Landscaping

Landscaping is not part of the proposed project. If revegetation is needed, disturbed areas would be revegetated according to TxDOT's standard practices, which to the extent practicable, complies with Executive Memorandum on Environmentally and Economically Beneficial Landscaping. Direction to contractors is provided on the standard EPIC sheet.

Farmland Protection Policy Act (FPPA)

The proposed project would convert farmland subject to the FPPA to a nonagricultural, transportation use. However, the combined scores of the relative value of the farmland and the site assessment completed by TxDOT do not warrant further consideration for protection and no additional sites need to be evaluated.



Suggested Attachments

Aerial Map (with delineated project boundaries)

USFWS T&E List

TPWD T&E List

Species Impact Table

NDD EOID List and Tracked Managed Areas (Required for TPWD Coordination)

NOAA EFH Mapper Printout

USFWS CBRA Mapper Printout

EMST Project MOU Summary Table (Required for TPWD Coordination)

TPWD SGCN List

FPPA Documentation

NRCS Web Soil Survey Map

Census Bureau Urbanized Area Map

Landscaping Plans

Photos (Required for TPWD Coordination)

Previous TPWD Coordination Documentation (if applicable)



Tier I Site Assessment

Main CSJ: 0028-13-135 and 0739-02-140

Form Prepared By: EPR/TxDOT

Date of Evaluation: June 17, 2019

Project is classified as a Categorical Exclusion

Proposed Letting Date: August 2020

Project not assigned to TxDOT under the NEPA Assignment MOU

District(s): Beaumont

County(ies): Jefferson

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1. No Is the project limited to a maintenance activity exempt from coordination?
<http://txdot.gov/inside-txdot/division/environmental/maintenance-program.html>
2. No Has the project previously completed coordination with TPWD?
3. Yes Is the project within range of a state threatened or endangered species or SGCN and suitable habitat is present?

*Explain:

Suitable habitat is limited within the proposed project boundary. Most of the proposed ROW includes existing intersecting roadway ROW comprised of well maintained urban vegetation, such as common turf grasses and landscaping shrubs. Additional areas of turf grass are present within and adjacent to the proposed project within commercial and residential landscaping. Areas of Mixed Woodlands and Forest were observed within the project ROW; the majority of which were within the median of the existing roadway at the I-10 and US 69 intersection.



Small areas of woodlands were observed immediately adjacent and slightly within the southeastern portion of the project area. These areas were comprised of young, dense forest containing loblolly pine (Pinus taeda), various oaks (Quercus sp.), and yaupon (Ilex vomitoria). This area of forest is bordered on all sides by urban development. The Vegetation Impact Table in Appendix A details the types and acreage of vegetation found in the project ROW.

The proposed project is within the range of state threatened/endangered species, and contains potentially suitable habitat for 28 listed species, as verified by a qualified biologist in June of 2019. A figure showing the project area has been included as Figure 1. The listed species table is attached and details which species could be present within the project area and whether the project will impact these species.

Forested areas within the project area could be considered habitat for the Swallow-tailed Kite (Elanoides forficatus) and White-faced Ibis (Plegadis chihi). While the potential habitat is present within the project area, it is isolated and marginal, and would likely only be used by transient birds.

Hillebrandt Bayou is potential habitat for three listed fish species, five listed mussel species, Smooth Softshells (Apalone mutica), and Alligator Snapping Turtles (Macrochelys temminckii). The bayou and its banks could also be utilized as habitat for the Mink (Neovison vison).

Timber rattlesnakes (Crotalus horridus), Eastern Box Turtles (Terrapene carolina), Corkwood (Leitneria pilosa), Swamp Rabbits (Sylvilagus aquaticus), Long-tailed Weasels (Mustela frenata), and Eastern Spotted Skunk (Spilogale putorius) could utilize the mixed woodlands and wetlands along the margins of the southern portion of the project area. These forested areas are generally small and isolated from large tracts of intact habitat, but could be utilized by the species.

The project area contains man-made structures such as bridges and culverts that could be utilized by the seven listed bat species for Jefferson County. Additionally, large, mature trees were located within the median and along the access roads in the southern portion of the project area. While no bats or evidence of bats was noted during field investigation, appropriate habitat is present.

Grassy upland areas in the southern portion of the project area could be considered marginal habitat for Western Box Turtles (Terrapene ornata) and Southern Short-tailed Shrews (Blarina carolinensis). While these species were not encountered during field investigations, a Least Shrew (Cryptotis parva) was located beneath a discarded board adjacent to the existing roadway, showing that the project area is suitable for Soricidae species.

Date [TPWD County](#) List Accessed: September 18, 2019

Date that the NDD was accessed: March 1, 2019

What agency performed the NDD search? TPWD

EOID Number	Common Name	Scientific Name	Listing Status	Buffer Zone
14028, 14029	Alligator Gar	<i>Atractosteus spatula</i>	SGCN	10 Mile
4767	Bat Roost	<i>Bat Roost</i>	NA	10 Mile
6095	Northern Scarlet Snake	<i>Cemophora coccinea copei</i>	SGCN	10 Mile
817	Rafinesque's Big-eared Bat	<i>Corynorhinus rafinesquii</i>	T	10 Mile
1360	Rafinesque's Big-eared Bat	<i>Corynorhinus rafinesquii</i>	T	10 Mile
10774	Texas Pigtoe	<i>Fusconaia askewi</i>	T	10 Mile
12632, 12633, 12634	Sandbank Pocketbook	<i>Lampsilis satura</i>	T	10 Mile
6929	Southeastern Myotis	<i>Myotis austroriparius</i>	SGCN	10 Mile



NDD Search Results for EOIDs and Tracked Managed Areas

EOID Number	Common Name	Scientific Name	Listing Status	Buffer Zone
10196	Sabine Shiner	<i>Notropis sabiniae</i>	SGCN	10 Mile
6762	Texas Trailing Phlox	<i>Phlox nivalis ssp. texensis</i>	E	10 Mile
3553, 1289, 6911, 6960	Long-sepaled False Dragon-head	<i>Physostegia longisepala</i>	SGCN	10 Mile
2050	Rookery	<i>Rookery</i>	NA	10 Mile
11773, 11774	Alfisol Coastal Prairie	<i>Alfisol Coastal Prairie</i>	NA	10 Mile

 No Does the BMP PA eliminate the requirement to coordinate for all species?

Comments:

Species that do not have BMPs established include Alligator Gar, Sabine Shiner, Southern short-tailed shrew, Tricolored Bat, Big Brown Bat, Eastern Red Bat, Hoary Bat, Mexican Free-tailed Bat, Eastern Spotted Skunk, Swamp Rabbit, Long-tailed weasel, Mink, Smooth Softshell, Eastern Box Turtle, Western Box Turtle, and Corkwood. The American Eel does have established BMPs, but the programmatic agreement states that if work is performed in the water, coordination must take place.

4. No NDD and TCAP review indicates adverse impacts to remnant vegetation?

Comments:

The NDD search identified occurrences of Alfisol Coastal Prairie within a 10-mile radius of the project area. A figure showing the NDD results is included as Figure 2. No listed series were observed within the ROW during surveys by a qualified biologist and are not depicted on NDD data within 1.5 miles of the project area. Therefore, the proposed project would have no impact on the remnant vegetation system listed above.

5. Yes Does the project require a NWP with PCN or IP by USACE?

*Explain:

While exact project impacts can not be determined at this point in the environmental assessment, the project has the potential to impact up to 0.72 acres of wetlands and 3,409 linear feet of streams. Determination of impacts and jurisdictional calls of features will be finalized during USACE permitting. However, a NWP 14 is anticipated since field data indicates 0.71 acres of wetlands are potentially non-jurisdictional.

Wetland 1: 0.01 acre
Wetland 2: 0.03 acre
Wetland 3: 0.04 acre
Wetland 4: 0.12 acre
Wetland 5: 0.38 acre
Wetland 6: 0.04 acre
Wetland 7: 0.09 acre
Wetland 8: 0.01 acre

Stream 1: 18 lf
Stream 1-Culvert: 389 lf
Stream 2: 529 lf
Stream 3: 572 lf



Tier I Site Assessment

Stream 4: 22 lf
 Stream 4-Culvert: 170 lf
 Stream 5: 37 lf
 Stream 6: 14 lf
 Stream 7: 9 lf
 Stream 7-Culvert: 401 lf
 Stream 8: 40 lf
 Stream 9: 11 lf
 Stream 10: 106 lf
 Stream 11-Culvert: 411 lf
 Stream 12-Culvert: 310 lf
 Stream 13-Culvert: 74 lf
 Stream 14-Culvert: 296 lf

6. No Does the project include more than 200 linear feet of stream channel for each single and complete crossing of one or more of the following that is not already channelized or otherwise maintained:

Comments:

Fourteen stream crossings were identified during the field delineation of the project area. All streams within the project area were identified as being channelized, culverted, or otherwise maintained.

7. No Does the project contain known isolated wetlands outside the TxDOT ROW that will be directly impacted by the project?

8. No Would the project impact at least 0.10 acre of riparian vegetation?

Comments:

Riparian vegetation was not observed within the project area during field investigations. Therefore, impacts to riparian vegetation is not anticipated.

9. Yes Does project disturb a habitat type in an area equal to or greater than the area of disturbance indicated in the Threshold Table Programmatic Agreement?

*Explain:

Proposed project impacts (20.05 acres) would exceed the threshold for Mixed Woodlands and Forests (0.5 acre), assuming full impact to these areas. While final design may reduce these impacts, the threshold for Mixed Woodlands and Forests will still likely be exceeded.

*Attach associated file of EMST output (Mapper Report or other Excel File which includes MOU Type, Ecosystem Name, Common/Vegetation Type Name) in ECOS

Excel File Name:

I10 EMST Vegetation.xls. A pdf is included in Appendix B of this document.

9.1. Yes Is there a discrepancy between actual habitat(s) and EMST mapped habitat(s)?

*Explain:

The EMST Vegetation Impacts Table and Figures 3 and 4 included in the attachments of this form show the discrepancy between actual habitat and EMST mapped habitat. Figure 3 shows the EMST mapped habitat and Figure 4 shows the actual habitat observed during a site visit. Photos of the vegetation



discrepancies are included in Appendix C.

TPWD EMST data shows areas of Agriculture within the median of the southern interchange of I-10 and US 69. Areas depicted as riparian are shown along the Port Arthur Canal and Hillebrandt Bayou. The field assessment determined these areas are well maintained median and considered Urban. Areas of Tidal and Salt Marsh are also depicted at Hillebrandt Bayou. The banks of Hillebrandt Bayou are well maintained within the project area and are not wetlands. Coastal Prairie and Woodlands are depicted near the northern intersection of the project area. These areas were evaluated and determined to be Urban.

I10 EMST Vegetation.xls is included in Appendix B of this document. Figures 3 and 4 show the Mapped and Observed EMST for the project area.

Attach file showing discrepancy between actual and EMST mapped habitat(s).

File Name:

I10 EMST Vegetation.xls
 PDF included in Appendix B. Figures 3 and 4 show the discrepancy between actual habitat and EMST mapped habitat.

Is TPWD Coordination Required?

Yes

- Early Coordination
- Administrated Coordination - Must be conducted through ENV-NRM

BMPs Implemented or EPICs included (as necessary):

Bird BMPs: Swallow-tailed Kite, White-faced Ibis
 Fish and Water Quality BMPs: American Eel
 Bat BMPs: Southeastern Myotis, Rafinesque's Big-eared Bat
 Mussel BMPs: Louisiana Pigtoe, Sandbank Pocketbook, Southern Hickorynut, Texas Heelsplitter, Texas Pigtoe
 Aquatic Reptile BMPs and Minimize impacts to wetland and riverine habitats: Alligator Snapping Turtle
 Terrestrial Reptile BMPs: Timber Rattlesnake
 Vegetation BMPs

Coordination will be required for Alligator Gar, Sabine Shiner, American Eel, Southern short-tailed shrew, Tricolored Bat, Big Brown Bat, Eastern Red Bat, Hoary Bat, Mexican Free-tailed Bat, Eastern Spotted Skunk, Swamp Rabbit, Long-tailed weasel, Mink, Smooth Softshell, Eastern Box Turtle, Western Box Turtle, Corkwood, exceedance of mixed woodlands and forest EMST threshold.

TxDOT Contact Information

Name: Leanna Sheppard

Phone Number: 409-898-5792

E-mail: Leanna.Sheppard@txdot.gov



Tier I Site Assessment



Suggested Attachments

Aerial Map (with delineated project boundaries)

USFWS T&E List

TPWD T&E List

Species Impact Table

NDD EOID List and Tracked Managed Areas (Required for TPWD Coordination)

EMST Project MOU Summary Table (Required for TPWD Coordination)

TPWD SGCN List

Photos (Required for TPWD Coordination)

Previous TPWD Coordination Documentation (if applicable)

Figures

Figure 1: Project Location Map

Figure 2: NDD Database Search Map

Figure 3: EMST Mapped Habitat

Figure 4: EMST Observed Habitat

Figure 5: USGS Topographic Map

Appendices

Appendix A: IPAC Official Species List

Appendix B: BEF Vegetation Impacts

Appendix C: Site Photographs

Appendix D: Jefferson County Rare, Threatened, and Endangered
Species of Texas Species Impact Table

Appendix E: Census Bureau Urbanized Area Map

Appendix F: NRCS-CPA-106 and NRCS Web Soil Survey Map

Appendix G: CBRA and EFH Mapper

Figures

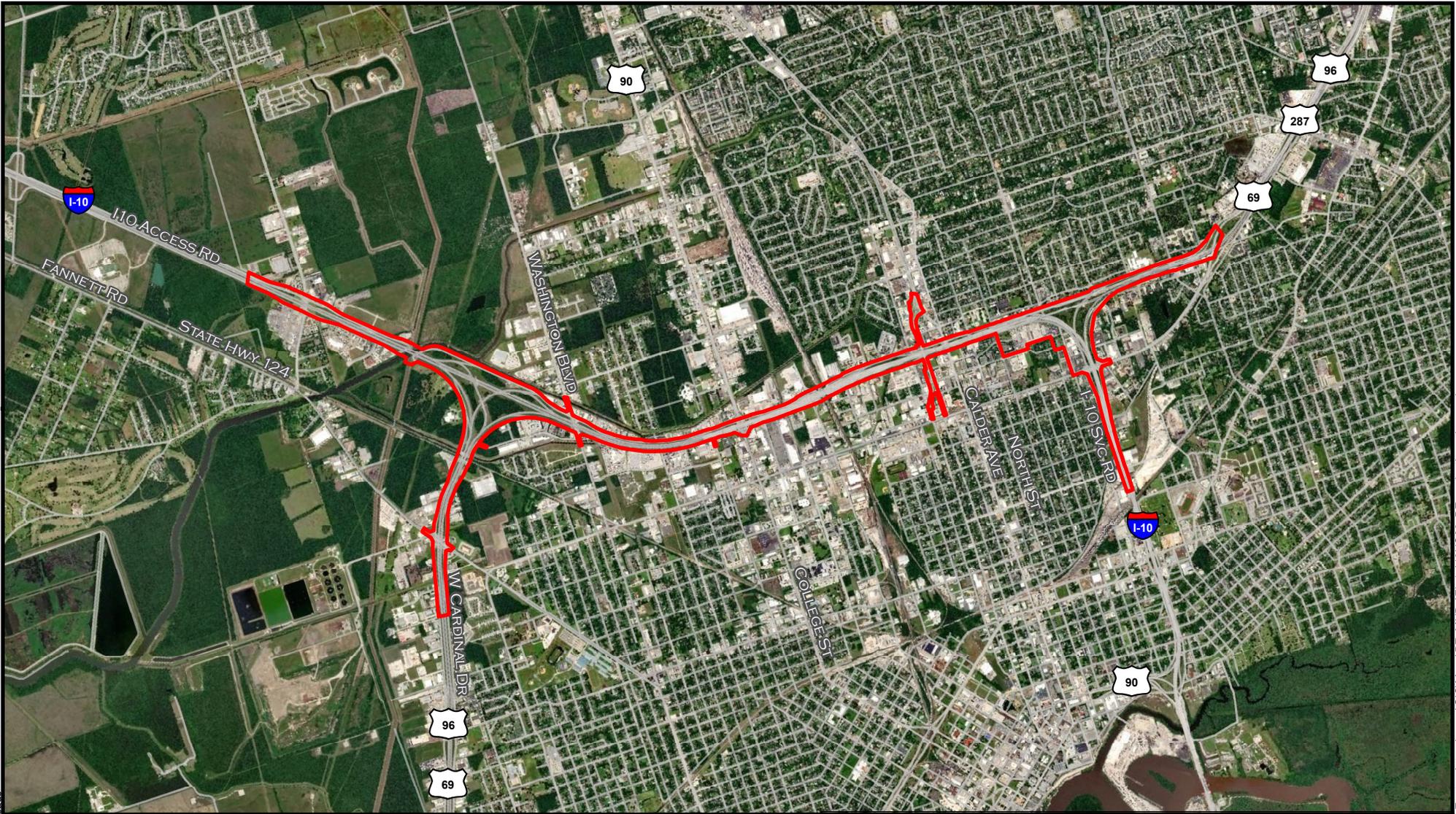
FIGURE 1: PROJECT LOCATION MAP

FIGURE 2: NDD DATABASE SEARCH MAP

FIGURE 3: EMST MAPPED HABITAT TYPE

FIGURE 4: EMST OBSERVED HABITAT TYPE

FIGURE 5: USGS TOPOGRAPHIC MAP



 PROJECT AREA

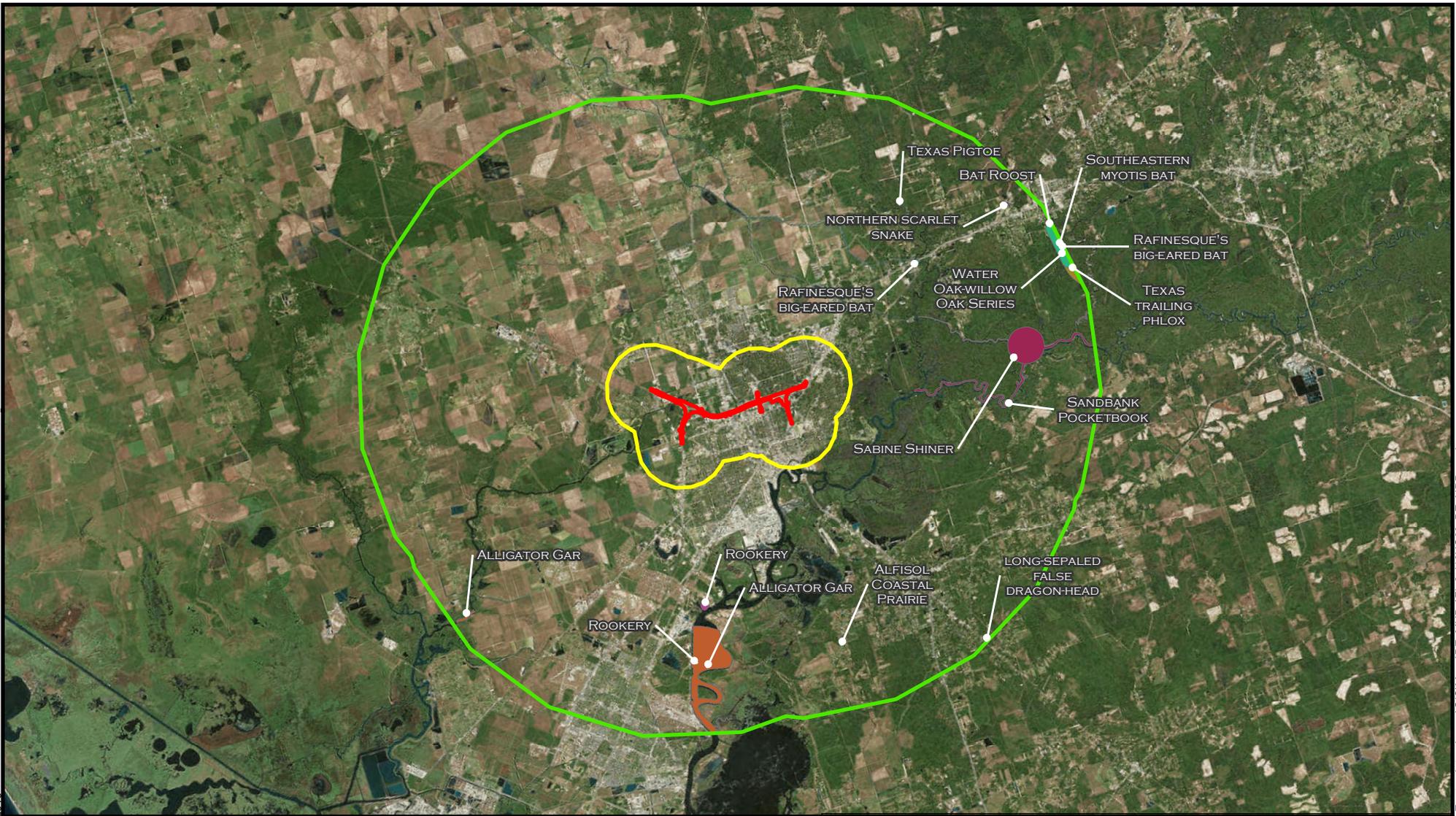


10/69 INTERCHANGES PROJECT
 CSJ: 0028-13-135 & 0739-02-140
 PROJECT LOCATION MAP
 JEFFERSON COUNTY, TEXAS

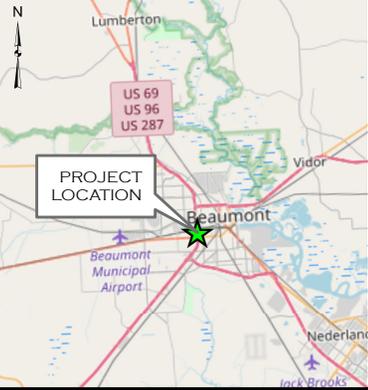


FIGURE 1

DATE:
 JUNE 2019



- | | |
|----------------------------|--------------------------------|
| PROJECT AREA | SABINE SHINER |
| 1.5 MILE BUFFER | SANDBANK POCKETBOOK |
| 10 MILE BUFFER | SOUTHEASTERN MYOTIS BAT |
| ROOKERY | TEXAS PIGTOE |
| ALFISOL COASTAL PRAIRIE | TEXAS TRAILING PHLOX |
| ALLIGATOR GAR | WATER OAK-WILLOW OAK SERIES |
| BAT ROOST | LONG-SEPALED FALSE DRAGON-HEAD |
| RAFINESQUE'S BIG-EARED BAT | NORTHERN SCARLET SNAKE |
| ROOKERY | |



10/69 INTERCHANGES PROJECT
 CSJ: 0028-13-135 & 0739-02-140
 NDD DATABASE SEARCH MAP
 JEFFERSON COUNTY, TEXAS

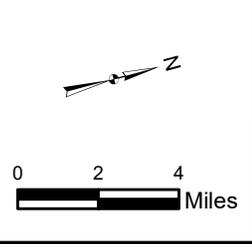
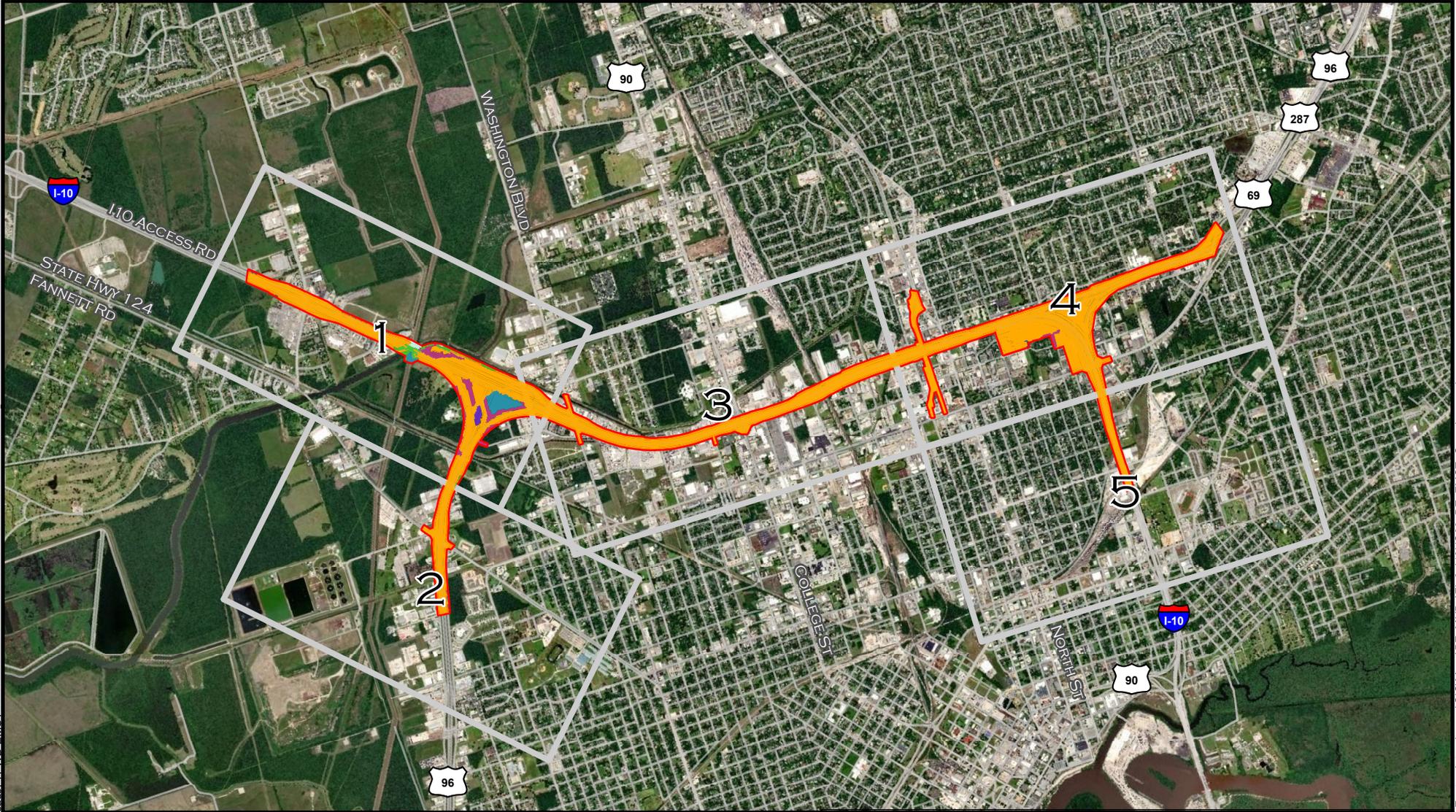
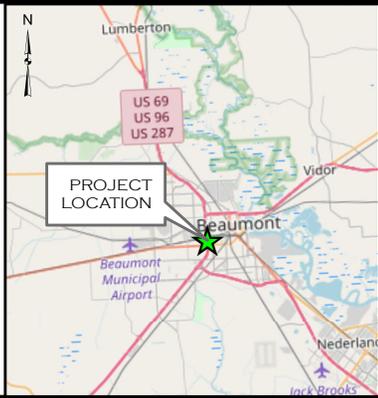


FIGURE 2

DATE:
 JUNE 2019



- PROJECT AREA
- AGRICULTURE
- COASTAL GRASSLAND
- COASTAL MIXED WOODLAND AND FOREST
- DISTURBED PRAIRIE
- RIPARIAN
- TIDAL AND SALT MARSH
- URBAN



10/69 INTERCHANGES PROJECT
 CSJ: 0028-13-135 & 0739-02-140
 EMST MAPPED HABITAT OVERVIEW
 JEFFERSON COUNTY, TEXAS

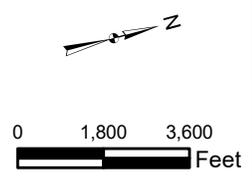
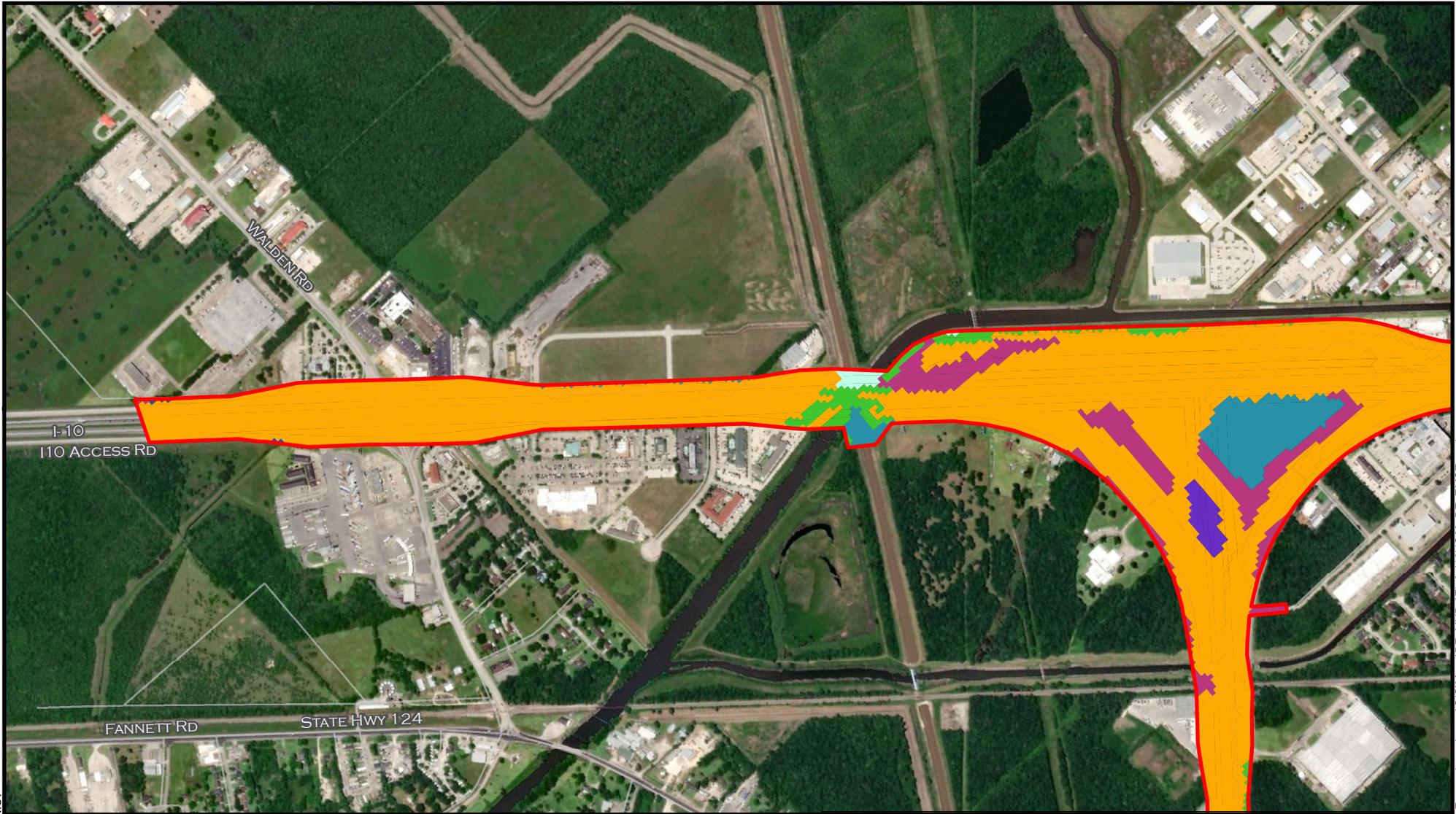


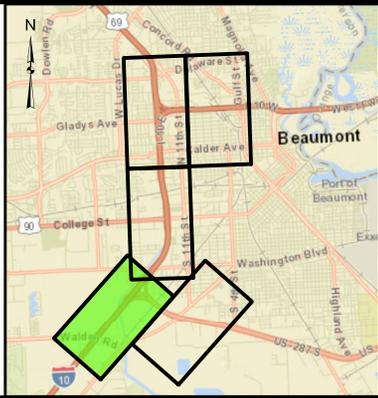
FIGURE 3

DATE:
 JUNE 2019



Sources: ESRI Aerial 2017, World Street Map, TPWD EMST

- PROJECT AREA
- AGRICULTURE
- COASTAL GRASSLAND
- COASTAL MIXED WOODLAND AND FOREST
- DISTURBED PRAIRIE
- RIPARIAN
- TIDAL AND SALT MARSH
- URBAN



10/69 INTERCHANGES PROJECT
 CSJ: 0028-13-135 & 0739-02-140
 EMST MAPPED HABITAT TYPE
 JEFFERSON COUNTY, TEXAS

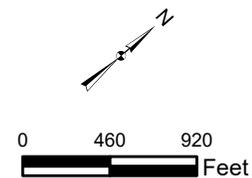


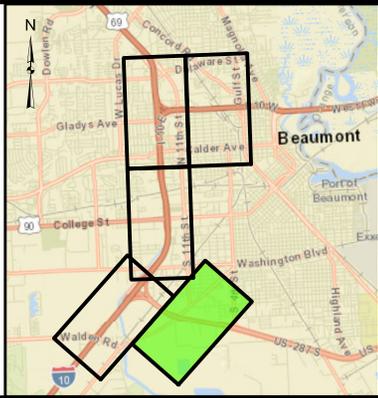
FIGURE 3
SHEET 1

DATE:
JUNE 2019

Document Path: R:\Projects\HOU0146_TXDO-BMT_110_Eastex Interchange\GIS\Maps\BE_MXD\Fig3_110US69_BE_EMST.mxd



- PROJECT AREA
- AGRICULTURE
- COASTAL GRASSLAND
- DISTURBED PRAIRIE
- TIDAL AND SALT MARSH
- URBAN



10/69 INTERCHANGES PROJECT
 CSJ: 0028-13-135 & 0739-02-140
 EMST MAPPED HABITAT TYPE
 JEFFERSON COUNTY, TEXAS

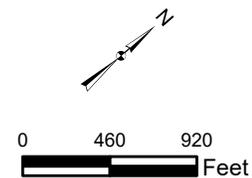
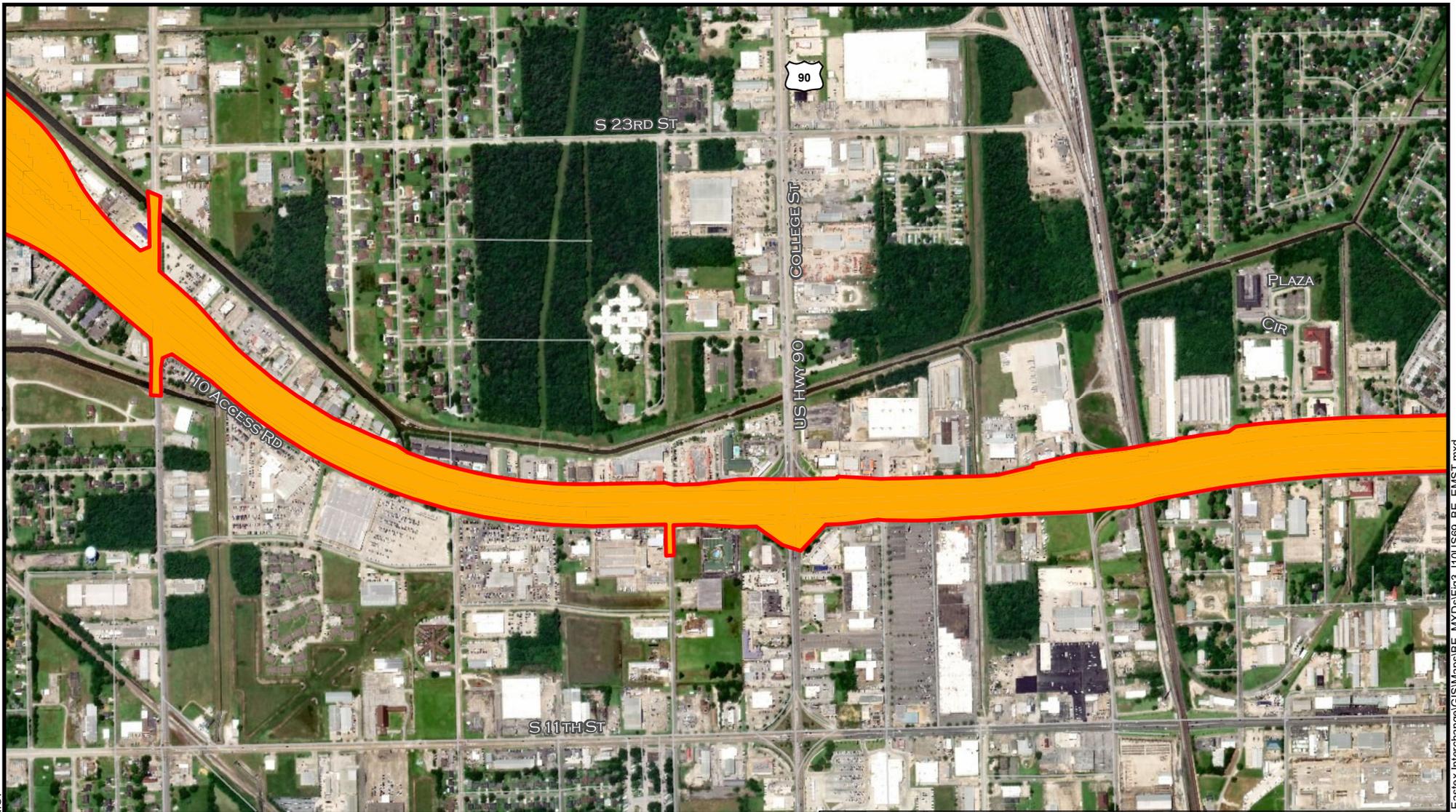
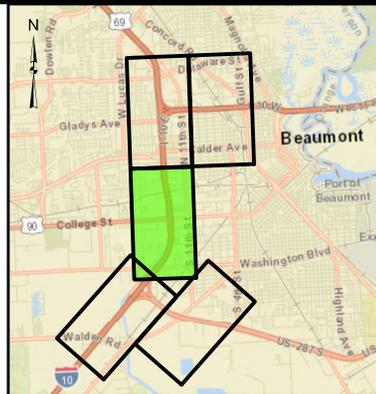


FIGURE 3
SHEET 2

DATE:
JUNE 2019



- PROJECT AREA
- URBAN



10/69 INTERCHANGES PROJECT
 CSJ: 0028-13-135 & 0739-02-140
 EMST MAPPED HABITAT TYPE
 JEFFERSON COUNTY, TEXAS

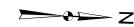
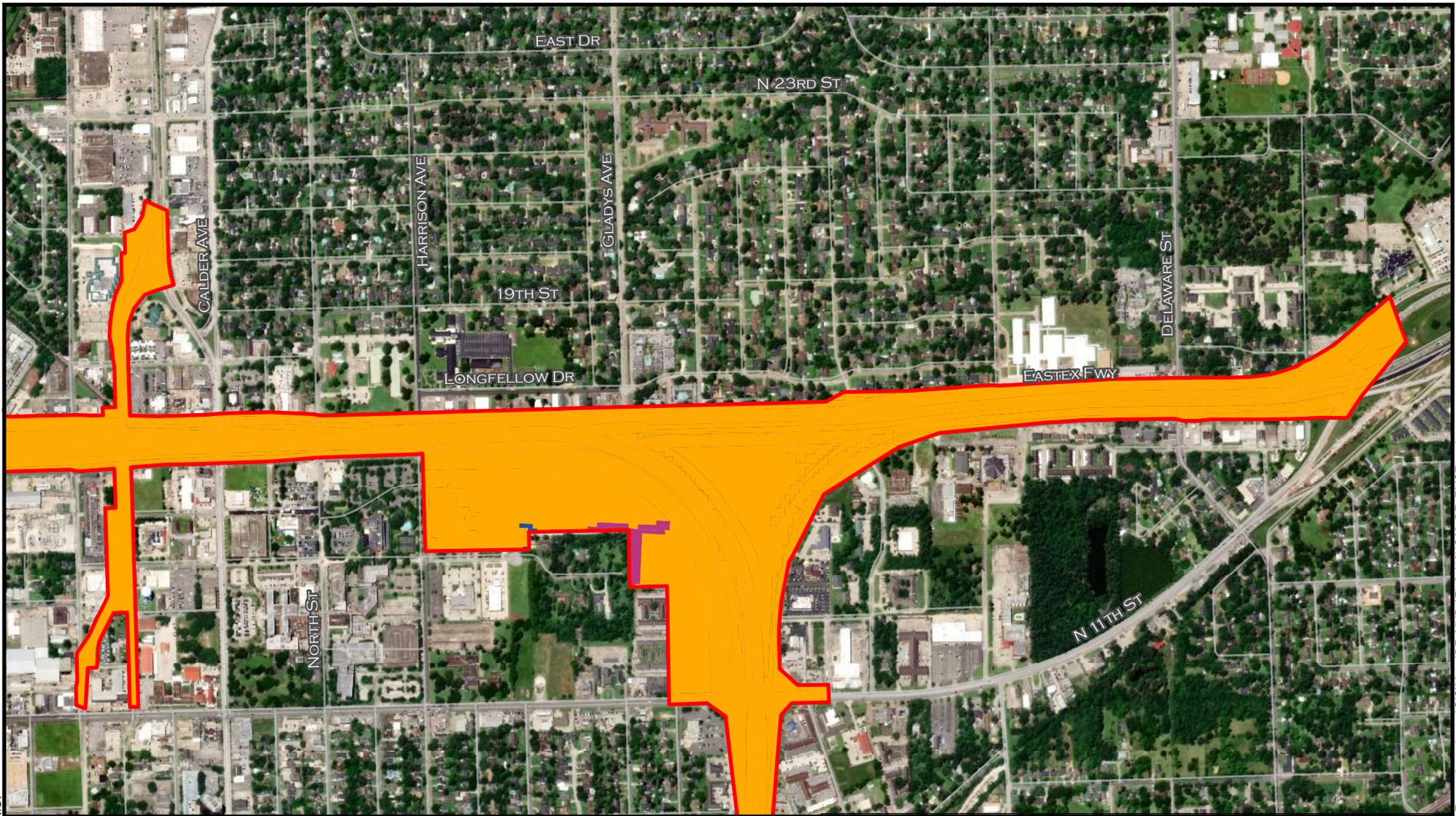
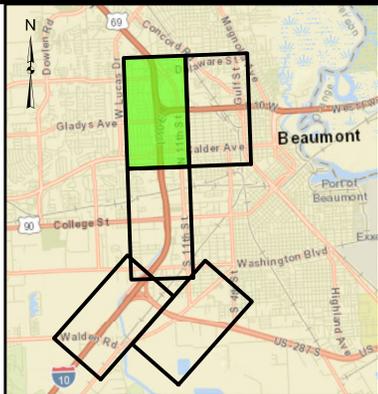


FIGURE 3
SHEET 3

DATE:
JUNE 2019



- PROJECT AREA
- COASTAL GRASSLAND
- DISTURBED PRAIRIE
- URBAN



10/69 INTERCHANGES PROJECT
 CSJ: 0028-13-135 & 0739-02-140
 EMST MAPPED HABITAT TYPE
 JEFFERSON COUNTY, TEXAS

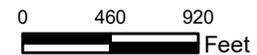
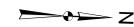
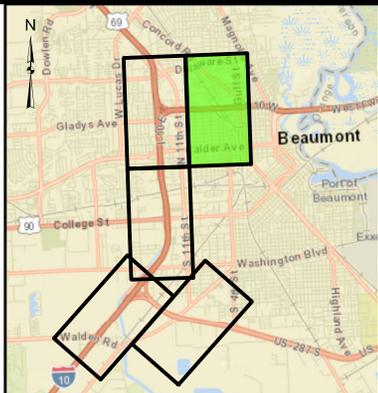


FIGURE 3
SHEET 4

DATE:
JUNE 2019



- PROJECT AREA
- AGRICULTURE
- URBAN



10/69 INTERCHANGES PROJECT
 CSJ: 0028-13-135 & 0739-02-140
 EMST MAPPED HABITAT TYPE
 JEFFERSON COUNTY, TEXAS

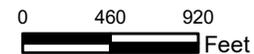
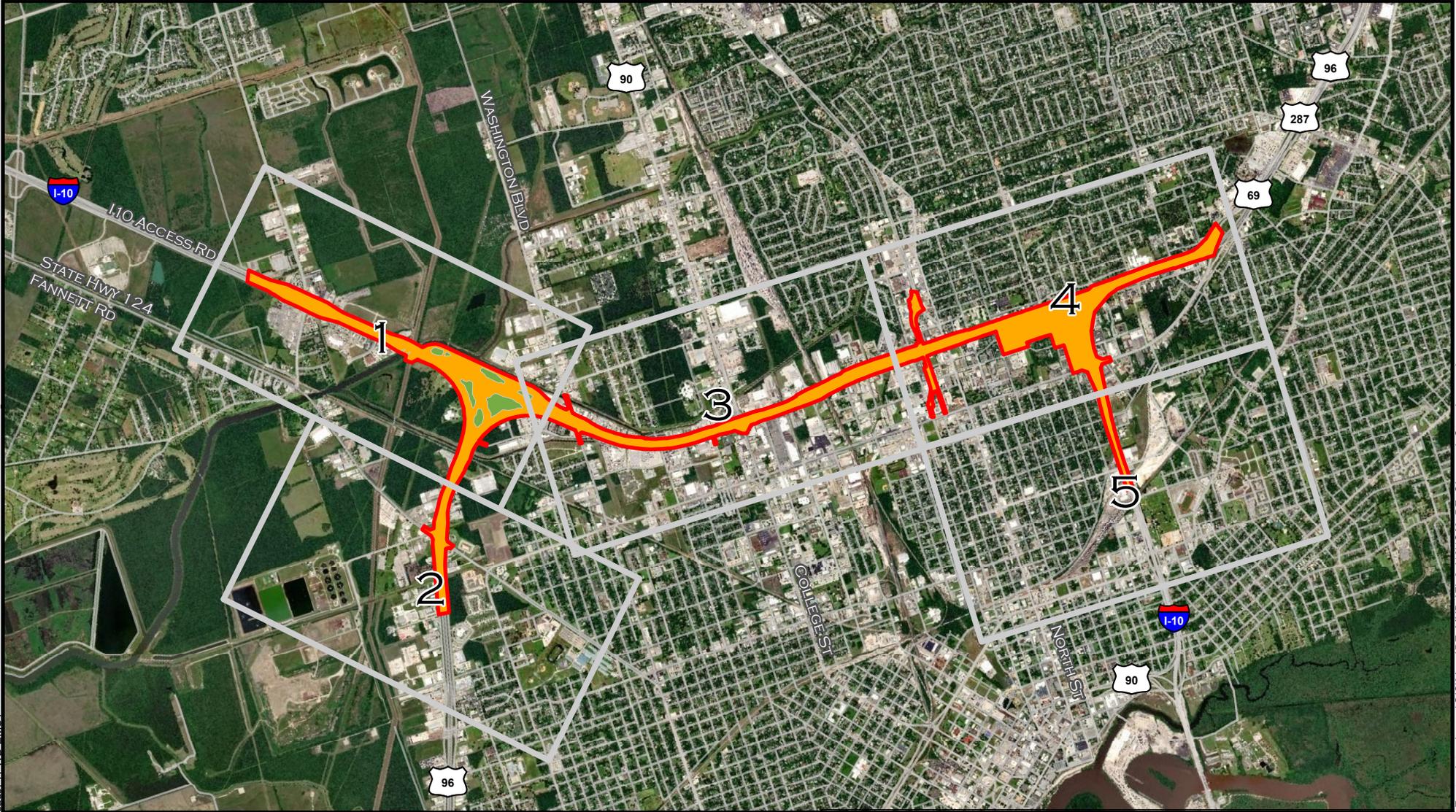
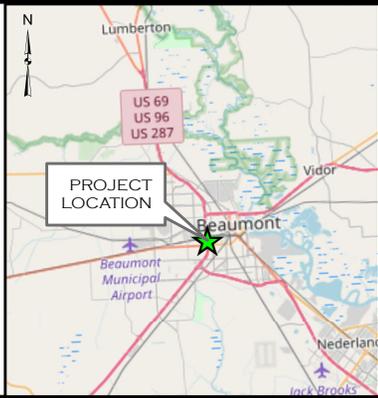


FIGURE 3
SHEET 5

DATE:
JUNE 2019



- PROJECT AREA
- MIXED WOODLANDS AND FORESTS
- URBAN



I-10/69 INTERCHANGES PROJECT
 CSJ: 0028-13-135 & 0739-02-140
 EMST OBSERVED HABITAT OVERVIEW
 JEFFERSON COUNTY, TEXAS

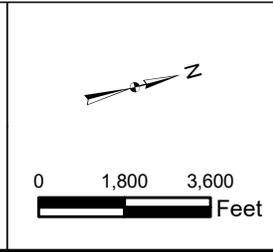
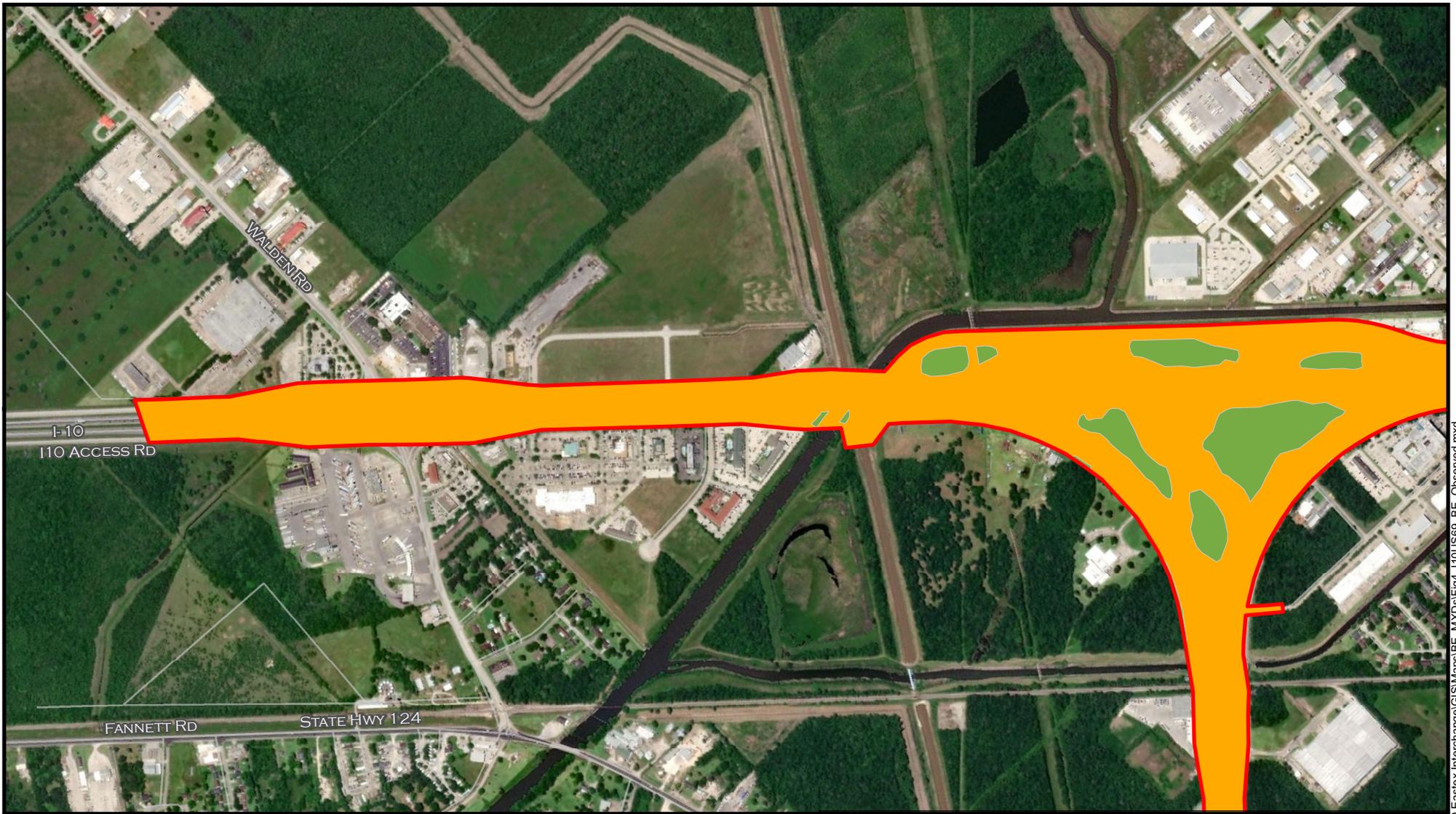
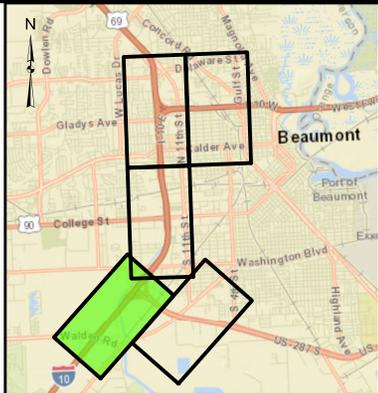


FIGURE 4

DATE:
JUNE 2019



- PROJECT AREA
- MIXED WOODLANDS AND FORESTS
- URBAN



I-10/69 INTERCHANGES PROJECT
 CSJ: 0028-13-135 & 0739-02-140
 EMST OBSERVED HABITAT TYPE
 JEFFERSON COUNTY, TEXAS

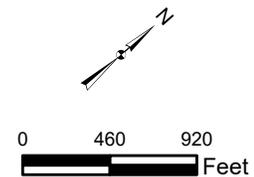
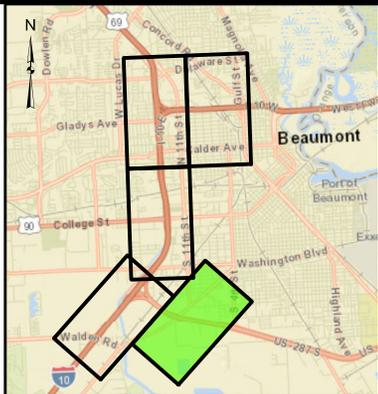


FIGURE 4
 SHEET 1

DATE:
 JUNE 2019



- PROJECT AREA
- MIXED WOODLANDS AND FORESTS
- URBAN



I-10/69 INTERCHANGES PROJECT
 CSJ: 0028-13-135 & 0739-02-140

EMST OBSERVED HABITAT TYPE

JEFFERSON COUNTY, TEXAS

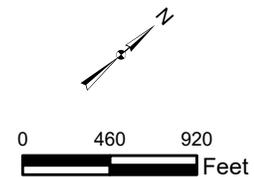
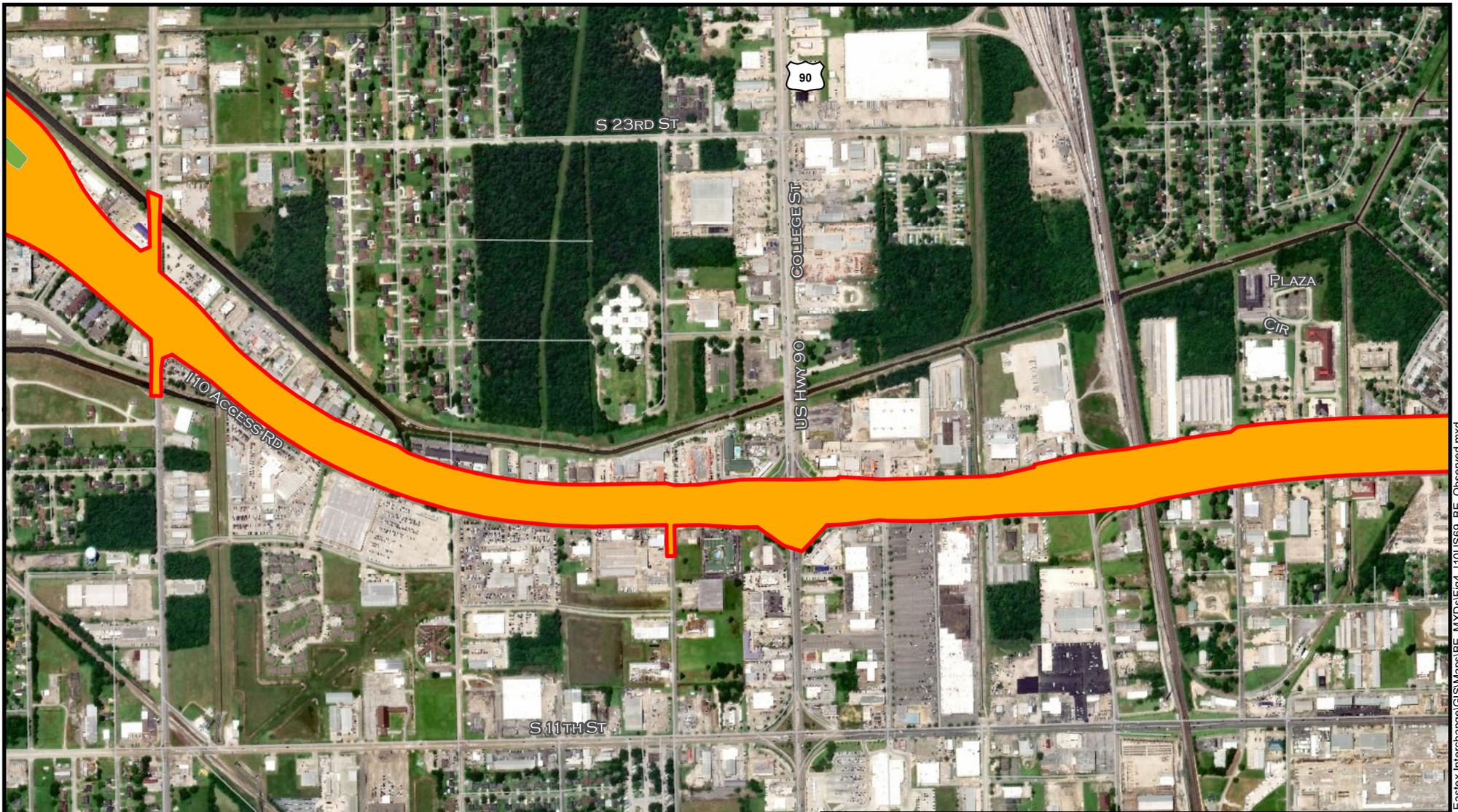
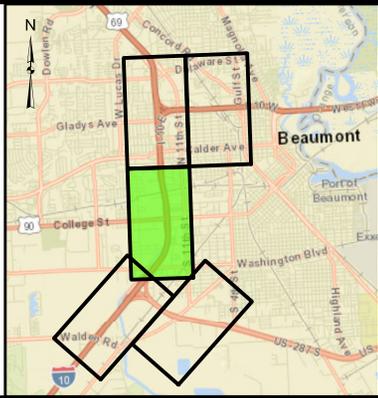


FIGURE 4
 SHEET 2

DATE:
 JUNE 2019



- PROJECT AREA
- MIXED WOODLANDS AND FORESTS
- URBAN



I-10/69 INTERCHANGES PROJECT
 CSJ: 0028-13-135 & 0739-02-140
 EMST OBSERVED HABITAT TYPE
 JEFFERSON COUNTY, TEXAS

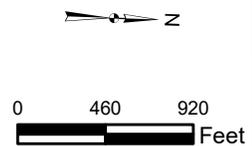
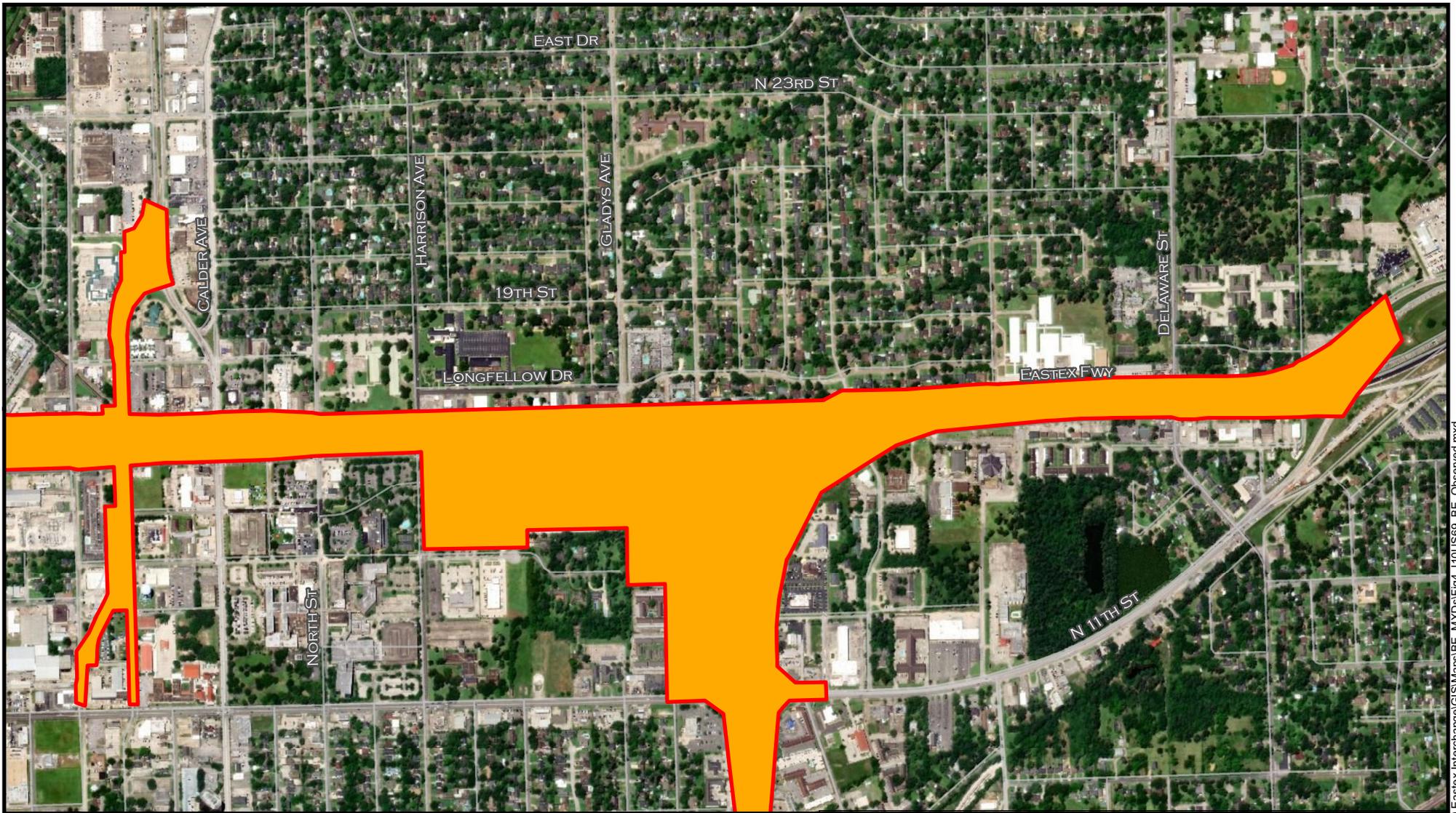
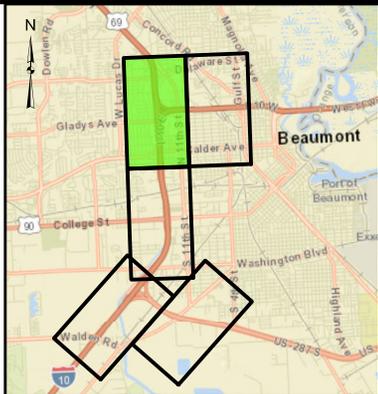


FIGURE 4
 SHEET 3

DATE:
 JUNE 2019



-  PROJECT AREA
-  URBAN



I-10/69 INTERCHANGES PROJECT
 CSJ: 0028-13-135 & 0739-02-140
 EMST OBSERVED HABITAT TYPE
 JEFFERSON COUNTY, TEXAS

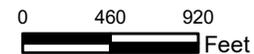
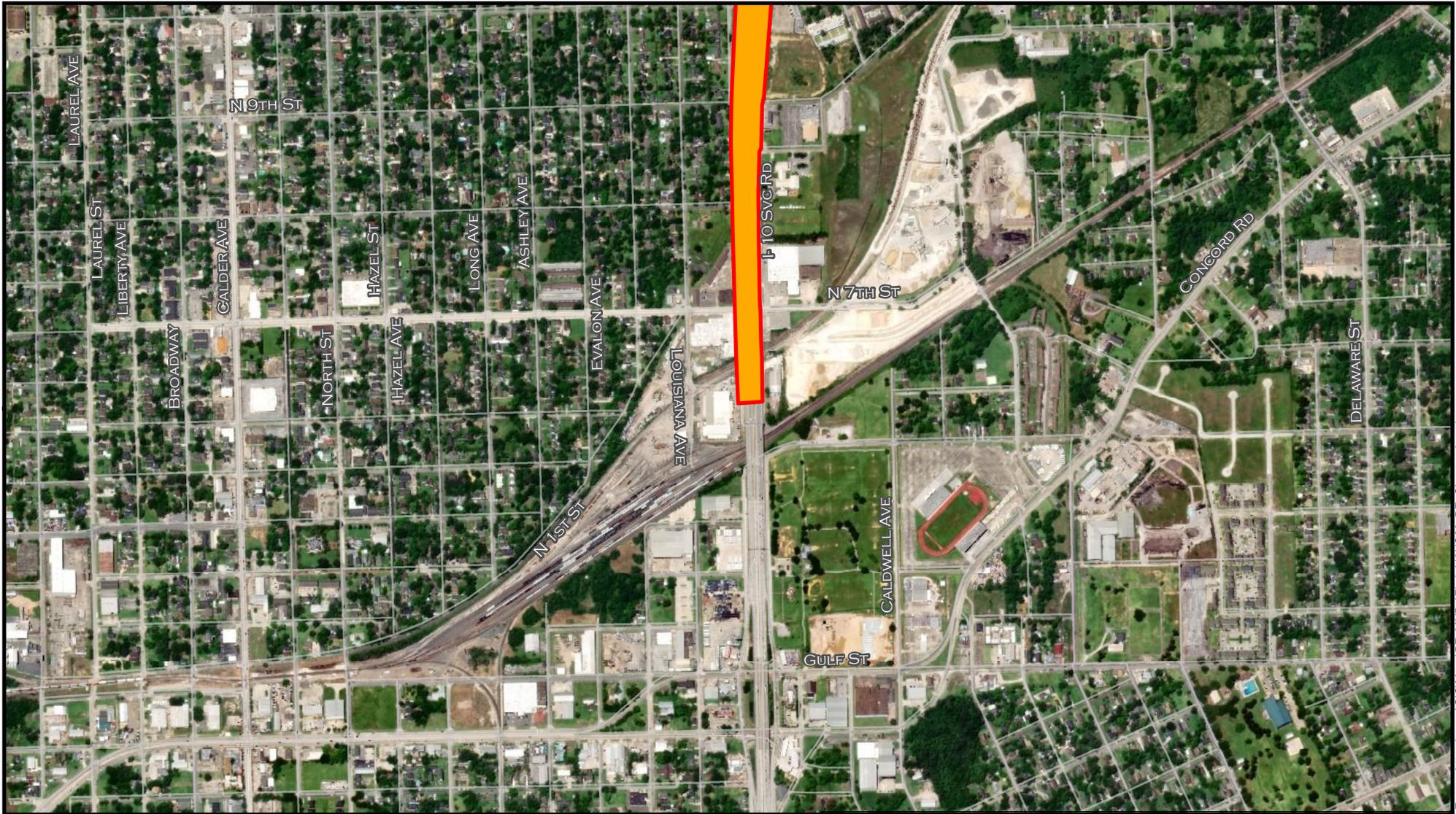
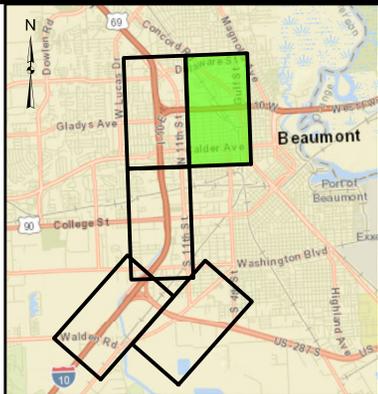


FIGURE 4
 SHEET 4

DATE:
 JUNE 2019



- PROJECT AREA
- URBAN



I-10/69 INTERCHANGES PROJECT
 CSJ: 0028-13-135 & 0739-02-140

EMST OBSERVED HABITAT TYPE

JEFFERSON COUNTY, TEXAS

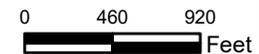


FIGURE 4
 SHEET 5

DATE:
 JUNE 2019

Appendix A
IPAC OFFICIAL SPECIES LIST



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Texas Coastal Ecological Services Field Office
17629 El Camino Real #211
Houston, TX 77058

Phone: (281) 286-8282 Fax: (281) 488-5882
<http://www.fws.gov/southwest/es/TexasCoastal/>
http://www.fws.gov/southwest/es/ES_Lists_Main2.html

In Reply Refer To:

June 19, 2019

Consultation Code: 02ETTX00-2019-SLI-1837

Event Code: 02ETTX00-2019-E-03824

Project Name: I-10 Interchanges

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The U.S. Fish and Wildlife Service (Service) field offices in Clear Lake, Tx, and Corpus Christi, Tx, have combined administratively to form the Texas Coastal Ecological Services Field Office. A map of the Texas Coastal Ecological Services Field Office area of responsibility can be found at: <http://www.fws.gov/southwest/es/TexasCoastal/Map.html>. All project related correspondence should be sent to the field office responsible for the area in which your project occurs. For projects located in southeast Texas please write to: Field Supervisor; U.S. Fish and Wildlife Service; 17629 El Camino Real Ste. 211; Houston, Texas 77058. For projects located in southern Texas please write to: Field Supervisor; U.S. Fish and Wildlife Service; P.O. Box 81468; Corpus Christi, Texas 78468-1468. For projects located in six counties in southern Texas (Cameron, Hidalgo, Starr, Webb, Willacy, and Zapata) please write: Santa Ana NWR, ATTN: Ecological Services Sub Office, 3325 Green Jay Road, Alamo, Texas 78516.

The enclosed species list identifies federally threatened, endangered, and proposed to be listed species; designated critical habitat; and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project.

New information from updated surveys, changes in the abundance and distribution of species, changes in habitat conditions, or other factors could change the list. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the ECOS-IPaC website <http://ecos.fws.gov/ipac/> at regular intervals during project planning and implementation for updates to species list and information. An updated list may be

requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

Candidate species have no protection under the Act but are included for consideration because they could be listed prior to the completion of your project. The other species information should help you determine if suitable habitat for these listed species exists in any of the proposed project areas or if project activities may affect species on-site, off-site, and/or result in "take" of a federally listed species.

"Take" is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. In addition to the direct take of an individual animal, habitat destruction or modification can be considered take, regardless of whether it has been formally designated as critical habitat, if the activity results in the death or injury of wildlife by removing essential habitat components or significantly alters essential behavior patterns, including breeding, feeding, or sheltering.

Section 7

Section 7 of the Act requires that all Federal agencies consult with the Service to ensure that actions authorized, funded or carried out by such agencies do not jeopardize the continued existence of any listed threatened or endangered species or adversely modify or destroy critical habitat of such species. It is the responsibility of the Federal action agency to determine if the proposed project may affect threatened or endangered species. If a "may affect" determination is made, the Federal agency shall initiate the section 7 consultation process by writing to the office that has responsibility for the area in which your project occurs.

Is not likely to adversely affect - the project may affect listed species and/or critical habitat; however, the effects are expected to be discountable, insignificant, or completely beneficial. Certain avoidance and minimization measures may need to be implemented in order to reach this level of effects. The Federal agency or the designated non-Federal representative should seek written concurrence from the Service that adverse effects have been eliminated. Be sure to include all of the information and documentation used to reach your decision with your request for concurrence. The Service must have this documentation before issuing a concurrence.

Is likely to adversely affect - adverse effects to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial. If the overall effect of the proposed action is beneficial to the listed species but also is likely to cause some adverse effects to individuals of that species, then the proposed action "is likely to adversely affect" the listed species. An "is likely to adversely affect" determination requires the Federal action agency to initiate formal section 7 consultation with this office.

No effect - the proposed action will not affect federally listed species or critical habitat (i.e., suitable habitat for the species occurring in the project county is not present in or adjacent to the action area). No further coordination or contact with the Service is necessary. However, if the

project changes or additional information on the distribution of listed or proposed species becomes available, the project should be reanalyzed for effects not previously considered.

Regardless of your determination, the Service recommends that you maintain a complete record of the evaluation, including steps leading to the determination of affect, the qualified personnel conducting the evaluation, habitat conditions, site photographs, and any other related articles.

Please be advised that while a Federal agency may designate a non-Federal representative to conduct informal consultations with the Service, assess project effects, or prepare a biological assessment, the Federal agency must notify the Service in writing of such a designation. The Federal agency shall also independently review and evaluate the scope and contents of a biological assessment prepared by their designated non-Federal representative before that document is submitted to the Service.

The Service's Consultation Handbook is available online to assist you with further information on definitions, process, and fulfilling Act requirements for your projects at: http://www.fws.gov/conservation/esa-library/pdf/esa_section7_handbook.pdf

Section 10

If there is no federal involvement and the proposed project is being funded or carried out by private interests and/or non-federal government agencies, and the project as proposed may affect listed species, a section 10(a)(1)(B) permit is recommended. The Habitat Conservation Planning Handbook is available at: http://www.fws.gov/conservation/esa-library/pdf/HCP_Handbook.pdf

Service Response

Please note that the Service strives to respond to requests for project review within 30 days of receipt, however, this time period is not mandated by regulation. Responses may be delayed due to workload and lack of staff. Failure to meet the 30-day timeframe does not constitute a concurrence from the Service that the proposed project will not have impacts to threatened and endangered species.

Proposed Species and/or Proposed Critical Habitat

While consultations are required when the proposed action may affect listed species, section 7(a)(4) was added to the ESA to provide a mechanism for identifying and resolving potential conflicts between a proposed action and proposed species or proposed critical habitat at an early planning stage. The action agency should seek concurrence from the Service to assist the action agency in determining effects and to advise the agency on ways to avoid or minimize adverse effect to proposed species or proposed critical habitat.

Candidate Species

Candidate species are species that are being considered for possible addition to the threatened and endangered species list. They currently have no legal protection under the ESA. If you find you have potential project impacts to these species the Service would like to provide technical

assistance to help avoid or minimize adverse effects. Addressing potential impacts to these species at this stage could better provide for overall ecosystem health in the local area and avert potential future listing.

Several species of freshwater mussels occur in Texas and four are candidates for listing under the ESA. The Service is also reviewing the status of six other species for potential listing under the ESA. One of the main contributors to mussel die offs is sedimentation, which smothers and suffocates mussels. To reduce sedimentation within rivers, streams, and tributaries crossed by a project, the Service recommends that you implement the best management practices found at: <http://www.fws.gov/southwest/es/TexasCoastal/FreshwaterMussels.html>.

Candidate Conservation Agreements (CCAs) or Candidate Conservation Agreements with Assurances (CCAAs) are voluntary agreements between the Service and public or private entities to implement conservation measures to address threats to candidate species. Implementing conservation efforts before species are listed increases the likelihood that simpler, flexible, and more cost-effective conservation options are available. A CCAA can provide participants with assurances that if they engage in conservation actions, they will not be required to implement additional conservation measures beyond those in the agreement. For additional information on CCAs/CCAAs please visit the Service's website at <http://www.fws.gov/endangered/what-we-do/cca.html>.

Migratory Birds

The Migratory Bird Treaty Act (MBTA) implements various treaties and conventions for the protection of migratory birds. Under the MBTA, taking, killing, or possessing migratory birds is unlawful. Many may nest in trees, brush areas or other suitable habitat. The Service recommends activities requiring vegetation removal or disturbance avoid the peak nesting period of March through August to avoid destruction of individuals or eggs. If project activities must be conducted during this time, we recommend surveying for active nests prior to commencing work. A list of migratory birds may be viewed at <http://www.fws.gov/migratorybirds/regulationspolicies/mbta/mbtandx.html>.

The bald eagle (*Haliaeetus leucocephalus*) was delisted under the Act on August 9, 2007. Both the bald eagle and the golden eagle (*Aquila chrysaetos*) are still protected under the MBTA and BGEPA. The BGEPA affords both eagles protection in addition to that provided by the MBTA, in particular, by making it unlawful to "disturb" eagles. Under the BGEPA, the Service may issue limited permits to incidentally "take" eagles (e.g., injury, interfering with normal breeding, feeding, or sheltering behavior nest abandonment). For more information on bald and golden eagle management guidelines, we recommend you review information provided at <http://www.fws.gov/midwest/eagle/pdf/NationalBaldEagleManagementGuidelines.pdf>.

The construction of overhead power lines creates threats of avian collision and electrocution. The Service recommends the installation of underground rather than overhead power lines whenever possible. For new overhead lines or retrofitting of old lines, we recommend that project

developers implement, to the maximum extent practicable, the Avian Power Line Interaction Committee guidelines found at <http://www.aplic.org/>.

Meteorological and communication towers are estimated to kill millions of birds per year. We recommend following the guidance set forth in the Service Interim Guidelines for Recommendations on Communications Tower Siting, Constructions, Operation and Decommissioning, found online at: <http://www.fws.gov/habitatconservation/communicationtowers.html>, to minimize the threat of avian mortality at these towers. Monitoring at these towers would provide insight into the effectiveness of the minimization measures. We request the results of any wildlife mortality monitoring at towers associated with this project.

We request that you provide us with the final location and specifications of your proposed towers, as well as the recommendations implemented. A Tower Site Evaluation Form is also available via the above website; we recommend you complete this form and keep it in your files. If meteorological towers are to be constructed, please forward this completed form to our office.

More information concerning sections 7 and 10 of the Act, migratory birds, candidate species, and landowner tools can be found on our website at: <http://www.fws.gov/southwest/es/TexasCoastal/ProjectReviews.html>.

Wetlands and Wildlife Habitat

Wetlands and riparian zones provide valuable fish and wildlife habitat as well as contribute to flood control, water quality enhancement, and groundwater recharge. Wetland and riparian vegetation provides food and cover for wildlife, stabilizes banks and decreases soil erosion. These areas are inherently dynamic and very sensitive to changes caused by such activities as overgrazing, logging, major construction, or earth disturbance. Executive Order 11990 asserts that each agency shall provide leadership and take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial value of wetlands in carrying out the agency's responsibilities. Construction activities near riparian zones should be carefully designed to minimize impacts. If vegetation clearing is needed in these riparian areas, they should be re-vegetated with native wetland and riparian vegetation to prevent erosion or loss of habitat. We recommend minimizing the area of soil scarification and initiating incremental re-establishment of herbaceous vegetation at the proposed work sites. Denuded and/or disturbed areas should be re-vegetated with a mixture of native legumes and grasses. Species commonly used for soil stabilization are listed in the Texas Department of Agriculture's (TDA) Native Tree and Plant Directory, available from TDA at P.O. Box 12847, Austin, Texas 78711. The Service also urges taking precautions to ensure sediment loading does not occur to any receiving streams in the proposed project area. To prevent and/or minimize soil erosion and compaction associated with construction activities, avoid any unnecessary clearing of vegetation, and follow established rights-of-way whenever possible. All machinery and petroleum products should be stored outside the floodplain and/or wetland area during construction to prevent possible contamination of water and soils.

Wetlands and riparian areas are high priority fish and wildlife habitat, serving as important sources of food, cover, and shelter for numerous species of resident and migratory wildlife. Waterfowl and other migratory birds use wetlands and riparian corridors as stopover, feeding, and nesting areas. We strongly recommend that the selected project site not impact wetlands and riparian areas, and be located as far as practical from these areas. Migratory birds tend to concentrate in or near wetlands and riparian areas and use these areas as migratory flyways or corridors. After every effort has been made to avoid impacting wetlands, you anticipate unavoidable wetland impacts will occur; you should contact the appropriate U.S. Army Corps of Engineers office to determine if a permit is necessary prior to commencement of construction activities.

If your project will involve filling, dredging, or trenching of a wetland or riparian area it may require a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers (COE). For permitting requirements please contact the U.S. Corps of Engineers, District Engineer, P.O. Box 1229, Galveston, Texas 77553-1229, (409) 766-3002.

Beneficial Landscaping

In accordance with Executive Order 13112 on Invasive Species and the Executive Memorandum on Beneficial Landscaping (42 C.F.R. 26961), where possible, any landscaping associated with project plans should be limited to seeding and replanting with native species. A mixture of grasses and forbs appropriate to address potential erosion problems and long-term cover should be planted when seed is reasonably available. Although Bermuda grass is listed in seed mixtures, this species and other introduced species should be avoided as much as possible. The Service also recommends the use of native trees, shrubs, and herbaceous species that are adaptable, drought tolerant and conserve water.

State Listed Species

The State of Texas protects certain species. Please contact the Texas Parks and Wildlife Department (Endangered Resources Branch), 4200 Smith School Road, Austin, Texas 78744 (telephone 512/389-8021) for information concerning fish, wildlife, and plants of State concern or visit their website at: http://www.tpwd.state.tx.us/huntwild/wild/wildlife_diversity/texas_rare_species/listed_species/.

If we can be of further assistance, or if you have any questions about these comments, please contact 281/286-8282 if your project is in southeast Texas, or 361/994-9005, ext. 246, if your project is in southern Texas. Please refer to the Service consultation number listed above in any future correspondence regarding this project.

Attachment(s):

- Official Species List
-

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Texas Coastal Ecological Services Field Office

17629 El Camino Real #211

Houston, TX 77058

(281) 286-8282

Project Summary

Consultation Code: 02ETTX00-2019-SLI-1837

Event Code: 02ETTX00-2019-E-03824

Project Name: I-10 Interchanges

Project Type: TRANSPORTATION

Project Description: The proposed I-10 Interchanges Project (the project) includes reconstructing and expanding I-10 and US 69 where they converge in the city of Beaumont, Jefferson County, Texas. The project would widen the existing I-10 from Walden Road (County Road 131) to 7th Street and existing US 69 from Fannett Road (State Highway 124) to 11th Street.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/30.072596573943038N94.13490761080445W>



Counties: Jefferson, TX

Endangered Species Act Species

There is a total of 8 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
West Indian Manatee <i>Trichechus manatus</i> There is final critical habitat for this species. Your location is outside the critical habitat. <i>This species is also protected by the Marine Mammal Protection Act, and may have additional consultation requirements.</i> Species profile: https://ecos.fws.gov/ecp/species/4469	Threatened

Birds

NAME	STATUS
Piping Plover <i>Charadrius melodus</i> Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot <i>Calidris canutus rufa</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened

Reptiles

NAME	STATUS
<p>Green Sea Turtle <i>Chelonia mydas</i> Population: North Atlantic DPS There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6199</p>	Threatened
<p>Hawksbill Sea Turtle <i>Eretmochelys imbricata</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3656</p>	Endangered
<p>Kemp's Ridley Sea Turtle <i>Lepidochelys kempii</i> There is proposed critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5523</p>	Endangered
<p>Leatherback Sea Turtle <i>Dermochelys coriacea</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1493</p>	Endangered
<p>Loggerhead Sea Turtle <i>Caretta caretta</i> Population: Northwest Atlantic Ocean DPS There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1110</p>	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Appendix B
BEF VEGETATION IMPACTS

10/69 Interchanges EMST Vegetation Impacts Table

EMST Habitat Type	EMST Acres	Actual Acres	Threshold	Impact Acreage	Breaks Threshold (Y/N)
Jefferson County - Western Gulf Coastal Plain					
Agriculture	10.64	0.00	10	0	N
Coastal Grassland	0.32	0.00	2	0	N
Disturbed Prairie	15.74	0.00	3	0	N
Mixed Woodlands and Forests	2.03	20.05	0.5	20.05	Y
Riparian	0.96	0.00	0.1	0	N
Tidal and Salt Marsh	5.38	0.00	0.01	0	N
Urban	427.51	442.53	NA	442.53	N
Total	462.58	462.58		462.58	

Appendix C
SITE PHOTOGRAPHS



Photo 1. Urban, maintained vegetation and channelized stream within the project area along IH 10, just north of Walden Road. Area mapped as Urban on EMST.



Photo 2. Looking southeast down Port Arthur Canal. Bridges are potential habitat for listed Bat species. Area mapped as Riparian on EMST, however has been classified as Urban.



Photo 3. Grassy area in the southern portion of the project area near Rexora Drive. Area mapped as Urban on EMST and confirmed as Urban during assessment.



Photo 4. Forested wetland habitat in the south-eastern portion of the project area. Area mapped as Mixed Woodlands and Forests on EMST.



Photo 5. Urban land use with ongoing construction near Rexora Drive. Area mapped as Urban on EMST.



Photo 6. Small wetland in woodland area. Area mapped as Mixed Woodlands and Forests on EMST.



Photo 7. Typical urban area off Ashley Road in the northeastern portion of the project area with landscaped vegetation. Area mapped as Urban on EMST.



Photo 8. Forested median within the southern I-10 interchange. Area mapped as Agriculture on EMST, but was determined to be Mixed Woodlands and Forest.

Appendix D
JEFFERSON COUNTY ENDANGERED SPECIES LIST AND IMPACT TABLE

JEFFERSON COUNTY

Table 1: Rare, Threatened, and Endangered Species of Texas Species Impact Table

Species	State Status	Federal Status	Habitat Description	Habitat Present	Project Area Habitat Assessment	Effect/Impact
AMPHIBIANS						
Strecker's Chorus Frog (<i>Pseudacris streckeri</i>)	SGCN	*	Wooded floodplains and flats, prairies, cultivated fields and marshes. Likes sandy substrates.	No	Prairies, cultivated fields, and other sandy-soiled habitats not observed within the project area. While "wooded floodplains and flats" type habitat is present within the Cardinal Drive interchange, sandy soil, which is essential to appropriate habitat for <i>Pseudacris streckeri</i> , was not observed. Therefore, habitat for <i>Pseudacris streckeri</i> is not present within the project area.	No Impact
Southern Crawfish Frog (<i>Lithobates areolatus areolatus</i>)	SGCN	*	The Southern Crawfish Frog can be found in abandoned crawfish holes and small mammal burrows. This species inhabits moist meadows, pasturelands, pine scrub, and river flood plains. This species spends nearly all of its time in burrows and only leaves the burrow area to breed. Although this species can be difficult to detect due to its reclusive nature, the call of breeding males can be heard over great distances. Eggs are laid and larvae develop in temporary water such as flooded fields, ditches, farm ponds and small lakes. Habitat: Shallow water, Herbaceous Wetland, Riparian, Temporary Pool, Cropland/hedgerow, Grassland/herbaceous, Suburban/orchard, Woodland, and Conifer. In Texas, southern crawfish frogs are found in and around prairie pothole wetlands and natural depressions in open woods.	No	Recent intensive field surveys in Texas have shown crawfish frogs to be extant in Texas in ephemeral, prairie pothole wetlands (and in some cases depressions in open woods) within high quality or remnant prairie, usually unplowed. Wetlands identified in the project area are low quality, modified, and largely surrounded by urban development. "Woodlands" within the project area are either dense thickets (not appropriate habitat) secondary mixed pine within highway median (not appropriate habitat) or flooded palmetto-oak wetlands (not appropriate habitat). Appropriate habitat was not observed during field investigations in March and June of 2019.	No Impact
BIRDS						
Bachman's Sparrow (<i>Peucaea aestivalis</i>)	T	--	Open pine woods with scattered bushes and grassy understory in Pineywoods region, brushy or overgrown grassy hillsides, overgrown fields with thickets and brambles, grassy orchards; remnant grasslands in Post Oak Savannah region; nests on ground against grass tuft or under low shrub	No	Woodlands and forests observed within the project area were not open and/or grassy. No areas of appropriate brushy or overgrown grassy hillsides, overgrown fields with thickets and brambles, grassy orchards, remnant grasslands in Post Oak Savannah region were observed in the project area.	No Impact
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	SGCN	T	Found near water areas, nests in tall trees.	No	Large bodies of ponded water with surrounding mature forest not found within the project area.	No Effect
Black Rail (<i>Laterallus jamaicensis</i>)	SGCN	PT	Salt, brackish, and freshwater marshes, pond borders, wet meadows, and grassy swamps; nests in or along edge of marsh, sometimes on damp ground, but usually on mat of previous years dead grasses; nest usually hidden in marsh grass or at base of Salicornia	No	Marsh habitat was not observed within the project area.	No Effect

Species	State Status	Federal Status	Habitat Description	Habitat Present	Project Area Habitat Assessment	Effect/Impact
Franklin's gull (<i>Leucophaeus pipixcan</i>)	SGCN	--	Nests in marshes and along inland lakes. Winters along coast in bays, estuaries, and along sandy beaches.	No	No marsh habitat or inland lake habitat within the project area. Bays, estuaries, and sandy beaches are not present within the project area.	No Impact
Piping Plover (<i>Charadrius melodus</i>)	T	LT	Beaches, sandflats, and dunes along Gulf Coast beaches and adjacent offshore islands. Also spoil islands in the Intracoastal Waterway. Based on the November 30, 1992 Section 6 Job No. 9.1, Piping Plover and Snowy Plover Winter Habitat Status Survey, algal flats appear to be the highest quality habitat. Some of the most important aspects of algal flats are their relative inaccessibility and their continuous availability throughout all tidal conditions. Sand flats often appear to be preferred over algal flats when both are available, but large portions of sand flats along the Texas coast are available only during low-very low tides and are often completely unavailable during extreme high tides or strong north winds. Beaches appear to serve as a secondary habitat to the flats associated with the primary bays, lagoons, and inter-island passes. Beaches are rarely used on the southern Texas coast, where bayside habitat is always available, and are abandoned as bayside habitats become available on the central and northern coast. However, beaches are probably a vital habitat along the central and northern coast (i.e. north of Padre Island) during periods of extreme high tides that cover the flats. Optimal site characteristics appear to be large in area, sparsely vegetated, continuously available or in close proximity to secondary habitat, and with limited human disturbance.	No	Beaches, bayside mud flats, and salt/sand flats are not present in or near the project area.	No Effect
Red Knot (<i>Calidris canutus rufa</i>)	SGCN	LT	Red knots migrate long distances in flocks northward through the contiguous United States mainly April-June, southward July-October. A small plump-bodied, short-necked shorebird that in breeding plumage, typically held from May through August, is a distinctive and unique pottery orange color. Its bill is dark, straight and, relative to other shorebirds, short-to-medium in length. The Red Knot prefers the shoreline of coast and bays and also uses mudflats during rare inland encounters. Wintering Range includes- Aransas, Brazoria, Calhoun, Cameron, Chambers, Galveston, Jefferson, Kennedy, Kleberg, Matagorda, Nueces, San Patricio, and Willacy. Habitat: Primarily seacoasts on tidal flats and beaches, herbaceous wetland, and Tidal flat/shore.	No	Beaches, bayside mud flats, and salt flats are not present in or near the project area. Herbaceous wetlands located within the project area are low quality, maintained, and surrounded by urban development. Suitable habitat not present.	No Effect

Species	State Status	Federal Status	Habitat Description	Habitat Present	Project Area Habitat Assessment	Effect/Impact
Red-cockaded Woodpecker (<i>Picoides borealis</i>)	E	LE	Cavity nests in older pine (60+ years); forages in younger pine (30+ years); prefers longleaf, shortleaf, and loblolly pine forest.	No	Mature longleaf pine savannah not observed within the project area.	No Effect
Reddish Egret (<i>Egretta rufescens</i>)	T	--	Resident of the Texas Gulf Coast; brackish marshes and shallow salt ponds and tidal flats; nests on ground or in trees or bushes, on dry coastal islands in brushy thickets of yucca and prickly pear	No	Brackish marsh and tidal flats not present in or near the project area. No shallow salt ponds or dry coastal island observed within the project area.	No Impact
Swallow-tailed Kite (<i>Elanoides forficatus</i>)	T	--	Lowland forested regions, especially swampy areas, ranging into open woodland; marshes, along rivers, lakes, and ponds; nests in tall trees in clearing or on forest woodland edge.	Yes	Lowland forested regions located within the vicinity of the project area. Possible as transient or utilizing habitat immediately adjacent	Impact
White-faced Ibis (<i>Plegadis chihi</i>)	T	--	Prefers freshwater marshes, can be found in swamps, ponds, and rivers. Nesting in marshes, low trees, reeds or floating mats.	Yes	Swamps/floodplains found in the vicinity of the project area. Wetlands in southern portion potential habitat. Possible as transient from adjacent habitat.	Impact
Wood Stork (<i>Mycteria Americana</i>)	T	--	Prairie ponds, flooded pastures, ditches, other standing water including saltwater. Usually roots communally in tall snags.	No	Prairie ponds and flooded pastures not present within the project area. While ditches were located along existing roads within the project area they did not contain suitable habitat for wood storks and were in highly urbanized areas. Ditches in the project area are maintained, ephemeral, and adjacent to busy roadways.	No Impact
FISH						
Alligator Gar (<i>Atractosteus spatula</i>)	SGCN	*	Reservoirs and lakes, in the backwaters of lowland rivers, and in the brackish waters of estuaries, bayous, and bays.	Yes	Stream 2 (Hillebrandt Bayou) would be considered appropriate habitat. Stream 10 (unnamed tributary of Hillebrandt Bayou) is channelized and concrete lined, however could potentially provide enough flowing water and substrate to be considered appropriate habitat. All other streams (Streams 1, 3-9, and 11-14) would not be considered appropriate habitat due to shallow flowing water and concrete lined channels with insufficient substrate.	Impact
American Eel (<i>Anguilla rostrata</i>)	SGCN	*	Coastal waterways below reservoirs to gulf; spawns January to February in ocean, larva move to coastal waters, metamorphose, then females move into freshwater; most aquatic habitats with access to ocean, muddy bottoms, still waters, large streams, lakes; can travel overland in wet areas; males in brackish estuaries; diet varies widely, geographically, and seasonally	Yes	Stream 2 (Hillebrandt Bayou) would be considered appropriate habitat. Stream 10 (unnamed tributary of Hillebrandt Bayou) is channelized and concrete lined, however could potentially provide enough flowing water and substrate to be considered appropriate habitat. All other streams (Streams 1, 3-9, and 11-14) would not be considered appropriate habitat due	Impact

Species	State Status	Federal Status	Habitat Description	Habitat Present	Project Area Habitat Assessment	Effect/Impact
					to shallow flowing water and concrete lined channels with insufficient substrate.	
Saltmarsh topminnow (<i>Fundulus jenkinsi</i>)	SGCN	--	Saltmarsh topminnows live in estuaries, coastal salt marshes and back water sloughs, including shallow tidal meanders of <i>Spartina</i> cordgrass marshes.	No	Tidal waters are not present within the project area.	No Impact
Sabine shiner (<i>Notropis sabinae</i>)	SGCN	--	Inhabits small streams and large rivers of eastern Texas from San Jacinto drainage northward along the Gulf Coast to the Sabine River Basin; Habitat generalist with affinities for shallow, moving water and rarely found in pools and backwater areas; closely restricted to substrate of fine, silt free sand in small creeks and rivers having slight to moderate current.	Yes	Stream 2 (Hillebrandt Bayou) would be considered appropriate habitat. Stream 10 (unnamed tributary of Hillebrandt Bayou) is channelized and concrete lined, however could potentially provide enough flowing water and substrate to be considered appropriate habitat. All other streams (Streams 1, 3-9, and 11-14) would not be considered appropriate habitat due to shallow flowing water and concrete lined channels with insufficient substrate.	Impact
Southern flounder (<i>Paralichthys lethostigma</i>)	SGCN	--	Adult fish breed and spend the warmer season in coastal embayments and nearshore shelf waters, where the eggs develop until they are late stage larvae, which are then pushed by currents into the estuaries where the fish settle into the sediment and grow into juveniles. The juveniles stay in the estuaries until they reach sexual maturity and leave to spawn	No	Estuarine waters not present within the project area.	No Impact
MAMMALS						
Southern Short-tailed Shrew (<i>Blarina carolinensis</i>)	SGCN	*	Moist, well-drained habitats containing woody vegetation	Yes	Undeveloped portions of the project area contained poorly drained soils, but were delineated as uplands. Marginal habitat including maintained fields and disturbed forest edges could be present adjacent to the existing roadway.	Impact
Southeastern Myotis Bat (<i>Myotis austroriparius</i>)	SGCN	*	Caves are rare in Texas portion of range; buildings, hollow trees are probably important. Historically, lowland pine and hardwood forests with large hollow trees; associated with ecological communities near water. Roosts in cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures.	Yes	Caves not observed in the project area. Suitable forested areas and man-made structures such as culverts and bridges observed within the project area.	Impact
Tricolored Bat (<i>Perimyotis subflavus</i>)	SGCN	*	Forest, woodland and riparian areas are important. Caves are very important to this species.	Yes	Caves not observed in the project area; however, suitable wooded areas observed within the southern portion of the project area.	Impact

Species	State Status	Federal Status	Habitat Description	Habitat Present	Project Area Habitat Assessment	Effect/Impact
Big Brown Bat (<i>Eptesicus fuscus</i>)	SGCN	*	Any wooded areas or woodlands except south Texas. Riparian areas in west Texas.	Yes	Suitable wooded areas observed within the southern portion of the project area.	Impact
Eastern Red Bat (<i>Lasiurus borealis</i>)	SGCN	*	Found in a variety of habitats in Texas. Usually associated with wooded areas. Found in towns especially during migration.	Yes	Suitable wooded areas observed within the southern portion of the project area.	Impact
Hoary Bat (<i>Lasiurus cinereus</i>)	SGCN	*	Known from montane and riparian woodland in Trans-Pecos, forests and woods in east and central Texas.	Yes	Suitable forests and woods observed within the southern portion of the project area.	Impact
Rafinesque's big-eared Bat (<i>Corynorhinus rafinesquii</i>)	T	--	roosts in cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures	Yes	Suitable bottomland hardwoods observed within the project area. Bats were not observed at man-made structures or bridges but habitat is present.	Impact
Mexican Free-tailed Bat (<i>Tadarida brasiliensis</i>)	SGCN	*	Roosts in buildings in east Texas. Largest maternity roosts are in limestone caves on the Edwards Plateau. Found in all habitats, forest to desert.	Yes	Suitable wooded areas observed within the southern portion of the project area. Bats were not observed at man-made structures or bridges but habitat is present.	Impact
Swamp Rabbit (<i>Sylvilagus aquaticus</i>)	SGCN	*	Lowland water, often in cypress swamps, marshland, floodplain, and river tributaries.	Yes	Wetland adjacent to the project area, lowland water areas in the southern portion of the project area, and floodplain areas within the project area could be considered habitat.	Impact
Humpback whale (<i>Megaptera novaeangliae</i>)	E	LE	Open ocean and coastal waters, sometimes including inshore areas such as bays; summer distribution is in temperate and subpolar waters; in winter, most are in tropical/subtropical waters near islands or coasts	No	Open ocean and coastal waters, as well as bays, are not present within the project area, which largely consist of highway median and existing roadway. Appropriate waters for marine mammals do not occur in the project area.	No Effect
Louisiana black bear (<i>Ursus americanus luteolus</i>)	T	--	Bottomland hardwoods, floodplain forests, upland hardwoods with mixed pine; marsh. Possible as transient; bottomland hardwoods and large tracts of inaccessible forested areas.	No	While woodlands and hardwoods are found along the margins of the project area, the general habitat is isolated and patchy and is not appropriate habitat for bears. No inaccessible tracts are located within the project area. The majority of the project area is developed.	No Impact
Long-tailed Weasel (<i>Mustela frenata</i>)	SGCN	*	Includes brushlands, fence rows, upland woods and bottomland hardwoods, forest edges & rocky desert scrub. Usually live close to water.	Yes	The majority of the project area is developed and disturbed, however, upland woods could be considered habitat for the long-tailed weasel, based on the description provided by TPWD.	Impact
Mink (<i>Neovison vison</i>)	SGCN	*	Intimately associated with water; coastal swamps & marshes, wooded riparian zones, edges of lakes. Prefer floodplains.	Yes	Overgrown areas and canals in the southern portion of the project area could constitute appropriate habitat.	Impact
Western Hog-nosed Skunk (<i>Conepatus leuconotus</i>)	SGCN	*	Habitats include woodlands, grasslands, deserts, to 7200 feet, most common in rugged, rocky canyon country; little is known about the habitat of the ssp. <i>telmalestes</i> .	No	Multiple sources (The Mammals of Texas - Online Edition, 1997 ; IUCN; Schmidly 1983; Conepatus leuconotus by Drago and Sheffield) state that it is very likely	No Impact

Species	State Status	Federal Status	Habitat Description	Habitat Present	Project Area Habitat Assessment	Effect/Impact
					extirpated in eastern Texas and that no specimens have been observed since 1905. Small urban encroached parcels of secondary forest and highway median are not appropriate habitat.	
Eastern Spotted Skunk (<i>Spilogale putorius</i>)	SGCN	*	Catholic; open fields prairies, croplands, fence rows, farmyards, forest edges & woodlands. Prefer wooded, brushy areas & tallgrass prairies. <i>S.p. ssp. interrupta</i> found in wooded areas and tallgrass prairies, preferring rocky canyons and outcrops when such sites are available.	Yes	Wooded areas within the project area are potential habitat for eastern spotted skunks.	Impact
Mountain Lion (<i>Puma concolor</i>)	SGCN	*	Rugged mountains & riparian zones. In Texas, mostly found in western counties and hill country. Requires large areas of contiguous habitat.	No	The project area does not contain contiguous tracts of habitat large enough to support mountain lions. Small urban encroached parcels of secondary forest and highway median are not appropriate habitat. Rugged mountains and riparian zones suitable to support Mountain Lions are not present within the project area.	No Impact
MOLLUSKS						
Louisiana pigtoe (<i>Pleurobema riddellii</i>)	T	--	Streams and moderate-size rivers, usually flowing water on substrates of mud, sand, and gravel; not generally known from impoundments; Sabine, Neches, and Trinity (historic) River basins	Yes	Stream 2 (Hillebrandt Bayou) would be considered appropriate habitat. Stream 10 (unnamed tributary of Hillebrandt Bayou) is channelized and concrete lined, however could potentially provide enough flowing water and substrate to be considered appropriate habitat. All other streams (Streams 1, 3-9, and 11-14) would not be considered appropriate habitat due to shallow flowing water and concrete lined channels with insufficient substrate.	Impact
Sandbank pocketbook (<i>Lampsilis satura</i>)	T	--	small to large rivers with moderate flows and swift current on gravel, gravel-sand, and sand bottoms; east Texas, Sulfur south through San Jacinto River basins; Neches River	Yes	Stream 2 (Hillebrandt Bayou) would be considered appropriate habitat. Stream 10 (unnamed tributary of Hillebrandt Bayou) is channelized and concrete lined, however could potentially provide enough flowing water and substrate to be considered appropriate habitat. All other streams (Streams 1, 3-9, and 11-14) would not be considered appropriate habitat due to shallow flowing water and concrete lined channels with insufficient substrate.	Impact

Species	State Status	Federal Status	Habitat Description	Habitat Present	Project Area Habitat Assessment	Effect/Impact
Southern hickorynut (<i>Obovaria jacksoniana</i>)	T	--	medium sized gravel substrates with low to moderate current; Neches, Sabine, and Cypress river basins	Yes	Stream 2 (Hillebrandt Bayou) would be considered appropriate habitat. Stream 10 (unnamed tributary of Hillebrandt Bayou) is channelized and concrete lined, however could potentially provide enough flowing water and substrate to be considered appropriate habitat. All other streams (Streams 1, 3-9, and 11-14) would not be considered appropriate habitat due to shallow flowing water and concrete lined channels with insufficient substrate.	Impact
Texas heelsplitter (<i>Potamilus amphichaenus</i>)	T	--	quiet waters in mud or sand and also in reservoirs. Sabine, Neches, and Trinity River basins	Yes	Stream 2 (Hillebrandt Bayou) would be considered appropriate habitat. Stream 10 (unnamed tributary of Hillebrandt Bayou) is channelized and concrete lined, however could potentially provide enough flowing water and substrate to be considered appropriate habitat. All other streams (Streams 1, 3-9, and 11-14) would not be considered appropriate habitat due to shallow flowing water and concrete lined channels with insufficient substrate.	Impact
Texas pigtoe (<i>Fusconaia askewi</i>)	T	--	rivers with mixed mud, sand, and fine gravel in protected areas associated with fallen trees or other structures; east Texas River basins, Sulphur River, Cypress Creek, Sabine through Trinity rivers as well as San Jacinto River	Yes	Stream 2 (Hillebrandt Bayou) would be considered appropriate habitat. Stream 10 (unnamed tributary of Hillebrandt Bayou) is channelized and concrete lined, however could potentially provide enough flowing water and substrate to be considered appropriate habitat. All other streams (Streams 1, 3-9, and 11-14) would not be considered appropriate habitat due to shallow flowing water and concrete lined channels with insufficient substrate.	Impact
REPTILES						
Loggerhead sea turtle (<i>Caretta caretta</i>)	T	LT	Gulf and bay system primarily for juveniles, adults are most pelagic of the sea turtles; omnivorous, shows a preference for mollusks, crustaceans, and coral; nests from April through November	No	Appropriate gulf, bay, and pelagic habitat for marine reptiles is not present within the project area.	No Effect
Green sea turtle (<i>Chelonia mydas</i>)	T	LT	Gulf and bay system; shallow water seagrass beds, open water between feeding and nesting areas, barrier island beaches; adults are herbivorous feeding on sea grass and seaweed; juveniles are omnivorous feeding initially on marine invertebrates, then increasingly on sea grasses and	No	Appropriate gulf, bay, shallow water seagrass beds, open water, and barrier island beach habitat for marine reptiles is not present within the project area.	No Effect

Species	State Status	Federal Status	Habitat Description	Habitat Present	Project Area Habitat Assessment	Effect/Impact
			seaweeds; nesting behavior extends from March to October, with peak activity in May and June			
Kemp's ridley sea turtle (<i>Lepidochelys kempii</i>)	E	LE	Gulf and bay system, adults stay within the shallow waters of the Gulf of Mexico; feed primarily on crabs, but also snails, clams, other crustaceans and plants, juveniles feed on sargassum and its associated fauna; nests April through August	No	Appropriate gulf and bay habitat for marine reptiles is not present within the project area.	No Effect
Alligator Snapping Turtle (<i>Macrochelys temminckii</i>)	T	--	Deep water of rivers and canals. Prefers deep running water with mud bottom, sometimes brackish coastal water.	Yes	Stream 2 (Hillebrandt Bayou) would be considered appropriate habitat. Stream 10 (unnamed tributary of Hillebrandt Bayou) is channelized and concrete lined, however could potentially provide enough flowing water and substrate to be considered appropriate habitat. All other streams (Streams 1, 3-9, and 11-14) would not be considered appropriate habitat due to shallow flowing water and concrete lined channels with insufficient substrate.	Impact
Leatherback sea turtle (<i>Dermochelys coriacea</i>)	E	LE	Pelagic. Gulf and bay systems, and widest ranging open water reptile; omnivorous, shows a preference for jellyfish; in the US portion of their western Atlantic nesting territories, nesting season ranges from March to August.	No	Appropriate habitat for marine reptiles is not present within the project area.	No Effect
Texas diamondback terrapin (<i>Malaclemys terrapin littoralis</i>)	SGCN	--	coastal marshes, tidal flats, coves, estuaries, and lagoons behind barrier beaches; brackish and salt water; burrows into mud when inactive; may venture into lowlands at high tide	No	Neither coastal marshes, tidal flats, nor any other saltwater habitats are within the project area.	No Impact
Eastern Box Turtle (<i>Terrapene carolina</i>)	SGCN	*	Eastern box turtles inhabit forests, fields, forest-brush, and forest-field ecotones. In some areas they move seasonally from fields in spring to forest in summer. They commonly enters pools of shallow water in summer. For shelter, they burrow into loose soil, debris, mud, old stump holes, or under leaf litter. They can successfully hibernate in sites that may experience subfreezing temperatures. In Maryland bottomland forest, some hibernated in pits or depressions in forest floor (usually about 30 cm deep) usually within summer range; individuals tended to hibernate in same area in different years (Stickel 1989). Also attracted to farms, old fields and cut-over woodlands, as well as creek bottoms and dense woodlands. Egg laying sites often are sandy or loamy soils in open areas; females may move from bottomlands to warmer and drier sites to nest. In Maryland, females used the same nesting area in different years (Stickel 1989).	Yes	A variety of habitats that would be considered appropriate for box turtles were observed during field investigations in March and June of 2019, including overgrown urban fields, woodlands, and forest.	Impact

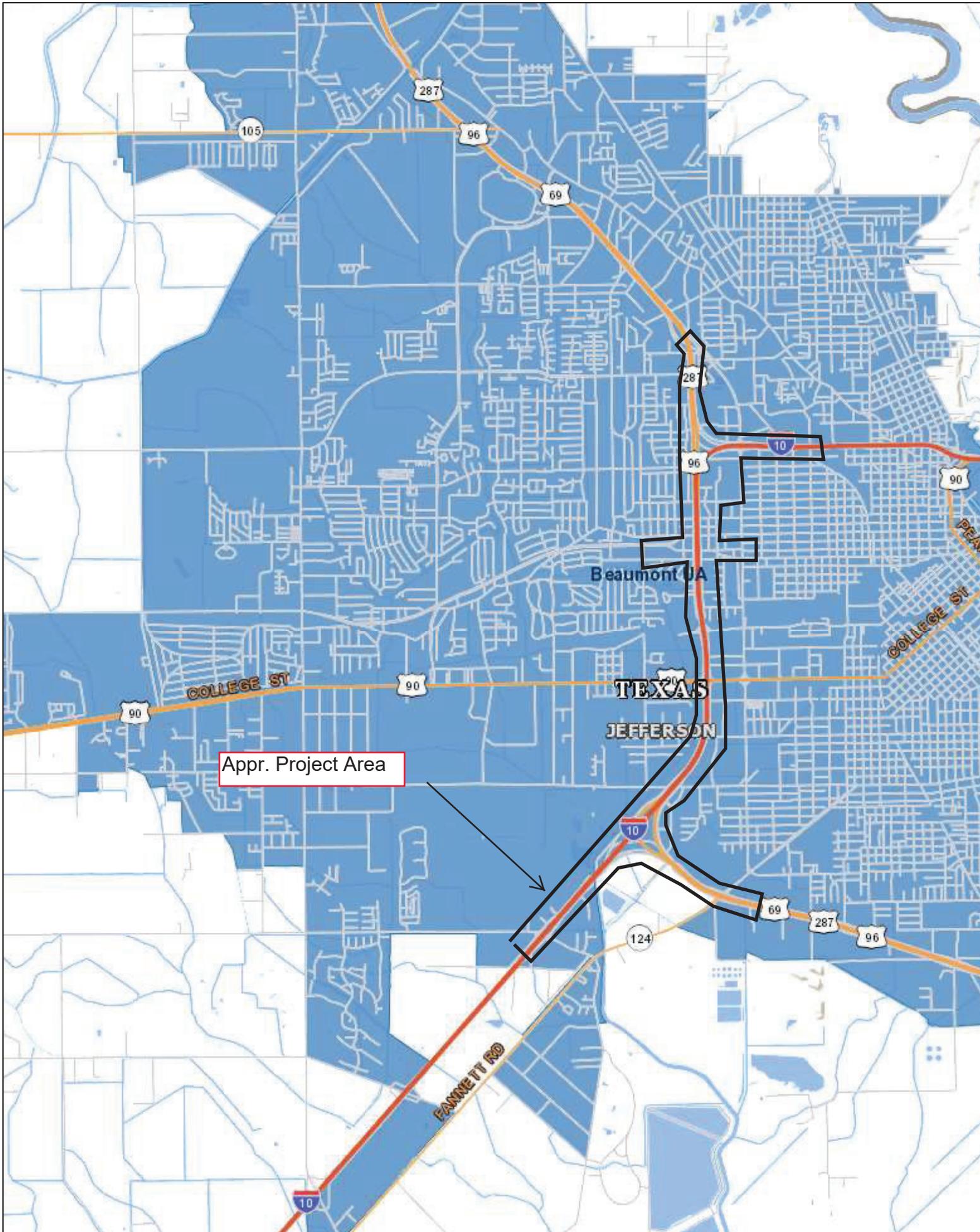
Species	State Status	Federal Status	Habitat Description	Habitat Present	Project Area Habitat Assessment	Effect/ Impact
Western Box Turtle (<i>Terrapene ornata</i>)	SGCN	*	Ornate or western box turtles inhabit prairie grassland, pasture, fields, sandhills, and open woodland. They are essentially terrestrial but sometimes enter slow, shallow streams and creek pools. For shelter, they burrow into soil (e.g., under plants such as yucca) (Converse et al. 2002) or enter burrows made by other species; winter burrow depth was 0.5-1.8 meters in Wisconsin (Doroff and Keith 1990), 7-120 cm (average depth 54 cm) in Nebraska (Converse et al. 2002). Eggs are laid in nests dug in soft well-drained soil in open area (Legler 1960, Converse et al. 2002). Very partial to sandy soil.	Yes	A variety of habitats that would be considered appropriate for box turtles were observed during field investigations in March and June of 2019, including overgrown urban fields, woodlands, and forest.	Impact
Smooth softshell (<i>Apalone mutica</i>)	SGCN	*	Any permanent body of water. Large rivers and streams; in some areas also found in lakes, impoundments, and shallow bogs (Ernst and Barbour 1972). Usually in water with sandy or mud bottom and few aquatic plants. Eggs are laid in nests dug in high open sandbars and banks close to water, usually within 90 m of water (Fitch and Plummer 1975).	Yes	Stream 2 (Hillebrandt Bayou) would be considered appropriate habitat. Stream 10 (unnamed tributary of Hillebrandt Bayou) is channelized and concrete lined, however could potentially provide enough flowing water and substrate to be considered appropriate habitat. All other streams (Streams 1, 3-9, and 11-14) would not be considered appropriate habitat due to shallow flowing water and concrete lined channels with insufficient substrate.	Impact
Slender Glass Lizard (<i>Ophisaurus attenuates</i>)	SGCN	*	Prefers dry microhabitats, usually associated with grassy areas. Habitats include open grassland, prairie, woodland edge, open woodland, oak savannas, longleaf pine flatwoods, scrubby areas, fallow fields, and areas near streams and ponds, often in habitats with sandy soil. This species often appears on roads in spring. During inactivity, it occurs in underground burrows. In Kansas, slender glass lizards were scarce in heavily grazed pastures, increased as grass increased with removal of grazing, and declined as brush and trees replaced grass (Fitch 1989). Eggs are laid underground, under cover, or under grass clumps cavities beneath flat rocks or in abandoned tunnels of small mammals (Fitch 1989).	No	Appropriate dry, higher quality, sandy prairie, dry open woods, and dry grassy areas were not observed during field and desktop evaluation. Potential dry grassy/scrubby areas within the Eastex interchange are not near a sufficient water source and do not contain appropriate sandy soil habitat.	No Impact
Texas horned lizard (<i>Phrynosoma cornutum</i>)	T	--	open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September	No	Open arid, semi-arid regions, sparsely vegetated areas, sandy/rocky soils not present within the project area.	No Impact
Northern scarlet snake (<i>Cemophora coccinea copei</i>)	T	--	mixed hardwood scrub on sandy soils; feeds on reptile eggs; semi-fossorial; active April-September	No	Upland, sandy, mixed hardwood scrub is not present within the project area.	No Impact

Species	State Status	Federal Status	Habitat Description	Habitat Present	Project Area Habitat Assessment	Effect/Impact
Timber/Canebrake Rattlesnake (<i>Crotalus horridus</i>)	T	*	Varying habitat including swamps/floodplains, hardwood/upland pine, limestone bluffs, abandoned farmlands.	Yes	Woodlands and Forests identified within the project area.	Impact
INSECTS						
Bay skipper (<i>Euphyes bayensis</i>)	SGCN	*	Apparently tidal sawgrass marsh only, probably covers same range of salinity as saw grass, nectarivore (butterfly), herbivore (caterpillar), larval foodplant is so far unconfirmed but is probably sawgrass, diurnal; two well separated broods apparently peaking in late May and in September which suggests the larvae may well aestivate in summer and the next brood hibernate	No	Tidal marsh not observed within the project area.	No Impact
PLANTS						
Scarlet catchfly (<i>Silene subciliata</i>)	SGCN	*	Deep well-drained sandy soils in and along margins of fire-maintained, dry, upland, longleaf pine savannas; in fire-suppressed forests with dense understory, it is often limited to sunnier roadsides or cleared utility easements; also sparingly in moister sands on openly forested creek banks; flowering early July-October, sometimes early November	No	Deep well-drained sandy soils not observed within the project area. No pine savannahs are located within the project area.	No Impact
Corkwood (<i>Leitneria pilosa ssp. pilosa</i>)	SGCN	*	Wet or saturated silty soils along brackish or freshwater swamps and ponds and other low, poorly drained sites; flowers in early spring, fruiting as early as May	Yes	Appropriate habitat present in wetlands within the project area. No plants observed during field investigations in March and June of 2019.	Impact
Large beakrush (<i>Rhynchospora macra</i>)	SGCN	*	Found in ombrotropic quaking peat bogs; Perennial; Flowering/Fruiting Aug-Oct	No	Bog-type areas not observed in the project area.	No Impact
Chapman's orchid (<i>Platanthera chapmanii</i>)	SGCN	--	In Texas, appears restricted to wetland pine savannas and savanna swales in hillside seepage bogs, two very restricted and declining habitats in the State; flowering July-August	No	No wetland pine savannas present within the project area.	No Impact
Awnless bluestem (<i>Bothriochloa exaristata</i>)	SGCN	--	Coastal prairies on black clay; Perennial; Flowering April-Dec; Fruiting April- Dec	No	No coastal prairies were observed within the project area.	No Impact

- * These species occur on the State listing of threatened or endangered species; however, they are not federally listed at this time by the U.S. Fish and Wildlife Service (2018).
- † These species are listed by the U.S. Wildlife Service; however, they are not listed to occur within this county by the Clear Lake office of the U.S. Fish and Wildlife Service (2018).
- Not listed for Texas Parks and Wildlife for this county (04/18)
- ‡ Under Review for Federal Listing (04/2018)

E = endangered T = threatened H = historical occurrence I = introduced population C = candidate species SGCN = Species of Greatest Conservation Need DM = delisted taxon, recovered, being monitored first five years AD = proposed delisting SAT = similarity of appearance to a threatened taxon, D = delisted taxon, PE = Proposed Federal Endangered, PT = Proposed Threatened

Appendix E
CENSUS BUREAU URBANIZED AREA MAP



Appendix F
NRCS-CPA-106 AND NRCS WEB SOIL SURVEY MAP

**FARMLAND CONVERSION IMPACT RATING
FOR CORRIDOR TYPE PROJECTS**

PART I (To be completed by Federal Agency)		3. Date of Land Evaluation Request 6/19/19	4. Sheet 1 of <u>1</u>
1. Name of Project 10/69 Interchanges Project		5. Federal Agency Involved FHWA (TxDOT-NEPA assigned)	
2. Type of Project Transportation		6. County and State Jefferson, Texas	
PART II (To be completed by NRCS)		1. Date Request Received by NRCS	2. Person Completing Form
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES <input type="checkbox"/> NO <input type="checkbox"/>		4. Acres Irrigated Average Farm Size	
5. Major Crop(s)	6. Farmable Land in Government Jurisdiction Acres: _____ % _____		7. Amount of Farmland As Defined in FPPA Acres: _____ % _____
8. Name Of Land Evaluation System Used	9. Name of Local Site Assessment System	10. Date Land Evaluation Returned by NRCS	

PART III (To be completed by Federal Agency)	Alternative Corridor For Segment			
	Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly	14.5			
B. Total Acres To Be Converted Indirectly, Or To Receive Services	0			
C. Total Acres In Corridor	462.2			

PART IV (To be completed by NRCS) Land Evaluation Information	Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value				

PART V (To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)

PART VI (To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))	Maximum Points	Corridor A	Corridor B	Corridor C	Corridor D
1. Area in Nonurban Use	15	1			
2. Perimeter in Nonurban Use	10	1			
3. Percent Of Corridor Being Farmed	20	0			
4. Protection Provided By State And Local Government	20	0			
5. Size of Present Farm Unit Compared To Average	10	0			
6. Creation Of Nonfarmable Farmland	25	0			
7. Availability Of Farm Support Services	5	0			
8. On-Farm Investments	20	0			
9. Effects Of Conversion On Farm Support Services	25	0			
10. Compatibility With Existing Agricultural Use	10	0			
TOTAL CORRIDOR ASSESSMENT POINTS	160	2	0	0	0

PART VII (To be completed by Federal Agency)	Maximum Points	Corridor A	Corridor B	Corridor C	Corridor D
Relative Value Of Farmland (From Part V)	100	0	0	0	0
Total Corridor Assessment (From Part VI above or a local site assessment)	160	2	0	0	0
TOTAL POINTS (Total of above 2 lines)	260	2	0	0	0

1. Corridor Selected: A	2. Total Acres of Farmlands to be Converted by Project: 0 acres of active farmland	3. Date Of Selection: 6/19/19	4. Was A Local Site Assessment Used? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>
-----------------------------------	--	---	---

5. Reason For Selection:

Signature of Person Completing this Part: John Williams DATE **6/19/19**

NOTE: Complete a form for each segment with more than one Alternate Corridor

CORRIDOR - TYPE SITE ASSESSMENT CRITERIA

The following criteria are to be used for projects that have a linear or corridor - type site configuration connecting two distant points, and crossing several different tracts of land. These include utility lines, highways, railroads, stream improvements, and flood control systems. Federal agencies are to assess the suitability of each corridor - type site or design alternative for protection as farmland along with the land evaluation information.

(1) How much land is in nonurban use within a radius of 1.0 mile from where the project is intended?

More than 90 percent - 15 points
90 to 20 percent - 14 to 1 point(s)
Less than 20 percent - 0 points

(2) How much of the perimeter of the site borders on land in nonurban use?

More than 90 percent - 10 points
90 to 20 percent - 9 to 1 point(s)
Less than 20 percent - 0 points

(3) How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than five of the last 10 years?

More than 90 percent - 20 points
90 to 20 percent - 19 to 1 point(s)
Less than 20 percent - 0 points

(4) Is the site subject to state or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?

Site is protected - 20 points
Site is not protected - 0 points

(5) Is the farm unit(s) containing the site (before the project) as large as the average - size farming unit in the County?

(Average farm sizes in each county are available from the NRCS field offices in each state. Data are from the latest available Census of Agriculture, Acreage or Farm Units in Operation with \$1,000 or more in sales.)
As large or larger - 10 points
Below average - deduct 1 point for each 5 percent below the average, down to 0 points if 50 percent or more below average - 9 to 0 points

(6) If the site is chosen for the project, how much of the remaining land on the farm will become non-farmable because of interference with land patterns?

Acreage equal to more than 25 percent of acres directly converted by the project - 25 points
Acreage equal to between 25 and 5 percent of the acres directly converted by the project - 1 to 24 point(s)
Acreage equal to less than 5 percent of the acres directly converted by the project - 0 points

(7) Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?

All required services are available - 5 points
Some required services are available - 4 to 1 point(s)
No required services are available - 0 points

(8) Does the site have substantial and well-maintained on-farm investments such as barns, other storage building, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures?

High amount of on-farm investment - 20 points
Moderate amount of on-farm investment - 19 to 1 point(s)
No on-farm investment - 0 points

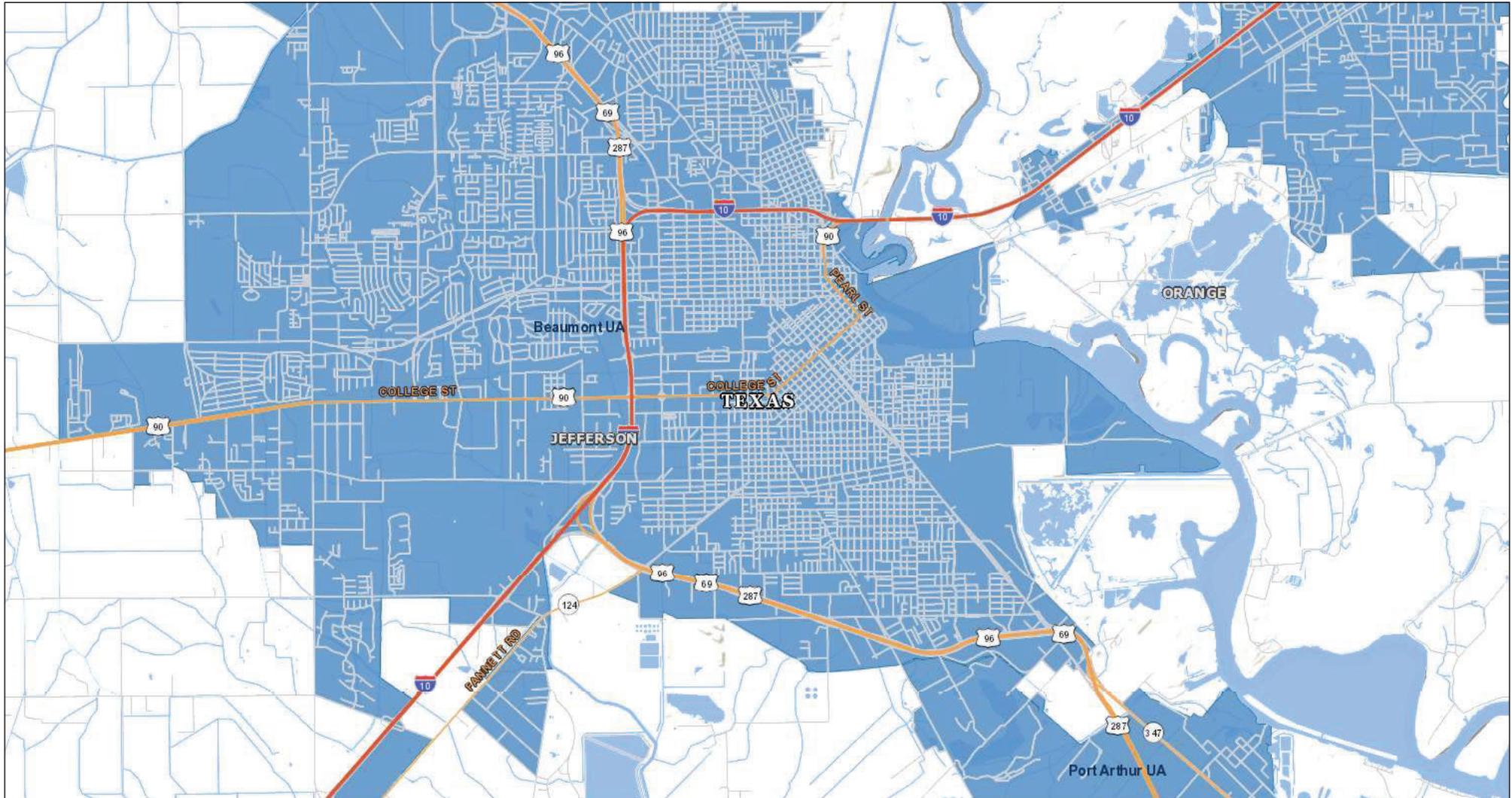
(9) Would the project at this site, by converting farmland to nonagricultural use, reduce the demand for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area?

Substantial reduction in demand for support services if the site is converted - 25 points
Some reduction in demand for support services if the site is converted - 1 to 24 point(s)
No significant reduction in demand for support services if the site is converted - 0 points

(10) Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of surrounding farmland to nonagricultural use?

Proposed project is incompatible to existing agricultural use of surrounding farmland - 10 points
Proposed project is tolerable to existing agricultural use of surrounding farmland - 9 to 1 point(s)
Proposed project is fully compatible with existing agricultural use of surrounding farmland - 0 points

10/69 Interchanges Project



September 13, 2019

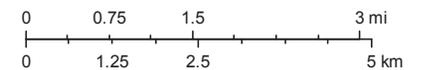
- Urbanized Areas
- Urban Clusters
- States
- Counties
- Urbanized Areas
- Urban Clusters
- Linear Hydrography
- Areal Hydrography
- Glaciers
- States
- Counties

Acreage in non-urban use: 1,251
Total acreage: 6,400

$1,251/6,400 = 0.195$
 $0.195 * 100 = 19.5\%$

Perimeter in non-urban use:
18,975 feet
Total perimeter: 90,955 feet
 $18,975/90,955 = 0.208$
 $0.208 * 100 = 20.8\%$

1:72,224



Source: U.S. Census Bureau
Sources: Esri, USGS, NOAA



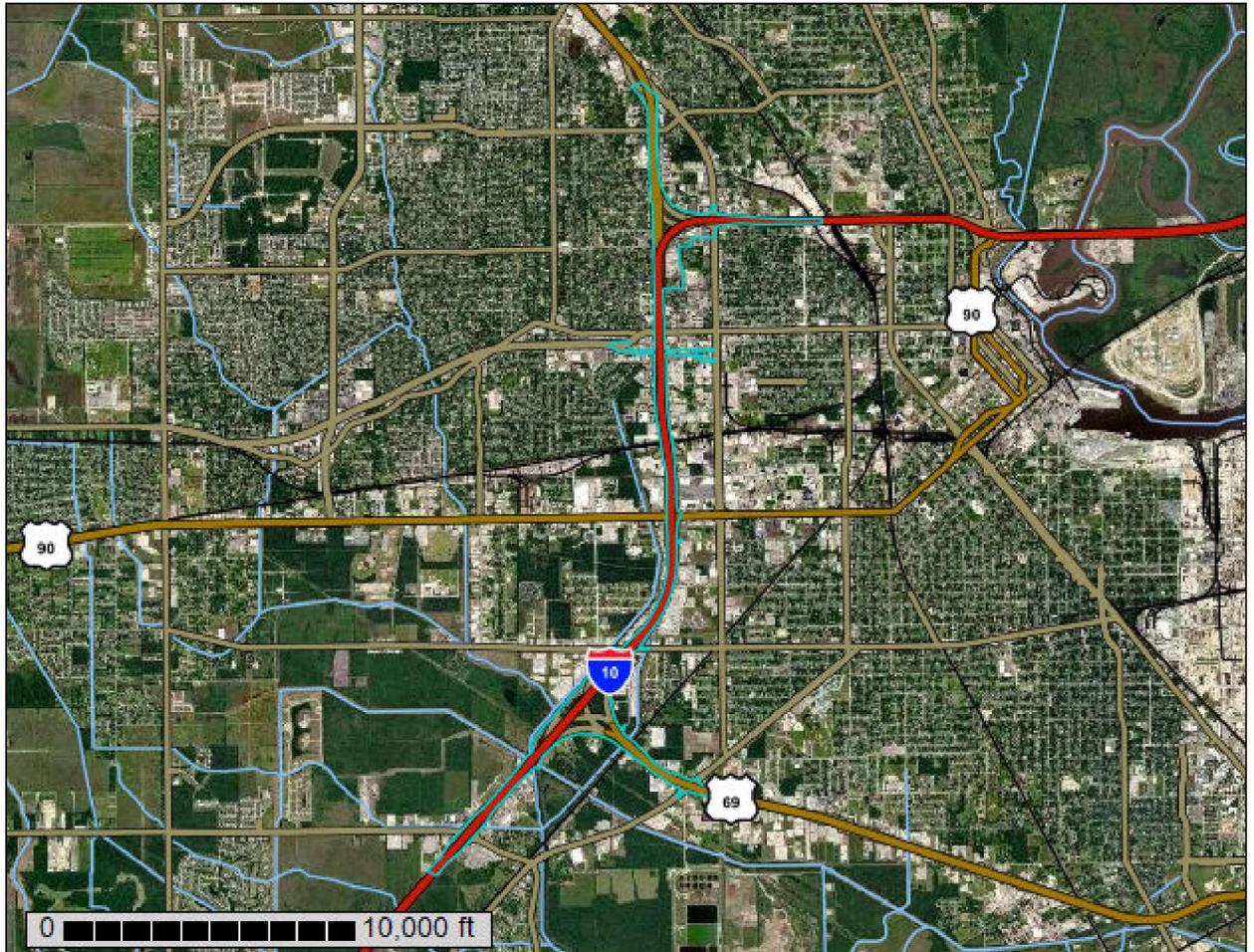
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Jefferson and Orange Counties, Texas



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

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scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

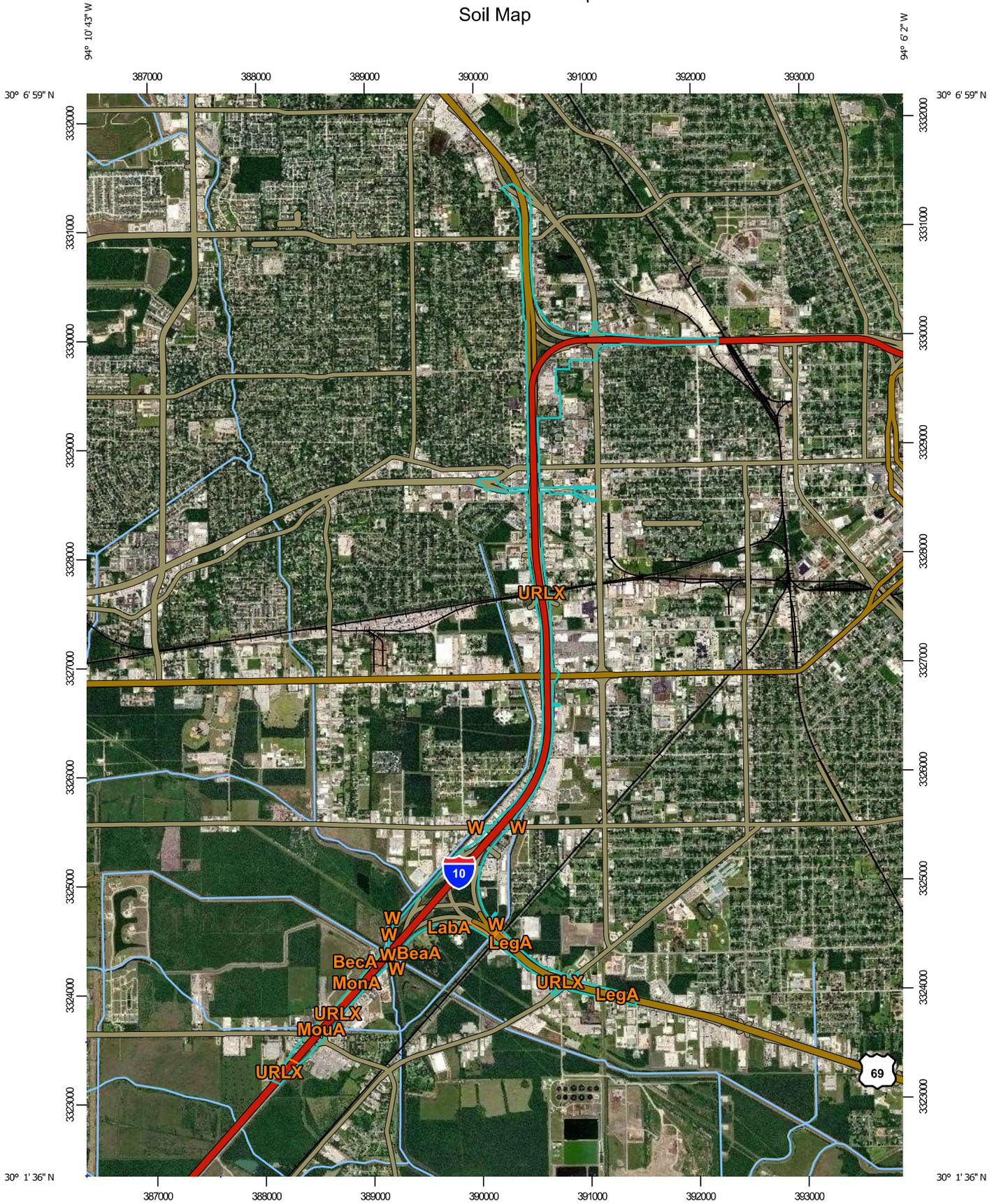
Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



Map Scale: 1:48,500 if printed on A portrait (8.5" x 11") sheet.

0 500 1000 2000 3000 Meters

0 2000 4000 8000 12000 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)	 Area of Interest (AOI)	 Spoil Area
Soils	 Soil Map Unit Polygons	 Stony Spot
	 Soil Map Unit Lines	 Very Stony Spot
	 Soil Map Unit Points	 Wet Spot
Special Point Features	 Blowout	 Other
	 Borrow Pit	 Special Line Features
	 Clay Spot	Water Features
	 Closed Depression	 Streams and Canals
	 Gravel Pit	Transportation
	 Gravelly Spot	 Rails
	 Landfill	 Interstate Highways
	 Lava Flow	 US Routes
	 Marsh or swamp	 Major Roads
	 Mine or Quarry	 Local Roads
	 Miscellaneous Water	Background
	 Perennial Water	 Aerial Photography
	 Rock Outcrop	
	 Saline Spot	
	 Sandy Spot	
	 Severely Eroded Spot	
	 Sinkhole	
	 Slide or Slip	
	 Sodic Spot	

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Jefferson and Orange Counties, Texas
 Survey Area Data: Version 19, Sep 14, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Nov 24, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BeaA	Beaumont clay, 0 to 1 percent slopes	0.0	0.0%
BecA	Beaumont-Urban land complex, 0 to 1 percent slopes	0.2	0.0%
LabA	Labelle clay loam, 0 to 1 percent slopes	2.7	0.6%
LauA	Labelle-Urban land complex, 0 to 1 percent slopes	0.1	0.0%
LeaA	League clay, 0 to 1 percent slopes	5.1	1.1%
LegA	League clay, 0 to 1 percent slopes, rarely flooded	3.5	0.8%
MonA	Morey loam, 0 to 1 percent slopes	1.7	0.4%
MouA	Morey-Urban land complex, 0 to 1 percent slopes	1.2	0.3%
URLX	Urban land	445.5	96.3%
W	Water	2.6	0.6%
Totals for Area of Interest		462.6	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They

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generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Jefferson and Orange Counties, Texas

BeaA—Beaumont clay, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2pfj7
Elevation: 20 to 100 feet
Mean annual precipitation: 48 to 62 inches
Mean annual air temperature: 68 to 72 degrees F
Frost-free period: 270 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Beaumont and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Beaumont

Setting

Landform: Flats
Landform position (three-dimensional): Dip
Microfeatures of landform position: Gilgai
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey fluviomarine deposits derived from igneous, metamorphic and sedimentary rock

Typical profile

A - 0 to 5 inches: clay
Bw - 5 to 19 inches: clay
Bssg - 19 to 80 inches: clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 4 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 6.0
Available water storage in profile: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: Blackland 44-56" PZ (R150AY740TX)
Hydric soil rating: Yes

Minor Components

League

Percent of map unit: 10 percent
Landform: Flats
Landform position (three-dimensional): Talf
Microfeatures of landform position: Gilgai
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Blackland 24-44" PZ (R150AY526TX)
Hydric soil rating: No

Viterbo

Percent of map unit: 5 percent
Landform: Flats
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Blackland 24-44" PZ (R150AY526TX)
Hydric soil rating: No

BecA—Beaumont-Urban land complex, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2thnb
Elevation: 0 to 100 feet
Mean annual precipitation: 48 to 62 inches
Mean annual air temperature: 68 to 72 degrees F
Frost-free period: 270 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Beaumont and similar soils: 65 percent
Urban land: 35 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Beaumont

Setting

Landform: Flats
Landform position (three-dimensional): Dip
Microfeatures of landform position: Gilgai
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey fluviomarine deposits derived from igneous, metamorphic and sedimentary rock

Typical profile

A - 0 to 5 inches: clay
Bw - 5 to 19 inches: clay

Custom Soil Resource Report

Bssg - 19 to 80 inches: clay

Properties and qualities

Slope: 0 to 1 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Poorly drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Gypsum, maximum in profile: 5 percent

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum in profile: 6.0

Available water storage in profile: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): 4w

Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: D

Ecological site: Blackland 44-56" PZ (R150AY740TX)

Hydric soil rating: Yes

Description of Urban Land

Typical profile

M - 0 to 40 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8s

Hydrologic Soil Group: D

Hydric soil rating: No

LabA—Labelle clay loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2thnk

Elevation: 20 to 100 feet

Mean annual precipitation: 48 to 62 inches

Mean annual air temperature: 68 to 72 degrees F

Frost-free period: 270 to 300 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Labelle and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Labelle

Setting

Landform: Flats

Landform position (three-dimensional): Talf, dip

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Loamy fluviomarine deposits derived from igneous, metamorphic and sedimentary rock

Typical profile

A - 0 to 8 inches: clay loam

Bt - 8 to 22 inches: silty clay loam

Btss - 22 to 48 inches: silty clay

Btkg - 48 to 80 inches: silty clay

Properties and qualities

Slope: 0 to 1 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat poorly drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: About 39 to 65 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 7 percent

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum in profile: 6.0

Available water storage in profile: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): 3w

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: D

Ecological site: Loamy Prairie 44-56" PZ (R150AY741TX)

Hydric soil rating: No

Minor Components

Morey

Percent of map unit: 5 percent

Landform: Flats

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: Loamy Prairie 44-56" PZ (R150AY741TX)

Hydric soil rating: No

Aris

Percent of map unit: 4 percent

Landform: Flats

Landform position (three-dimensional): Dip

Down-slope shape: Linear

Across-slope shape: Linear

Custom Soil Resource Report

Ecological site: Lowland 35-56" PZ (R150AY537TX)

Hydric soil rating: Yes

Anahuac

Percent of map unit: 1 percent

Landform: Point bars

Landform position (three-dimensional): Rise

Down-slope shape: Linear

Across-slope shape: Convex

Ecological site: Loamy Prairie 44-56" PZ (R150AY741TX)

Hydric soil rating: No

LauA—Labelle-Urban land complex, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2thnr

Elevation: 0 to 100 feet

Mean annual precipitation: 48 to 62 inches

Mean annual air temperature: 68 to 72 degrees F

Frost-free period: 270 to 300 days

Farmland classification: Not prime farmland

Map Unit Composition

Labelle and similar soils: 65 percent

Urban land: 35 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Labelle

Setting

Landform: Flats

Landform position (three-dimensional): Talf, dip

Down-slope shape: Linear

Across-slope shape: Convex

Parent material: Loamy fluviomarine deposits derived from igneous, metamorphic and sedimentary rock

Typical profile

A - 0 to 8 inches: clay loam

Bt - 8 to 22 inches: silty clay loam

Btss - 22 to 48 inches: silty clay

Btkg - 48 to 80 inches: silty clay

Properties and qualities

Slope: 0 to 1 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat poorly drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: About 39 to 65 inches

Custom Soil Resource Report

Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 7 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 6.0
Available water storage in profile: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: Loamy Prairie 44-56" PZ (R150AY741TX)
Hydric soil rating: No

Description of Urban Land

Typical profile

M - 0 to 40 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydrologic Soil Group: D
Hydric soil rating: No

LeaA—League clay, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2thnt
Elevation: 20 to 100 feet
Mean annual precipitation: 48 to 62 inches
Mean annual air temperature: 68 to 72 degrees F
Frost-free period: 270 to 300 days
Farmland classification: All areas are prime farmland

Map Unit Composition

League and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of League

Setting

Landform: Flats
Landform position (three-dimensional): Talf
Microfeatures of landform position: Gilgai
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey fluviomarine deposits derived from igneous, metamorphic and sedimentary rock

Custom Soil Resource Report

Typical profile

Ap - 0 to 6 inches: clay
Bw - 6 to 11 inches: silty clay
Bss - 11 to 36 inches: clay
Bssg - 36 to 80 inches: clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 35 to 59 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 12 percent
Gypsum, maximum in profile: 2 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 6.0
Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: Blackland 24-44" PZ (R150AY526TX)
Hydric soil rating: No

Minor Components

Beaumont

Percent of map unit: 10 percent
Landform: Flats
Landform position (three-dimensional): Dip
Microfeatures of landform position: Gilgai
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Blackland 44-56" PZ (R150AY740TX)
Hydric soil rating: Yes

China

Percent of map unit: 3 percent
Landform: Flats
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Blackland 24-44" PZ (R150AY526TX)
Hydric soil rating: No

Labelle

Percent of map unit: 2 percent
Landform: Flats
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Convex

Custom Soil Resource Report

Ecological site: Loamy Prairie 44-56" PZ (R150AY741TX)
Hydric soil rating: No

LegA—League clay, 0 to 1 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: 2thnv
Elevation: 0 to 20 feet
Mean annual precipitation: 48 to 62 inches
Mean annual air temperature: 68 to 72 degrees F
Frost-free period: 270 to 300 days
Farmland classification: All areas are prime farmland

Map Unit Composition

League and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of League

Setting

Landform: Flats
Landform position (three-dimensional): Talf
Microfeatures of landform position: Gilgai
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey fluviomarine deposits derived from igneous, metamorphic and sedimentary rock

Typical profile

Ap - 0 to 7 inches: clay
Bw - 7 to 22 inches: clay
Bss - 22 to 48 inches: clay
Bssg - 48 to 80 inches: clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 35 to 59 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 12 percent
Gypsum, maximum in profile: 2 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 12.0
Available water storage in profile: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: Blackland 24-44" PZ (R150AY526TX)
Hydric soil rating: No

Minor Components

Beaumont

Percent of map unit: 10 percent
Landform: Flats
Landform position (three-dimensional): Dip
Microfeatures of landform position: Gilgai
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Blackland 44-56" PZ (R150AY740TX)
Hydric soil rating: Yes

China

Percent of map unit: 3 percent
Landform: Flats
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Blackland 24-44" PZ (R150AY526TX)
Hydric soil rating: No

Labelle

Percent of map unit: 2 percent
Landform: Flats
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: Loamy Prairie 44-56" PZ (R150AY741TX)
Hydric soil rating: No

MonA—Morey loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2thp2
Elevation: 20 to 100 feet
Mean annual precipitation: 48 to 62 inches
Mean annual air temperature: 68 to 72 degrees F
Frost-free period: 270 to 300 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Morey and similar soils: 90 percent
Minor components: 10 percent

Custom Soil Resource Report

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Morey

Setting

Landform: Flats

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Loamy fluviomarine deposits derived from igneous, metamorphic and sedimentary rock

Typical profile

Ap - 0 to 6 inches: loam

Bt1 - 6 to 13 inches: loam

Bt2 - 13 to 36 inches: clay loam

Btk - 36 to 54 inches: clay loam

Btkg - 54 to 80 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat poorly drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: About 51 to 78 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 4 percent

Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

Sodium adsorption ratio, maximum in profile: 13.0

Available water storage in profile: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): 3w

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: D

Ecological site: Loamy Prairie 44-56" PZ (R150AY741TX)

Hydric soil rating: No

Minor Components

Labelle

Percent of map unit: 5 percent

Landform: Flats

Landform position (three-dimensional): Talf, dip

Down-slope shape: Linear

Across-slope shape: Convex

Ecological site: Loamy Prairie 44-56" PZ (R150AY741TX)

Hydric soil rating: No

Aris

Percent of map unit: 4 percent

Landform: Flats

Landform position (three-dimensional): Dip

Down-slope shape: Linear

Custom Soil Resource Report

Across-slope shape: Linear
Ecological site: Lowland 35-56" PZ (R150AY537TX)
Hydric soil rating: Yes

Anahuac

Percent of map unit: 1 percent
Landform: Point bars
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: Loamy Prairie 44-56" PZ (R150AY741TX)
Hydric soil rating: No

MouA—Morey-Urban land complex, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2thp5
Elevation: 20 to 100 feet
Mean annual precipitation: 48 to 62 inches
Mean annual air temperature: 68 to 72 degrees F
Frost-free period: 270 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Morey and similar soils: 65 percent
Urban land: 35 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Morey

Setting

Landform: Flats
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy fluviomarine deposits derived from igneous, metamorphic and sedimentary rock

Typical profile

Ap - 0 to 6 inches: loam
Bt1 - 6 to 13 inches: loam
Bt2 - 13 to 36 inches: clay loam
Btk - 36 to 54 inches: clay loam
Btkg - 54 to 80 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: High

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: About 51 to 78 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 4 percent

Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

Sodium adsorption ratio, maximum in profile: 13.0

Available water storage in profile: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): 3w

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: D

Ecological site: Loamy Prairie 44-56" PZ (R150AY741TX)

Hydric soil rating: No

Description of Urban Land

Typical profile

M - 0 to 40 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8s

Hydrologic Soil Group: D

Hydric soil rating: No

URLX—Urban land

Map Unit Setting

National map unit symbol: 2sych

Elevation: 10 to 200 feet

Mean annual precipitation: 48 to 62 inches

Mean annual air temperature: 67 to 72 degrees F

Frost-free period: 240 to 300 days

Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Down-slope shape: Linear

Across-slope shape: Linear

Typical profile

M - 0 to 40 inches: variable

Custom Soil Resource Report

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: 0 inches to manufactured layer

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)

W—Water

Map Unit Setting

National map unit symbol: dl4t

Elevation: 0 to 50 feet

Mean annual precipitation: 50 to 60 inches

Mean annual air temperature: 68 to 72 degrees F

Frost-free period: 250 to 310 days

Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

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Custom Soil Resource Report

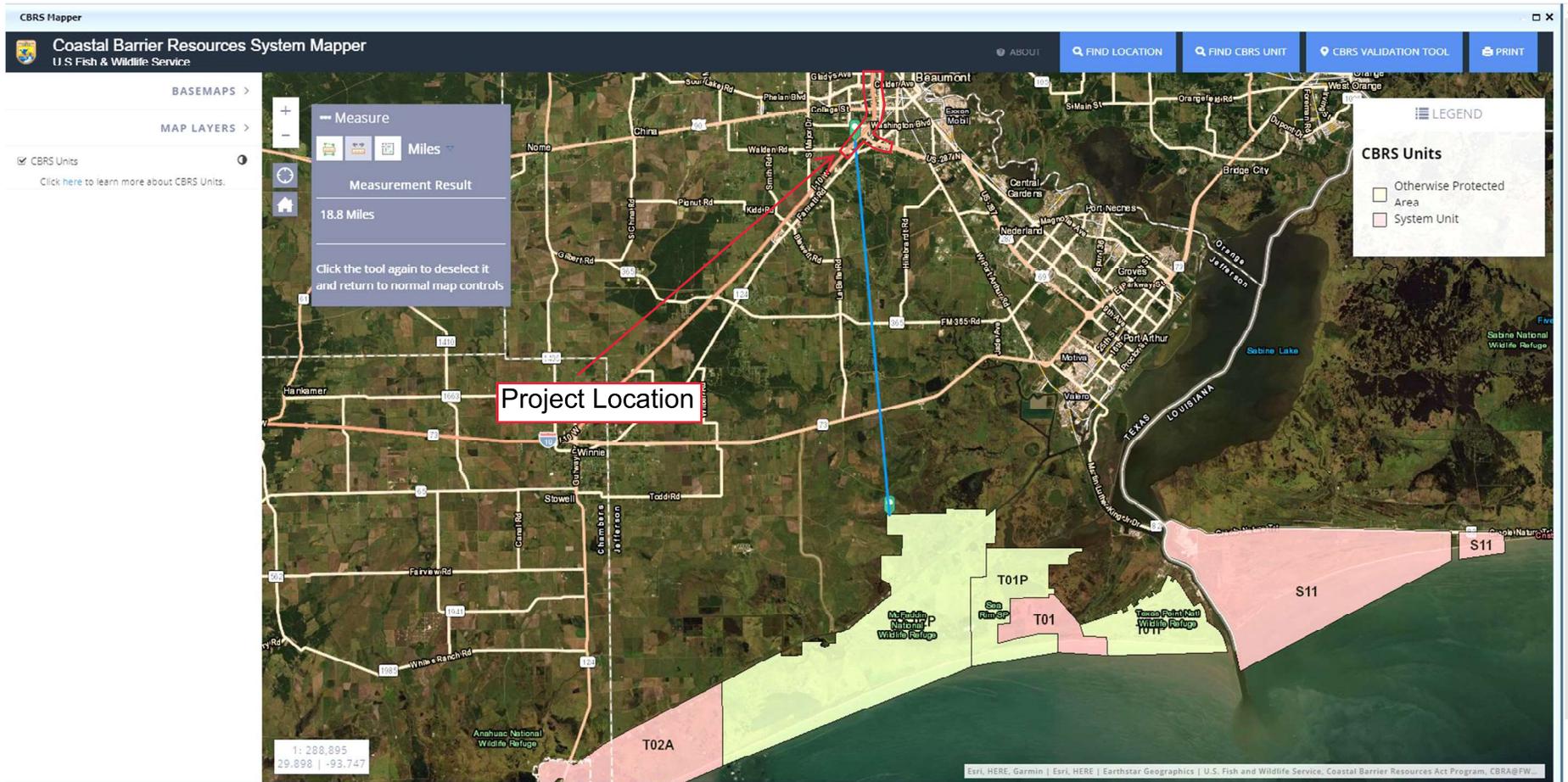
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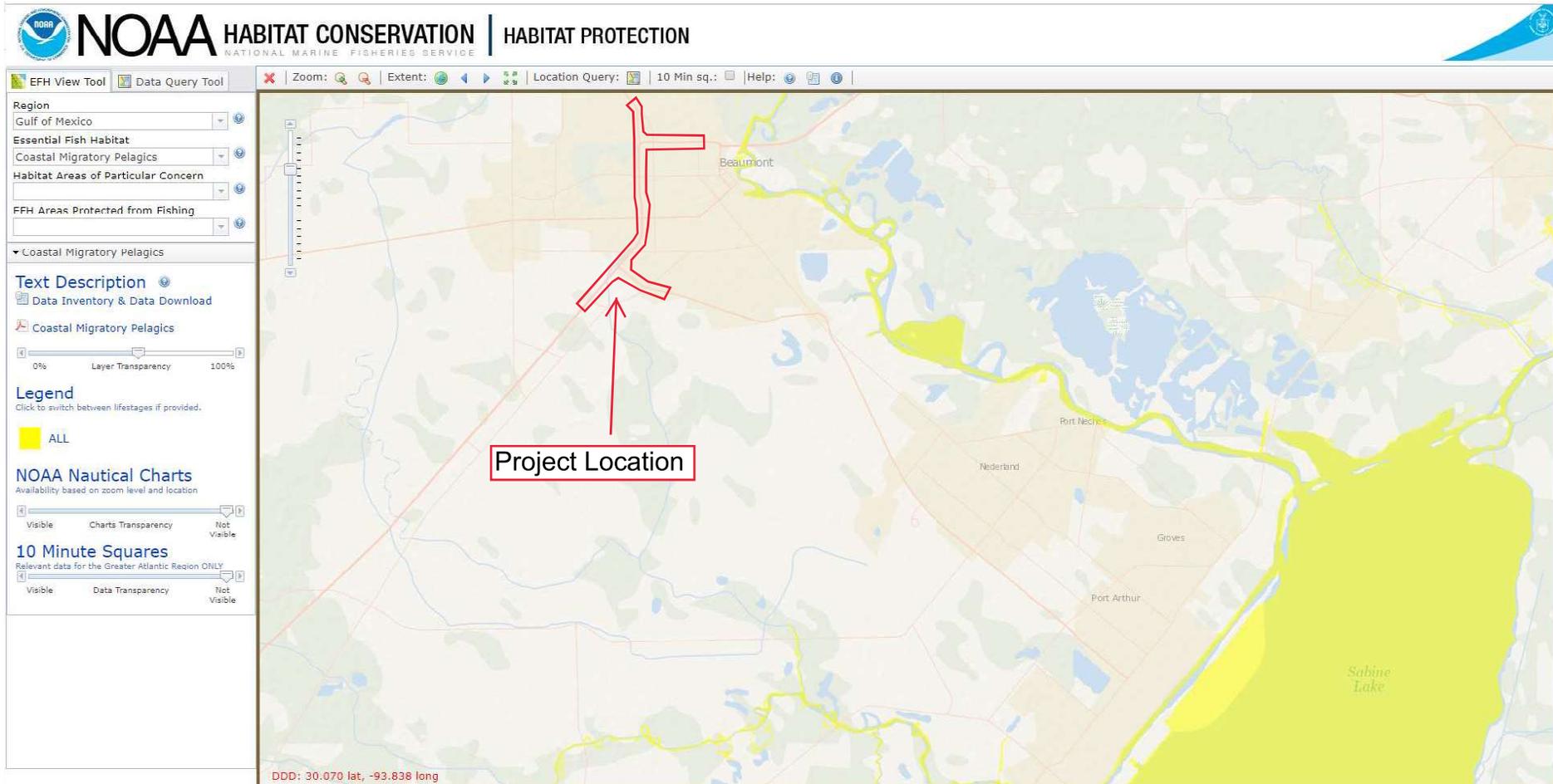
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Appendix G
CBRA AND EFH MAPPER

CSJ: 0028-13-135 & 0739-02-140
Beaumont District
10/69 Interchanges Project
Jefferson County
CBRS Mapper



CSJ: 0028-13-135 & 0739-02-140
Beaumont District
10/69 Interchanges Project
Jefferson County
EFH Mapper



EFH View Tool

Data Query Tool

Activate Location Query

Print This Report

EFH Data Notice: Essential Fish Habitat (EFH) is defined by textual descriptions contained in the fishery management plans developed by the regional Fishery Management Councils. In most cases mapping data can not fully represent the complexity of the habitats that make up EFH. This report should be used for general interest queries only and should not be interpreted as a definitive evaluation of EFH at this location. A location-specific evaluation of EFH for any official purposes must be performed by a regional expert. Please refer to the following links for the appropriate regional resources.

Query Results

Degrees, Minutes, Seconds: Latitude = , Longitude =
Decimal Degrees: Latitude = , Longitude =

The query location intersects with spatial data representing EFH and/or HAPCs for the following species/management units.

HAPCs

No Habitat Areas of Particular Concern (HAPC) were identified at the report location.

EFH Areas Protected from Fishing

No EFH Areas Protected from Fishing (EFHA) were identified at the report location.

Zoom: Extent: Location Query: 10 Min sq.: Help:

