

PART II
APPENDIX IIE
ENDANGERED SPECIES

**APPENDIX IIE-1
TEXAS PARKS AND WILDLIFE DEPARTMENT (TPWD)
DOCUMENTATION**

Appendix IIE-1A
Request for Review Letter



May 15, 2020

Laura Zebehazy

Texas Parks and Wildlife Department
Wildlife Habitat Assessment Program
4200 Smith School Road
Austin, TX 78744

Ms. Zebehazy,

The applicant, Golder Associates Inc. (Golder) on behalf of USA Waste of Texas Landfills, Inc (USA Waste) is requesting Texas Parks and Wildlife Department (TPWD) concurrence on determinations made for state listed rare, threatened and endangered (T&E) species habitat associated with the Hawthorn Park Landfill Expansion Project (Project) for compliance with TPWD's Wildlife Habitat Assessment Program. The Project is located on an approximate 253-acre tract, north of Tanner Road, west of Gessner Road, and east of the Sam Houston Parkway in Houston, Harris County, Texas. (Please refer to the attached maps in the State Listed Rare, T&E Species Habitat Assessment Report).

USA Waste is proposing expansion of the existing Hawthorn Park Landfill currently permitted as Texas Commission on Environmental Quality (TCEQ) Municipal Solid Waste (MSW) Permit No. 2185. The Project's expansion includes increasing the permitted area for landfill development to approximately 211 acres by including additional adjacent properties and previously abandoned road rights-of-ways (ROWs). Approximately 96% of the proposed permit area has been previously developed as part of ongoing landfill operations, recycling areas, access roads, and drainage features.

The expansion will also include completion of a detention basin located adjacent and east of the property. The detention pond will encompass approximately 45 acres and was approved by the City of Houston and Harris County Flood Control District in 1995. Construction of this detention pond has continued as part of ongoing landfill construction and operations. The Project is surrounded on all sides by commercial and residential developments. The Project's survey area is primarily composed of an existing landfill and there are sections devoted for concrete recycling and organic mulching. The site is covered by fill and contains primarily herbaceous vegetation. The majority of the site is heavily disturbed with little natural habitat remaining.

Golder biologists conducted a site assessment for the Project on March 9-12, 2020 to identify the presence of any state listed rare, T&E species or presence of suitable habitats. Golder reviewed the TPWD Annotated County Lists of Rare Species for Harris County, Texas Natural Diversity Database (TNXDD), and Migratory Bird Ecoregional Checklist to ascertain the lists of protected species with potential to occur within the Project's survey area. Review of these databases identified 83 state listed rare, T&E species.

None of the 83 state listed species were observed within the Project survey area during field surveys. Potentially suitable habitat is present within the Project area for 29 of the listed species. However, due to the sparse and

fragmented habitats located within the survey area, minimal tree clearing that would occur, and the temporary nature of the majority of the Project work, it is Golder's professional opinion that the Project will not result in significant impacts on state listed rare, threatened and endangered species or species habitat. Please send a response indicating TPWD's approval of their compliance in coordination with the Wildlife Habitat Assessment Program. Also note that U.S. Fish and Wildlife Service informal Section 7 Endangered Species Act consultations are currently ongoing.

A copy of the State Listed Species Habitat Assessment Report has been included for your convenience. Please contact Ashley Thompson at (941) 773-1848 or by email at Ashley_Thompson@Golder.com for any questions or require further information.



Ashley Thompson
Senior Project Biologist



Jacob Trahan
Project Manager

Attachments: Attachment 1: TPWD Wildlife Habitat Assessment Program Review Request
Attachment 2: State Listed Species Habitat Assessment Report

Appendix IIE-1B

Wildlife Habitat Assessment Program Review Request Form

Project Coordination and Review Requests **(Including Threatened and Endangered Species)**

EARLY PROJECT COORDINATION

If you are in the information gathering phase of project coordination and assessment, *in lieu of* submitting a Project Review form or a letter request, you may obtain information from the following Texas Parks and Wildlife Department (TPWD) sources regarding sensitive resource information for use in your analyses. TPWD recommends you use at least the following two sources of information when analyzing for project impacts to sensitive resources, including before submitting a request for TPWD review and recommendations.

RARE, THREATENED, AND ENDANGERED SPECIES OF TEXAS BY COUNTY - This database includes lists of species known to occur and potentially occurring in Texas at the county level. It can be accessed online at: http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/ or by contacting our administrative staff at (512) 389-4571. Appropriate use and interpretation of the county level lists are the responsibility of the recipient.

TEXAS NATURAL DIVERSITY DATABASE (TXNDD) – The TXNDD is publicly available location specific data on rare, threatened and endangered species, natural communities and other significant features of conservation concern to TPWD. This information can be obtained by submitting a data request to txndd@tpwd.state.tx.us. Response to a data request will include available TXNDD records, reports, and geographic information system compatible shapefiles of recorded locations for species and other rare resources on the U.S. Geological Survey (USGS) 7.5 minute topographic quadrangle of the project and surrounding area. Responses generally take a maximum of five business days from receipt of the request. Appropriate use and interpretation of TXNDD data are the responsibility of the recipient.

WILDLIFE HABITAT ASSESSMENT (WHAB) PROGRAM REVIEW

PROJECT REVIEW REQUESTS – The WHAB Program can provide a review of your assessment, after your analysis for impacts using the above two data sources. Please complete the WHAB Review Request form (attached; use Word format for fill-in version), or use the form as an outline of information to include with your letter request. The WHAB Program response will provide an evaluation of your environmental assessment for impacts to fish and wildlife and their habitats, including rare, threatened, and endangered species, other significant resources and concerns presently known or potentially occurring in the vicinity of your project. WHAB Program responses generally take 4 to 6 weeks on average from receipt, depending on the size of your request.

The request should include all the information listed on the next two pages and be sent to the address shown on the last page. The more pertinent information you provide, the more customized our review, and the faster our turnaround. Review requests submitted without adequate project detail may cause a delay in our response as we will need to contact you and wait for supplemental information. The potential for adverse impacts to natural resources from project activities varies based on the type of activity; location; season; vegetation; present physical features (both natural and man-made); degree of disturbance; planned avoidance, minimization, mitigation, enhancement, and restoration measures; species-specific tolerance levels; etc. Current color photographs and aerial photographs of the site greatly facilitate the review process. Complete information allows us to more accurately assess the potential for project impacts, as well as, assists us in narrowing the list of rare, threatened, and endangered species and other natural resources that may need to be addressed further.



WILDLIFE HABITAT ASSESSMENT PROGRAM Review Requests

(Including Threatened and Endangered Species)

Name: Ashley Thompson Date: May 15, 2020
Your Company: Golder Associates, Inc. Phone: (941) 773-1848
Your Company Address: 14950 Heathrow Forest Parkway, Suite 280 Fax: ()
City, State, Zip: Houston, TX 78744 E-mail: Ashley_Thompson@golder.com

Project Title, Number and Site Location: Hawthorn Park Landfill Expansion Project County(ies): Harris

1. Scope of Project:

(a) What regulations will this review help you to comply with? OR, if not regulatory, why is the review being requested? Who is the project sponsor?

Please see attached State Listed Species Habitat Assessment Report

(b) What and where is the project site? What activities will be conducted at the site? (Especially activity types, extent, boundaries, length & width, waterways, vegetation disturbance, and total acreage of site and acreage of the site that will be disturbed)

The Project is an approximate 253-acre tract located north of Tanner Road, west of Gessner Road, and east of the Sam Houston Parkway in Houston, Harris County, Texas.

(c) If this request is for a site investigation or risk assessment, why is the site being investigated? If applicable, what contaminant pathways are being evaluated?

Please see attached State Listed Species Habitat Assessment Report

(d) Schedule of activities – Approximately when (which calendar months, how many years) will the project be active on the site?

2. **Vegetation:** Species, dominant plants, structure and composition, vegetation layers, height of layers, natural vegetation community types.

Please see attached State Listed Species Habitat Assessment Report

3. **Other Natural Resources/Physical Features:**

(a) Soils, geology, watercourses, aquifers, flood zones, etc.

Please see attached State Listed Species Habitat Assessment Report

(b) Habitat, animals, animal assemblages, other sensitive features, etc.

Please see attached State Listed Species Habitat Assessment Report

4. **Existing Site Development:** Extent of pavement, gravel, shell, or other cover; buildings, landscaped, xeriscaped, drainage system, etc.

Please see attached State Listed Species Habitat Assessment Report

5. **Historic Use/Function of Site:** Pasture, forest, urban, row crops, rangeland, wetland, etc. If the request is for a risk assessment, when was, or for how long, has the site been active, inactive? Are cultural resources present on the site or will the project cross or impact state or federal lands, local parklands?

Please see attached State Listed Species Habitat Assessment Report

6. **Has a threatened and endangered species survey or assessment, wetland delineation, or other biological assessment already been performed?** (In general, TPWD recommends an on-site habitat assessment be performed.) Yes No

(a) If yes, provide surveyor name, qualifications, methods or protocols, acreage surveyed, level of effort, weather conditions, time of day, and dates the survey was performed.



WILDLIFE HABITAT ASSESSMENT PROGRAM
Review Requests (Continued)
(Including Threatened and Endangered Species)

6. (b) If yes, please provide results and copy of survey/assessment report.

7. **Could current on-site or adjacent habitat support rare species?** Yes No
Specifically, explain why or why not.

Please see attached State Listed Species Habitat Assessment Report

8. **Provide a description of potential negative direct and indirect impacts** from proposed project activities or former and current site activities, such as types of habitat and acreage to be degraded or lost, temporarily and permanently. Also, describe cumulative effects that could be anticipated from the project on the natural environment.

Project activities are not anticipated to result in significant impacts on state listed rare, threatened or endangered species or their habitats. Please see the attached State Listed Species Habitat Assessment Report for a detailed impact assessment.

9. **Provide a description of planned beneficial mitigation and enhancements** or restoration efforts. Be sure to note the avoidance, minimization, and compensatory mitigation measures planned to address the threat of negative impacts (e.g. which erosion control measures will be used, what will site restoration activities encompass, etc.).

No mitigation or enhancements have been planned for the project since it is a previously permitted landfill site.

10. **Include copies of coordination with other agencies** relevant to impacts or enhancements of natural resources for this project, or agency & contact name.

11. **Clearly delineate exact location of site and its boundaries** using an applicable USGS quad (most preferable) as the base layer or best map available. The topographic map citation should include the USGS quad name. The map must contain identifiable features and a scale that allows us to find your site **and** accurately pinpoint your site boundaries. When using internet maps, provide both a location map (zoomed out for highway reference) and a layout map (zoomed in for site features, boundaries, and neighboring street reference).

12. **Originals or color-copy photographs** of site and surrounding area with captions or narratives.

13. **Aerial photographs with pertinent features labeled.** Aerials should show the year photograph was taken.

Send completed form to:

Texas Parks and Wildlife Department
Wildlife Division
Wildlife Habitat Assessment Program
4200 Smith School Road
Austin, Texas 78744-3291
(512) 389-4571 (Phone) (512) 389-4599 (Fax)

Texas Parks and Wildlife Department maintains the information collected through this form. With few exceptions, you are entitled to be informed about the information we collect. Under Sections 552.021 and 552.023 of the Texas Government Code, you are also entitled to receive and review the information. Under Section 559.004, you are also entitled to have this information corrected.

Appendix IIE-1C

State Listed Species Habitat Assessment Report



GOLDER

REPORT

State Listed Species Habitat Assessment Report

Hawthorn Park Landfill Expansion Project

Submitted to:

Texas Parks and Wildlife Department - Wildlife Division

Wildlife Habitat Assessment Program
4200 Smith School Road
Austin, TX 78744

Submitted by:

Golder Associates, Inc.

14950 Heathrow Forest Parkway, Suite 280
Houston, Texas 77032

189426901

May 2020

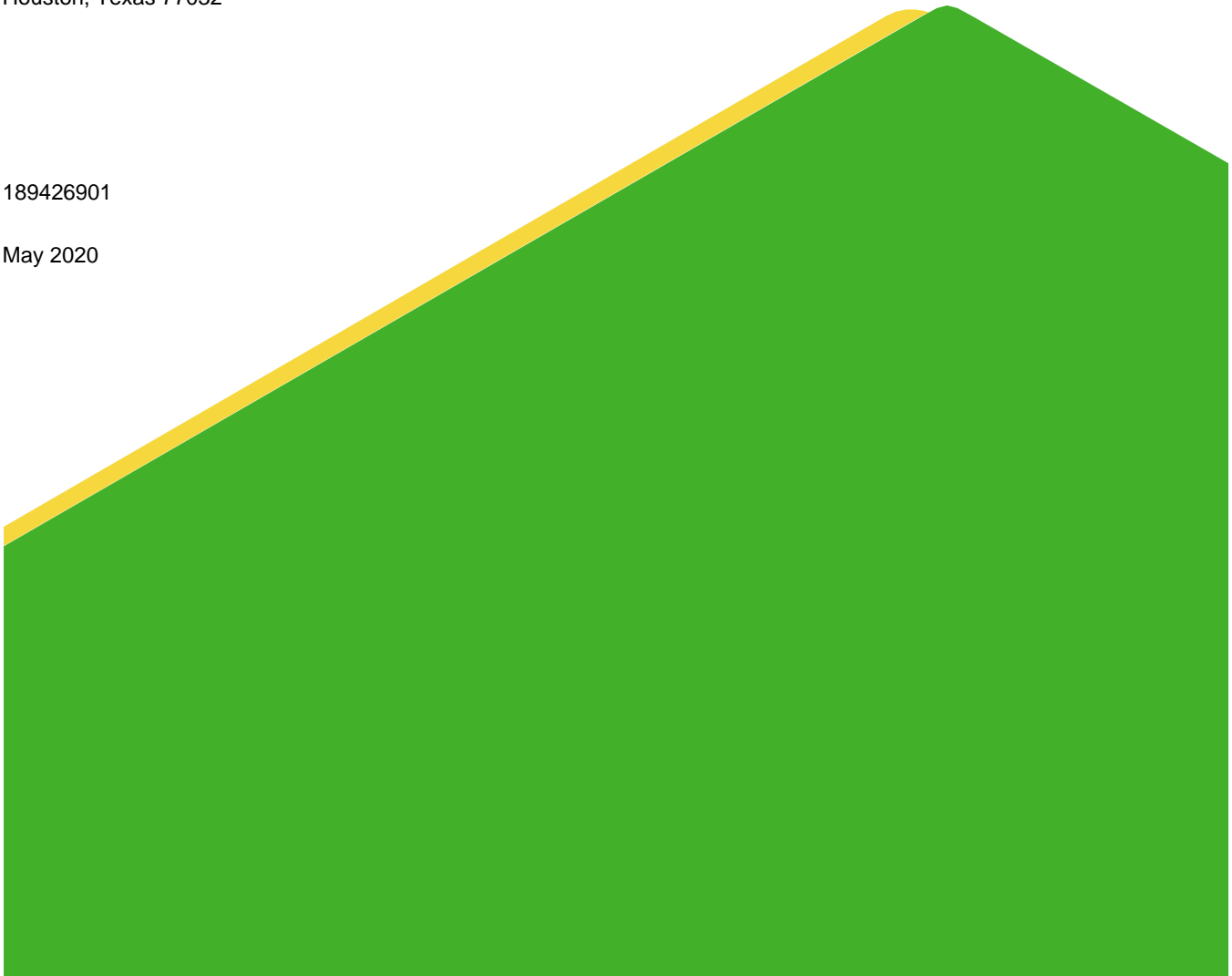


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1.0 INTRODUCTION

Golder Associates (Golder) was retained by USA Waste of Texas Landfills, Inc (USA Waste) to perform a biological resource habitat assessment for state listed Rare, Threatened and Endangered (T&E) species for the Hawthorn Park Landfill Expansion Project (Project) as part of the Texas Parks and Wildlife Department (TPWD) Wildlife Habitat Assessment Program. USA Waste is proposing expansion of the existing Hawthorn Park Landfill currently permitted as Texas Commission on Environmental Quality (TCEQ) Municipal Solid Waste (MSW) Permit No. 2185. This report is completed in compliance with applicable TCEQ MSW permitting requirements for Wetlands (30 Texas Administrative Code [TAC] §330.61(m)) and Endangered or Threatened Species (30 TAC §330.61(n)). The Project is located north of Tanner Road, west of Gessner Road, and east of the Sam Houston Parkway in Houston, Harris County, Texas. The biological resource habitat assessment consisted of the identification of species occurrence and potentially suitable habitat located within the Project's approximate 253-acre survey area (survey area).

2.0 PROJECT DESCRIPTION

USA Waste is proposing expansion of the existing Hawthorn Park Landfill. The Project's expansion includes increasing the permitted area for landfill development to approximately 211 acres by including additional adjacent properties and previously abandoned road rights-of-ways (ROWs). Approximately 96% of the proposed permit area has been previously developed as part of ongoing landfill operations, recycling areas, access roads, and drainage features.

The expansion will also include completion of a detention basin located adjacent and east of the property. The detention pond will encompass approximately 45 acres and was approved by the City of Houston and Harris County Flood Control District in 1995. Construction of this detention pond has continued as part of ongoing landfill construction and operations.

3.0 METHODOLOGY

3.1 Background Review

Prior to conducting field surveys, Golder reviewed published information for the survey areas to gain an understanding of the existing site conditions. Golder reviewed information from the following sources:

- United States Geologic Survey (USGS) topographic survey maps;
- Historic and current aerial photographs;
- Natural Resources Conservation Service (NRCS) soil survey database;
- Texas Parks and Wildlife Department (TPWD) Texas Natural Diversity Database (TXNDD);
- TPWD Annotated County Lists of Rare, Threatened and Endangered Species; and
- TPWD and Texas Partners in Flight Migratory Bird Ecoregion Checklist.

3.1.1 USGS Topographic Survey Maps and Aerial Photography

Golder reviewed the USGS 7.5 Quadrangle Topographic Map, Hedwig Village, Texas prior to conducting field surveys. The topographic maps identified areas that historically contained ponds and streams throughout the Project survey area. Recent aerial photography reveals a system of ponds and drainage ditches that direct the flow of stormwater from the west to the east across the Project area.

3.1.2 Soils

The NRCS soils data lists two soil series within the Project (Appendix A). Table 1 below presents the soil data for the Project survey area.

Table 1: NRCS Soils Located within the Project Survey Area

Soil Series Map Unit	Soil Map Unit Symbol	Slope Percentage	Hydric Rating
Cyfair-Urban Land Complex	CyuA	0 – 1	Not Hydric
Addicks-Urban Land Complex	Ak	0 – 1	Hydric

3.1.3 Texas Natural Diversity Database

Golder requested the TXNDD data for the USGS 7.5 Quadrangle Topographic Map, Hedwig Village, Texas prior to conducting field surveys (Appendix E). The TXNDD data identified eight element occurrences (EO) occurring within a 1-mile buffer of the Project. These include the Southern Crawfish Frog (*Litobates areolatus areolatus*), Coastal Gay-Feather (*Liatrix bracteata*), Awnless Bluestem (*Bothriochloa exaristata*), Houston Toad (*Anaxyrus houstonensis*), Tharp's Dropseed (*Sporobolus tharpii*), Houston Daisy (*Rayjacksonia aurea*), Texas Windmill Grass (*Chloris texensis*), and Texas Prairie Dawn (*Hymenoxys texana*). Two of which (Southern Crawfish Frog and Houston Toad) overlap the survey area.

3.1.4 State Listed Rare, Threatened and Endangered Species

Golder reviewed the TPWD annotated county list of rare, threatened and endangered species known to potentially occur within Harris County, Texas (Appendix D). The review identified 83 species potentially occurring within the Project. Table 2 in Section 4.2 presents each of these species along with their general habitat requirements and anticipated Project impacts.

3.1.5 Migratory Bird Ecoregion Checklist

Golder reviewed the TPWD and Texas Partners in Flight Migratory Bird Ecoregion Checklist for Region 6 – Coastal Prairies. As of the time of this report the ecoregional checklist has not been completed.

3.2 Rare, Threatened and Endangered Species Surveys

The biological resources habitat assessment consisted of an initial background review of the Project and pedestrian surveys conducted in the field within the Project survey area to observe and record existing site conditions. The TPWD TXNDD EO list and Harris County list for Rare, T&E species was reviewed prior to conducting field surveys to identify any state listed species that could potentially be located within the Project survey area (Appendices E and D, respectively). Aerial photographs and topographic maps were used along with the habitat characterization data collected in the field to perform the species habitat assessments.

Golder biologists conducted the biological resource habitat assessment survey on March 9-12, 2020 to determine the presence of state listed Rare, T&E species or if suitable habitat for state listed Rare, T&E species is present within the Project survey area. Surveys were conducted along meandering transects and field maps and a sub-meter GPS with the survey area boundaries were used for navigation. Observations were recorded and

photographs were taken of general habitat characteristics. A photolog with representative site photographs taken during the survey are provided in Appendix C.

4.0 FIELD SURVEY RESULTS

Golder conducted the field surveys within the Project survey area, shown in the mapping exhibits provided in Appendix A. Datasheets documenting hydrology, vegetation, and soil conditions at the site are located in Appendix B. Photographs taken at the site depicting conditions documented within the Project survey areas are provided in Appendix C. Land use types within the upland areas consists of industrial areas, pipeline ROWs, forested areas, and existing restored portions of the landfill.

4.1 Vegetation

Characteristic vegetation observed within the Project survey area consisted of bermudagrass (*Cynodon dactylon*), Carolina geranium (*Geranium carolinianum*), huisache (*Vachellia farnesiana*), King Ranch bluestem (*Bothriochloa ischaemum*), sawtooth hackberry (*Rubus argutus*), white mulberry (*Morus alba*), black mustard (*Brassica rapa*), Texas thistle (*Cirsium texanum*), American elm (*Ulmus americana*), water oak (*Quercus nigra*), sugar hackberry (*Celtis laevigata*), Alabama supplejack (*Berchemia scandens*), American sycamore (*Platanus occidentalis*), Chinese tallow (*Triadica sebifera*), woodrush flatsedge (*Cyperus entrerianus*), spikerush (*Eleocharis montevidensis*), broadleaf cattail (*Typha latifolia*), and black willow (*Salix nigra*).

4.2 Rare, Threatened and Endangered Species

The TPWD Harris County species list identified 83 state listed rare, T&E species that could potentially occur within the Project survey area. Table 2 below presents each of these 83 species, their associated habitats, and anticipated Project impacts.

Table 2: State Listed Rare, Threatened and Endangered Species Potentially Occurring within the Project

Species Name	State Status	*Habitat Requirements/ Comments	Anticipated Project Impacts
Amphibians			
Cajun Chorus Frog (<i>Pseudacris fouquettei</i>)	N/A	The species' preferred habitat includes forests, fields, swamps, marshes, irrigation ditches, and temporarily flooded areas. While potentially suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat is sparse and fragmented. No individuals were observed during field surveys and there are vast areas of more suitable habitat surrounding the survey area.	May Impact
Houston Toad (<i>Anaxyrus houstonensis</i>)	Endangered	The species' preferred habitat includes forests with deep sandy soils. Adults and juveniles are presumed to move through areas of less suitable habitat using riparian corridors. The survey area does not contain suitable habitat or soils preferred by the species; the survey area is a previously disturbed landfill site and soils are heavy clay and highly disturbed. Although the TXNDD identified an historical element occurrence within the survey area, potentially suitable habitat is no longer present within the survey area.	No Impact Anticipated
Southern Crawfish Frog (<i>Lithobates areolatus areolatus</i>)	N/A	The species preferred habitat consists terrestrial and aquatic systems ranging from grasslands, pasture and intact prairie or isolated grasslands in the middle of large forested areas to ephemeral wetlands. While potentially suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat is sparse and fragmented. Although the TXNDD identified an element occurrence within the survey area no individuals of the species were observed during field surveys.	May Impact
Southern Dusky Salamander (<i>Desmognathus conanti</i>)	N/A	The species prefers vegetated riparian and aquatic zones of spring fed, sandy bottom streams and baygalls in forested areas. The Survey area does not contain any spring fed streams with sandy bottoms; therefore, no suitable habitat is located within the survey area.	No Impact Anticipated

Species Name	State Status	*Habitat Requirements/ Comments	Anticipated Project Impacts
Strecker's Chorus Frog (<i>Pseudacris streckeri</i>)	N/A	The species prefers wooded floodplains and flats, prairies, cultivated fields and marshes with sandy substrates. No suitable habitat was identified within the survey area.	No Impact Anticipated
Woodhouse's Toad (<i>Anaxyrus woodhousii</i>)	N/A	The species prefers a wide variety of habitats including forests, grasslands, and barrier island sand dunes. No suitable habitat was identified within the survey area.	No Impact Anticipated
Birds			
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Threatened	The species prefers habitat near rivers and large lakes nesting in tall trees or on cliffs near water. Although some sparse forested areas are located within the survey area, mature trees large enough to support eagle nesting were not identified. No abandoned nests or individuals were observed during field surveys.	No Impact Anticipated
Black Rail (<i>Laterallus jamaicensis</i>)	N/A	The species prefers salt, brackish and freshwater marshes, pond borders, wet meadows, and grassy swamps. The Project contains potentially suitable habitat along the pond borders within the survey area. While suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat is sparse and fragmented. No individuals of the species were observed during field surveys.	May Impact
Franklin's Gull (<i>Leucophaeus pipixcan</i>)	N/A	This species is only a spring and fall migrant throughout Texas. During migrations the species is known to utilize stopover habitat at night consisting of wetlands, lake shores and islands. The Project contains potentially suitable stopover habitat. While suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat is sparse and fragmented. No individuals of the species were observed during field surveys.	May Impact
Mountain Plover (<i>Charadrius montanus</i>)	N/A	The species prefers high plains, shortgrass prairies, or shallow depressions. The Project does not contain suitable habitat.	No Impact Anticipated

Species Name	State Status	*Habitat Requirements/ Comments	Anticipated Project Impacts
Piping Plover (<i>Charadrius melodus</i>)	Threatened	The species prefers beaches, sandflats and dunes along Gulf Coast beaches and adjacent offshore islands. The survey area is located inland and does not contain suitable habitat.	No Impact Anticipated
Red Knot (<i>Calidris canutus rufa</i>)	N/A	The species migrates long distances utilizing shorelines of coasts and bays, mudflats, tidal flats, beaches, and herbaceous wetlands. The survey area is located inland and does not contain potentially suitable habitat.	No Impact Anticipated
Red-Cockaded Woodpecker (<i>Picoides borealis</i>)	Endangered	The species prefers southern yellow pine species, loblolly, longleaf and shortleaf. Nesting in cavities in older (60+ years) infected with red heart fungus. Foraging in younger pine stands (30+ years). The survey area does not contain potentially suitable habitat.	No Impact Anticipated
Reddish Egret (<i>Egretta rufescens</i>)	Threatened	The species is a resident of the Gulf Coast utilizing brackish marshes, shallow salt ponds and tidal flats. The survey area is located inland and does not contain potentially suitable habitat.	No Impact Anticipated
Swallow-Tailed Kite (<i>Elanoides forficatus</i>)	Threatened	The species prefers lowland forests especially swampy areas, marshes, along rivers, lakes, and ponds. The survey area contains potentially suitable habitat along the ponds within the survey area. While suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat is sparse and fragmented. No individuals of the species were observed during field surveys.	May Impact
Western Burrowing Owl (<i>Athene cunicularia hypugaea</i>)	N/A	The species utilizes open grasslands, especially prairie, plains and savannas. The survey area does not contain potentially suitable habitat.	No Impact Anticipated
White-Faced Ibis (<i>Plegadis chihi</i>)	Threatened	The species is found in a variety of habitats including freshwater marshes, sloughs, and irrigated rice fields, but can also be found in brackish and saltwater habitats. The survey area contains potentially suitable habitat. While suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat	May Impact

Species Name	State Status	*Habitat Requirements/ Comments	Anticipated Project Impacts
		is sparse and fragmented. No individuals of the species were observed during field surveys.	
White-Tailed Hawk (<i>Buteo albicaudatus</i>)	Threatened	The species prefers coastal prairies, cordgrass flats and scrub-live oak and mesquite savannas. The survey area does not contain potentially suitable habitat.	No Impact Anticipated
Whooping Crane (<i>Grus americana</i>)	Endangered	The species can be found in small ponds, marshes, and flooded grain fields. Potentially suitable stopover habitat is present within the survey area. While suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat is sparse and fragmented. No individuals of the species were observed during field surveys.	May Impact
Wood Stork (<i>Mycteria americana</i>)	Threatened	The species prefers to nest in large tracts of bald cypress and red mangrove. Foraging typically occurs in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water. The survey area contains potentially suitable foraging habitat. While suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat is sparse and fragmented. No individuals were observed during field surveys.	May Impact
Crustaceans			
Houston Burrowing Crayfish (<i>Fallicambarus houstonensis</i>)	N/A	The species is known as a complete burrowing species. All collected specimens have come from excavated burrows most from temporary pools. The survey area does not contain potentially suitable habitat.	No Impact Anticipated
Fish			
Alligator Gar (<i>Atractosteus spatula</i>)	N/A	The species is found in rivers, streams, lakes, swamps, bayous, bays, and estuaries typically in pools and backwater habitats. While not likely, the manmade ponds and ditches located within the survey area could serve as potentially suitable habitat for the species. The stormwater conveyance culverts in the vicinity of the Project would	May Impact

Species Name	State Status	*Habitat Requirements/ Comments	Anticipated Project Impacts
		only provide outflow/inflow during extreme flood events; therefore, it is unlikely the species would utilize these waterbodies.	
Sabine Shiner (<i>Notropis sabinae</i>)	N/A	The species prefers small streams and large rivers with shallow, moving water over fine sandy substrates. Found in eastern Texas from the San Jacinto drainage northward along the Gulf Coast to the Sabine River Basin. All waterbodies located within the survey area have low flow with clay/silt substrates. The survey area does not contain potentially suitable habitat.	No Impact Anticipated
Saltmarsh Topminnow (<i>Fundulus jenkinsi</i>)	N/A	The species is found along estuary edges of saltmarsh along the Gulf Coast. The survey area is located inland and does not contain potentially suitable habitat.	No Impact Anticipated
Silverband Shiner (<i>Notropis shumardi</i>)	N/A	The species prefers main channels of streams and rivers with moderate to swift currents, moderate to deep depths over silt, sand and gravel. The species is currently known from the Red River to the Lavaca River. All waterbodies located within the survey area have low flow with clay/silt substrates. The survey area does not contain potentially suitable habitat.	No Impact Anticipated
Southern Flounder (<i>Paralichthys lethostigma</i>)	N/A	The species is estuarine dependent and inhabits riverine, estuarine and coastal waters preferring muddy, sandy or silty substrates. The survey area is located inland and does not contain potentially suitable habitat.	No Impact Anticipated
Western Creek Chubsucker (<i>Erimyzon claviformis</i>)	Threatened	The species prefer silt, sand and gravel bottomed pools of clear headwater creeks, and small rivers. Found from the Red River to the San Jacinto drainage. All waterbodies located within the survey area have low flow with clay/silt substrates. The survey area does not contain potentially suitable habitat.	No Impact Anticipated
Insects			
American Bumblebee (<i>Bombus pensylvanicus</i>)	N/A	The species can be found in a wide variety of habitats that support wildflowers, parks, pastures, and open meadows. The Project contains potentially suitable habitat. While	May Impact

Species Name	State Status	*Habitat Requirements/ Comments	Anticipated Project Impacts
		suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat is sparse and fragmented. No individuals were observed during field surveys. All project related activities associated with this habitat would be minor and temporary in nature and revegetation would occur within disturbed areas.	
Bay Skipper (<i>Euphyes bayensis</i>)	N/A	This species is only known to occur in tidal sawgrass marshes. The survey area is located inland and does not contain potentially suitable habitat.	No Impact Anticipated
Mammals			
American Badger (<i>Taxidea taxus</i>)	N/A	This species is a habitat generalist but prefers areas with soft soils that support ground squirrel populations. Soils within the survey area, a previously disturbed landfill, are primarily clay and not conducive to digging or burrowing. The survey area does not contain potentially suitable habitat.	No Impact Anticipated
Big Brown Bat (<i>Eptesicus fuscus</i>)	N/A	The species is a habitat generalist found in wooded areas. The survey area contains wooded areas that may serve as potentially suitable habitat. While suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat is sparse and fragmented.	May Impact
Big Free-Tailed Bat (<i>Nyctinomops macrotis</i>)	N/A	The species prefers to roost in crevices and cracks in high canyon walls but will also use buildings. The survey area does not contain any high canyon walls or suitable buildings that can be used for roosting habitat.	No Impact Anticipated
Eastern Red Bat (<i>Lasiurus borealis</i>)	N/A	The species is found through a wide variety of habitats but is usually associated with wooded areas. The survey area contains wooded areas that may serve as potentially suitable habitat. While suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat is sparse and fragmented.	May Impact
Eastern Spotted Skunk (<i>Spilogale putorius</i>)	N/A	The species is a habitat generalist found in open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands. The survey area contains potentially	May Impact

Species Name	State Status	*Habitat Requirements/ Comments	Anticipated Project Impacts
		suitable habitat. While suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat is sparse and fragmented.	
Hoary Bat <i>(Lasiurus cinereus)</i>	N/A	The species is found in the forests and woods of east and central Texas. The survey area contains wooded areas that may serve as potentially suitable habitat. While suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat is sparse and fragmented.	May Impact
Humpback Whale <i>(Megaptera novaeangliae)</i>	Endangered	The species inhabits tropical, subtropical, temperate, and subpolar water worldwide. They will utilize both open ocean and coastal waters. The survey area does not contain potentially suitable habitat.	No Impact Anticipated
Long-Tailed Weasel <i>(Mustela frenata)</i>	N/A	The species preferred habitat includes brushlands, fence rows, upland woods, and bottomland hardwoods usually close to water. The survey area contains potentially suitable habitat. While suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat is sparse and fragmented.	May Impact
Louisiana Black Bear <i>(Ursus americanus luteolus)</i>	Threatened	The species is found in bottomland hardwoods, forested floodplains, upland hardwoods with mixed pine and marshes. The survey area does not contain large tracts of suitable habitat capable of supporting the species.	No Impact Anticipated
Mexican Free-Tailed Bat <i>(Tadarida brasiliensis)</i>	N/A	The species is found in a wide variety of habitats, roosting in buildings, bridges, limestone caves and other natural and manmade structures. The survey area does not contain any limestone caves, bridges or suitable buildings that can be used for roosting habitat.	No Impact Anticipated
Mink <i>(Neovision vison)</i>	N/A	The species is closely associated with water habitats consisting of coastal swamps and marshes, wooded riparian zones, and edges of lakes. The survey area contains potentially suitable habitat. While suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat is sparse and fragmented.	May Impact

Species Name	State Status	*Habitat Requirements/ Comments	Anticipated Project Impacts
Mountain Lion (<i>Puma concolor</i>)	N/A	The species is a habitat generalist found in a wide range of habitats throughout Texas but is most frequent in rugged mountains regions. The survey area does not contain large tracts of suitable habitat capable of supporting the species.	No Impact Anticipated
Plains Spotted Skunk (<i>Spilogale putorius interrupta</i>)	N/A	The species is a habitat generalist found in open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands. The survey area contains potentially suitable habitat. While suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat is sparse and fragmented.	May Impact
Rafinesque's Big-Eared Bat (<i>Corynorhinus rafinesquii</i>)	Threatened	The species prefer lowland pine and hardwood forests with large hollow trees. Roosting in cavity trees of bottomland hardwoods, concrete culverts and abandoned manmade structures. The survey area contains wooded areas that may serve as potentially suitable habitat. While suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat is sparse and fragmented.	May Impact
Southeastern Myotis Bat (<i>Myotis austroriparius</i>)	N/A	The species prefer lowland pine and hardwood forests with large hollow trees near water. Roosting in cavity trees of bottomland hardwoods, concrete culverts and abandoned manmade structures. The survey area contains wooded areas that may serve as potentially suitable habitat. While suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat is sparse and fragmented.	May Impact
Southern Short-Tailed Shrew (<i>Blarina carolinensis</i>)	N/A	The species is found in east Texas pine forests and agricultural fields. The survey area does not contain suitable habitat.	No Impact Anticipated
Swamp Rabbit (<i>Sylvilagus aquaticus</i>)	N/A	The species is primarily found in lowland areas near water including cypress bogs, marshes, floodplains, creeks and rivers. The survey area does not contain suitable habitat.	No Impact Anticipated

Species Name	State Status	*Habitat Requirements/ Comments	Anticipated Project Impacts
Thirteen-Lined Ground Squirrel (<i>Ictidomys tridecemlineatus</i>)	N/A	The species prefers short grass prairies with deep soils for burrowing. Soils within the survey area are primarily clay and not conducive to digging or burrowing.	No Impact Anticipated
Tricolored Bat (<i>Perimyotis subflavus</i>)	N/A	The species is found in forest, bottomland hardwoods, and caves. The survey area contains wooded areas that may serve as potentially suitable habitat. While suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat is sparse and fragmented.	May Impact
Western Hognose Skunk (<i>Conepatus leuconotus</i>)	N/A	The species is found in woodlands, grasslands, and deserts. The survey area contains potentially suitable habitat. While suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat is sparse and fragmented.	May Impact
Mollusks			
Louisiana Pigtoe (<i>Pleurobema riddellii</i>)	Threatened	The species is known to occur in small streams to large rivers in slow to moderate currents in substrates of clay, mud, sand and gravel. There are several ditches located within the survey area, however they are not considered suitable for the species.	No Impact Anticipated
Sandbank Pocketbook (<i>Lampsilis satura</i>)	Threatened	The species is known to occur in small streams to large rivers in slow to moderate currents in substrates of clay, mud, sand and gravel. There are several ditches located within the survey area, however they are not considered suitable for the species.	No Impact Anticipated
Reptiles			
Alligator snapping Turtle (<i>Macrochelys temminckii</i>)	Threatened	The species is found in perennial waterbodies; rivers, canals, lakes, and oxbows, swamps, bayous, and ponds near running water. The manmade ponds and ditches located within the survey area may serve as potentially suitable habitat for the species.	May Impact

Species Name	State Status	*Habitat Requirements/ Comments	Anticipated Project Impacts
American Alligator (<i>Alligator mississippiensis</i>)	N/A	The species is found in aquatic habitats including coastal marshes, inland natural rivers, swamps, marshes, and manmade impoundments. The manmade ponds and ditches located within the survey area may serve as potentially suitable habitat for the species.	May Impact
Common Garter Snake (<i>Thamnophis sirtalis</i>)	N/A	The species is found in grasslands and modified open areas near aquatic habitats such as ponds, streams and marshes. The survey area may serve as suitable habitat for the species.	May Impact
Eastern Box Turtle (<i>Terrapene carolina</i>)	N/A	The species prefer forests, fields, forest-brush, and forest-field ecotones. The survey area may serve as suitable habitat for the species. While suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat is sparse and fragmented.	May Impact
Loggerhead Sea Turtle (<i>Caretta caretta</i>)	Threatened	This species is associated with tropical, subtropical and temperate water worldwide. They will utilize both open ocean and coastal waters. The survey area is located far inland and does not contain suitable habitat.	No Impact Anticipated
Slender Glass Lizard (<i>Ophisaurus attenuates</i>)	N/A	The species prefers open grassland, prairie, woodland edge, open woodland, oak savannas, longleaf pine flatwoods, scrubby areas, fallow fields and areas near streams and ponds often with sandy soils. The survey area may serve as suitable habitat for the species. While suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat is sparse and fragmented.	May Impact
Smooth Softshell (<i>Apalone mutica</i>)	N/A	The species prefers large rivers and streams also found in lakes and impoundments. The manmade ponds located within the survey area may serve as suitable habitat for the species.	May Impact
Texas Diamondback Terrapin (<i>Malaclemys terrapin littoralis</i>)	N/A	The species prefer coastal marshes, tidal flats, coves, estuaries, and lagoons behind barrier beaches. The survey area is located inland and does not contain suitable habitat.	No Impact Anticipated

Species Name	State Status	*Habitat Requirements/ Comments	Anticipated Project Impacts
Texas Horned Lizard (<i>Phrynosoma cornutum</i>)	Threatened	The species prefers open habitats with sparse vegetation, including grass, prairie, cactus, scattered brush or scrubby trees. Current open habitats are densely vegetation. The survey area does not contain suitable habitat.	No Impact Anticipated
Timber Rattlesnake (<i>Crotalus horridus</i>)	Threatened	The species is found in swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland and limestone bluffs. The survey area does not contain potentially suitable habitat.	No Impact Anticipated
Western Box Turtle (<i>Terrapene ornata</i>)	N/A	The species is found in prairie grasslands, pasture, fields, sandhills, and open woodlands. The survey area may serve as suitable habitat for the species. While suitable habitat may be present, the Project is located within a previous disturbed landfill and potential habitat is sparse and fragmented.	May Impact
Western Hognose Snake (<i>Heterodon nasicus</i>)	N/A	The species prefers shortgrass or mixed grass prairie with gravel or sandy soils. Current open habitats are densely vegetation and soils are heavy clay. The survey area does not contain suitable habitat.	No Impact Anticipated
Plants			
Awnless Bluestem (<i>Bothriochloa exaristata</i>)	N/A	The species is found on coastal prairies with black clay. The TNXDD data has element occurrences listed for the species within 1-mile of the survey area. However, the Project is a previously disturbed landfill, little natural habitats exist. No individuals of the species were observed during field surveys.	No Impact Anticipated
Coastal Gay-Feather (<i>Liatris bracteate</i>)	N/A	The species is found on coastal prairie grasslands. The TNXDD data has element occurrences listed for the species within 1-mile of the Project. However, the Project is a previously disturbed landfill, little natural habitats exist. No individuals of the species were observed during field surveys.	No Impact Anticipated
Corkwood (<i>Leitneria pilosa ssp. pilosa</i>)	N/A	The species is found in wet or saturated silty soils along brackish or freshwater swamps, ponds or other low, poorly drained sites. Potentially suitable habitat may	No Impact Anticipated

Species Name	State Status	*Habitat Requirements/ Comments	Anticipated Project Impacts
		occur within the survey area; however, the Project is a previously disturbed landfill, little natural habitats exist. No individuals of the species were observed during field surveys.	
Correll's False Dragon Head (<i>Physostegia correllii</i>)	N/A	The species is found in wet, silty clay loams on streamsides, creek beds, irrigation channels, and roadside ditches. Potentially suitable habitat may occur within the survey area; however, the Project is a previously disturbed landfill, little natural habitats exist. No individuals of the species were observed during field surveys.	No Impact Anticipated
Giant Sharpstem Umbrella Sedge (<i>Cyperus cephalanthus</i>)	N/A	The species is found on saturated, fine sandy loam soils, along nearly level fringes of deep prairie depressions or depressional areas within coastal prairies with remnant heavy black clay. The Project is a previously disturbed landfill, little natural habitats exist. Potentially suitable habitat is not present within the survey area.	No Impact Anticipated
Goldenwave Tickseed (<i>Coreopsis intermedia</i>)	N/A	The species prefers deep sandy soils of sandhills in openings in or along margins of post oak woodlands and pine-oak forests. The Project is a previously disturbed landfill, little natural habitats exist. Potentially suitable habitat is not present within the survey area.	No Impact Anticipated
Houston Daisy (<i>Rayjacksonia aurea</i>)	N/A	The species is found in naturally barren or sparsely vegetated saline slick spots or pimple mounds on coastal prairies, usually in sandy to sandy loam soils. The TNXDD data has element occurrences listed for the species within 1-mile of the survey area. However, the Project is a previously disturbed landfill, little natural habitats exist. No individuals of the species were observed during field surveys.	No Impact Anticipated
Indianola Beakrush (<i>Rhynchospora indianolensis</i>)	N/A	The species is found in cattle pastures. Potentially suitable habitat is not present within the survey area.	No Impact Anticipated
Oklahoma Grass Pink (<i>Calopgon oklahomensis</i>)	N/A	The species is found in mesic, acidic, sandy to loamy prairies, pine savannas, oak woodlands, edges of bogs, and frequently mowed areas. The survey area is made up	No Impact Anticipated

Species Name	State Status	*Habitat Requirements/ Comments	Anticipated Project Impacts
		of clay soils and is a previously disturbed landfill, little natural habitats exist. Potentially suitable habitat is not present within the survey area.	
Panicked Indigobush (<i>Amorpha paniculata</i>)	N/A	The species is found in acid seep forests, peat bogs, wet floodplain forests, and seasonal wetlands on the edge of saline prairies. The Project is a previously disturbed landfill, little natural habitats exist. Potentially suitable habitat is not present within the survey area.	No Impact Anticipated
Shinner's Sunflower (<i>Helianthus occidentalis ssp. plantagineus</i>)	N/A	The species is found in coastal plain prairies. The Project is a previously disturbed landfill, little natural habitats exist. Potentially suitable habitat is not present within the survey area.	No Impact Anticipated
South Texas False Cudweed (<i>Pseudognaphalium austrotexanum</i>)	N/A	The species is found in sandy grasslands on eroded areas above saline flats. The Project is a previously disturbed landfill, little natural habitats exist. Potentially suitable habitat is not present within the survey area.	No Impact Anticipated
Texas Ladies-Tresses (<i>Spiranthes brevilabris var. brevilabris</i>)	N/A	The species is found in sandy moist prairies and calcareous prairie pockets surrounded by pines, pine hardwood forests, open pinelands, wetland pine savannahs, dry to moist fields, meadows, and roadsides. The Project is a previously disturbed landfill, little natural habitats exist. Potentially suitable habitat is not present within the survey area.	No Impact Anticipated
Texas Meadow Rue (<i>Thalictrum texanum</i>)	N/A	The species is found in woodlands and woodland margins, on soils with sandy loam, but also occur on prairie pimple mounds. The Project is a previously disturbed landfill, little natural habitats exist. Potentially suitable habitat is not present within the survey area.	No Impact Anticipated
Texas Prairie Dawn (<i>Hymenoxys texana</i>)	Endangered	The species is found in poorly drained, sparsely vegetated areas at the base of pimple mounds in open grasslands. The TNXDD data does have an element occurrence listed for the species within 1-mile of the survey area. However, the Project survey area contains clay and is heavily disturbed due to past land use as landfill among	No Impact Anticipated

Species Name	State Status	*Habitat Requirements/ Comments	Anticipated Project Impacts
		other construction activities. No pimple mounds or other suitable habitat are located within the survey area.	
Texas Tauschia (<i>Tauschia texana</i>)	N/A	This species only occurs in loamy soils in deciduous forests or woodlands on river and stream terraces. The Project is a previously disturbed landfill, little natural habitats exist. Potentially suitable habitat is not present within the survey area.	No Impact Anticipated
Texas Willkommia (<i>Willkommia texana</i> var. <i>texana</i>)	N/A	The species is found in sparsely vegetated shortgrass patches within taller prairies on alkaline or saline soils on the coastal plain. The Project is a previously disturbed landfill, little natural habitats exist. Potentially suitable habitat is not present within the survey area.	No Impact Anticipated
Texas Windmill Grass (<i>Chloris texensis</i>)	N/A	The species is found in sandy to sandy loam soils in relatively bare areas in coastal prairie grasslands. The TNXDD data does have an element occurrence listed for the species within 1-mile of the survey area. However, the survey area has been heavily distributed, little natural habitats exist. Potentially suitable habitat is not present within the survey area.	No Impact Anticipated
Tharp's Dropseed (<i>Sporobolus tharpii</i>)	N/A	The species is found on barrier islands, shores or lagoons and bays protected by the barrier islands. The TNXDD data does have an element occurrence listed for the species within 1-mile of the survey area. However, the survey area is located inland, and potentially suitable habitat is not present within the survey area.	No Impact Anticipated
Threeflower Broomweed (<i>Thurovia triflora</i>)	N/A	The species is found along coastal communities with sparse, low vegetation between salty prairies and tidal flats. Further inland found in vegetated slick spots on prairie mima mounds. The Project is a previously disturbed landfill, little natural habitats exist. Potentially suitable habitat is not present within the survey area.	No Impact Anticipated

*All species habitat descriptions were obtained from the TPWD Annotated County Lists of Rare Species for Harris County, TX.
 N/A – Denotes species listed on TPWD Annotated County Lists of Rare Species for Harris County, TX with no state designated threatened or endangered status; but still considered in this assessment due to state rare listing.

4.3 Migratory Birds

As outlined within Table 2, the survey area contains potentially suitable nesting habitat for multiple migratory bird species and several unoccupied nests during field surveys. Golder biologists did not identify any unoccupied raptor nests within the survey area. Some sparse forested areas are located within the survey area; however, mature trees large enough to support eagle nesting were not identified. Therefore, it is not anticipated that the survey area could support nesting eagles. Migratory Bird Treaty Act and Bald and Golder Eagle Protection Act coordination with the U.S. Fish and Wildlife Service (USFWS) Region 2 is currently ongoing.

5.0 CONCLUSION

Golder performed field surveys to identify the presence of any individuals or suitable habitat for the state listed rare, T&E species within the Project survey area on March 9-12, 2020. The TPWD Harris County Rare, Threatened and Endangered Species list identified 83 species that could potentially occur within the Project survey area. As outlined within Table 2, based on the field survey results potentially suitable habitat is located within the survey area for 28 of the 83-state listed rare, T&E species, including amphibians, birds, fish, insects, reptiles, and mammals. Potentially suitable habitat for the remaining 55 species was not identified within the survey area. No individuals of the 83-state listed rare, threatened and endangered species within Harris County were observed during the habitat assessment.

The Project is surrounded on all sides by commercial and residential developments. The Project's survey area is primarily composed of an existing landfill and there are sections devoted for concrete recycling and organic mulching. The site is heavily disturbed, covered by fill, and contains primarily herbaceous vegetation. Tree clearing would occur within the sparse forested area located on the north side of the site (Attachment A). The majority of the Project activities would be temporary in nature and would be allowed to revegetate following construction. All current maintenance activities have been conducted within the allowable limits of existing and previously authorized permits. Therefore, significant impacts on state listed rare, T&E species are not anticipated. Please send a response indicating TPWD's approval of their compliance in coordination with the Wildlife Habitat Assessment Program. USFWS informal Section 7 Endangered Species Act consultations are currently ongoing.

Golder's conclusion reflects our professional opinion based on conditions present at the time of the evaluation. Discrepancies may arise between current and future evaluation of wetlands at the Project due to changes in land use, vegetation, and/or hydrology. No warranties, implied or expressed, are made.

6.0 REFERENCES

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Signature Page



Jeremy Munz
Project Biologist

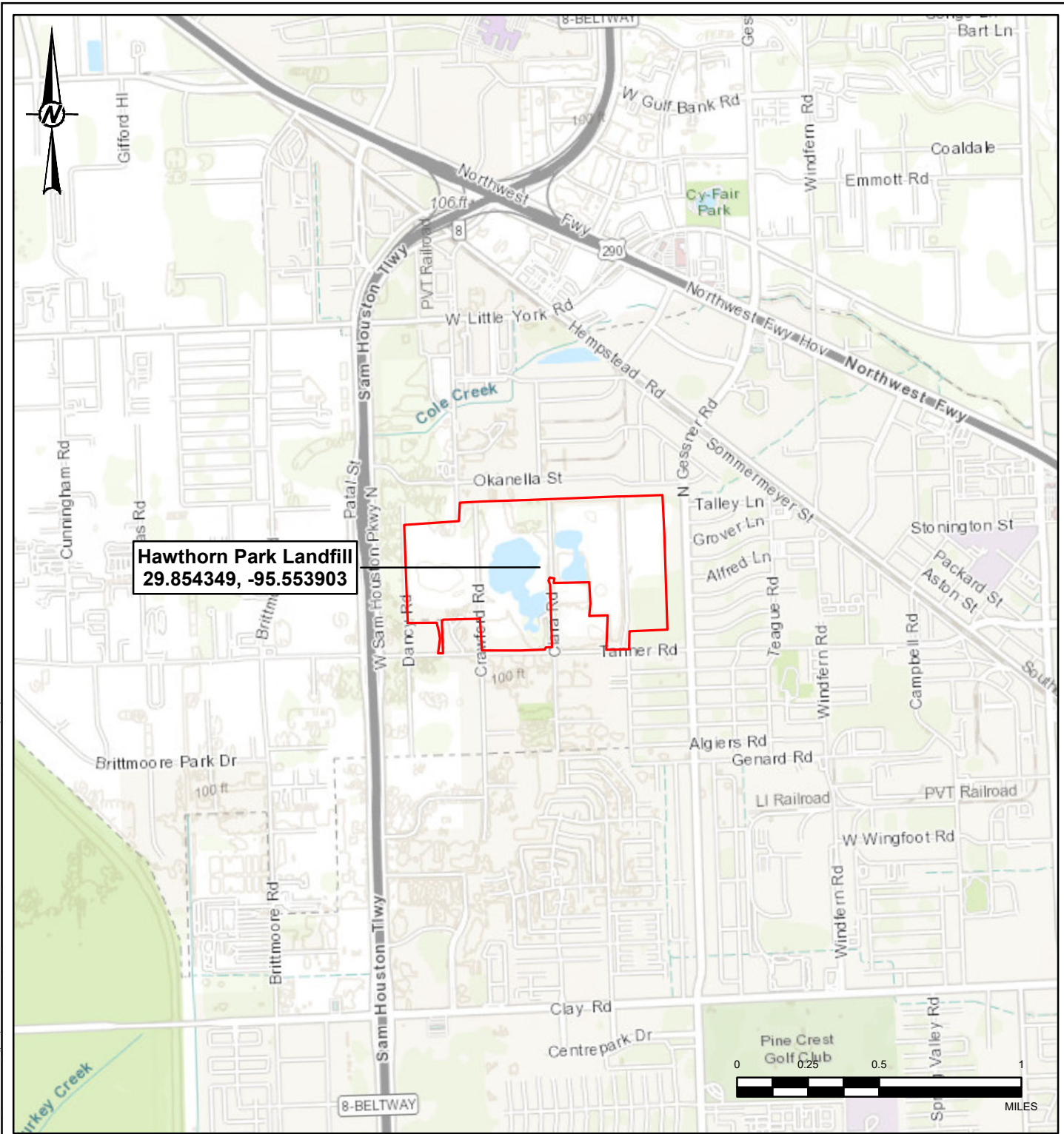


Jacob Trahan
Sr. Environmental Consultant



golder.com

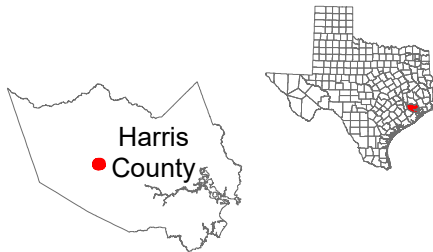
Appendix A



Hawthorn Park Landfill
29.854349, -95.553903

LEGEND

SURVEY AREA



REFERENCE(S)

1. SURVEY AREA. GOLDER ASSOCIATES, INC., 2020.
2. SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEODATA, IGN, KADASTER NL, ORDANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

COORDINATE SYSTEM: NAD 1983 STATEPLANE TEXAS SOUTH CENTRAL FIPS 4204 FEET
 PROJECTION: LAMBERT CONFORMAL CONIC
 DATUM: NORTH AMERICAN 1983

CLIENT

USA WASTE OF TEXAS LANDFILLS, INC.

PROJECT

HAWTHORN PARK LANDFILL EXPANSION

TITLE

**TPWD HABITAT ASSESSMENT CONSULTATION
 SITE VICINITY MAP**

CONSULTANT

YYYY-MM-DD 2020-03-25



GOLDER

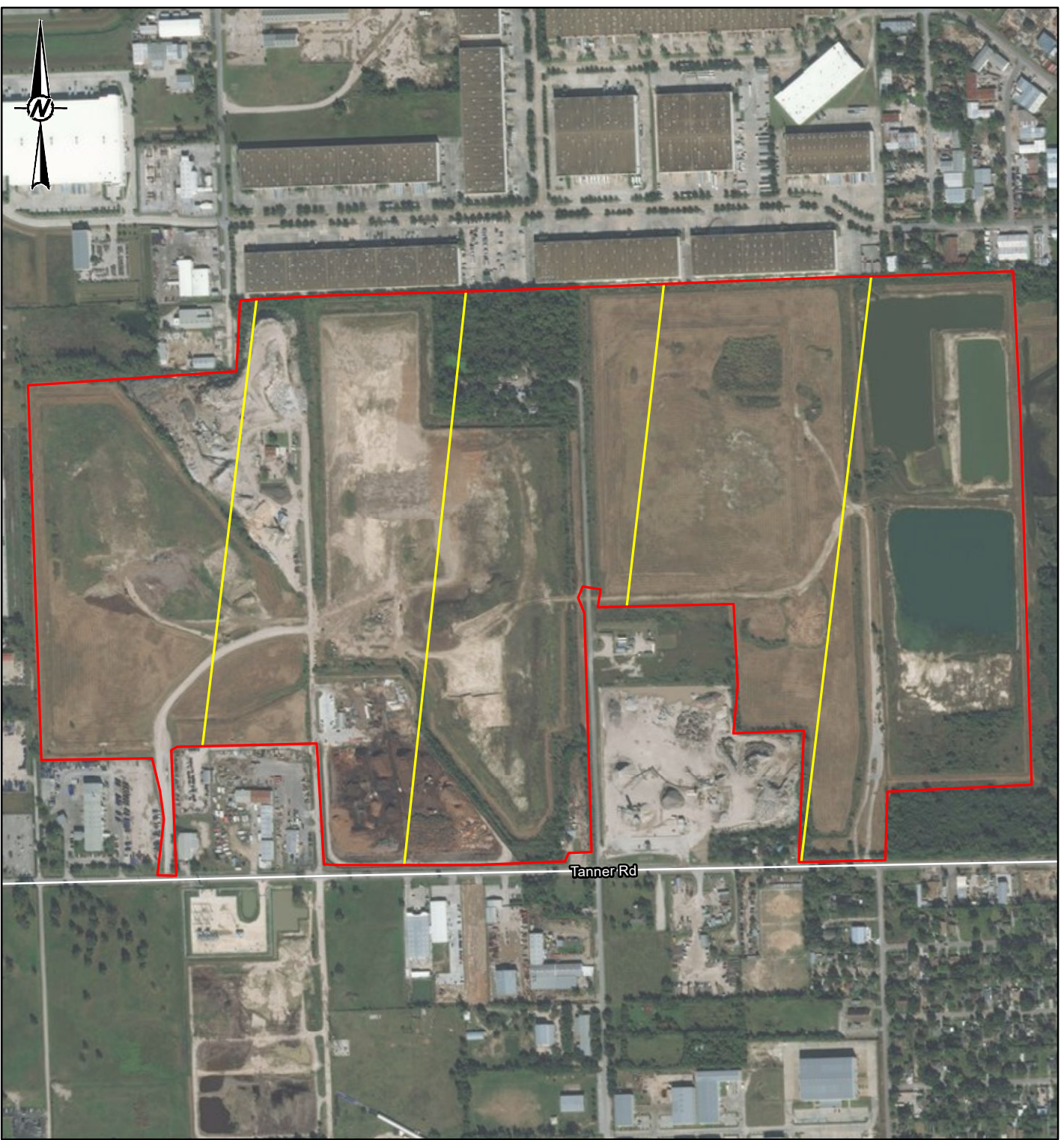
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PREPARED	GFD
REVIEWED	JM
APPROVED	JMT

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189426901

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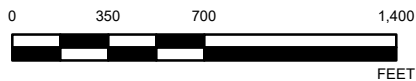
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FIGURE
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LEGEND

- SURVEY AREA
- TRANSECTS



REFERENCE(S)

1. SURVEY AREA, TRANSECTS, GOLDER ASSOCIATES, INC., 2020.
2. SERVICE LAYER CREDITS: SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRIID, IGN, AND THE GIS USER COMMUNITY

COORDINATE SYSTEM: NAD 1983 STATEPLANE TEXAS SOUTH CENTRAL FIPS 4204 FEET
 PROJECTION: LAMBERT CONFORMAL CONIC
 DATUM: NORTH AMERICAN 1983

CLIENT
 USA WASTE OF TEXAS LANDFILLS, INC.

PROJECT
 HAWTHORN PARK LANDFILL EXPANSION

TITLE
**TPWD HABITAT ASSESSMENT CONSULTATION
 AERIAL MAP**

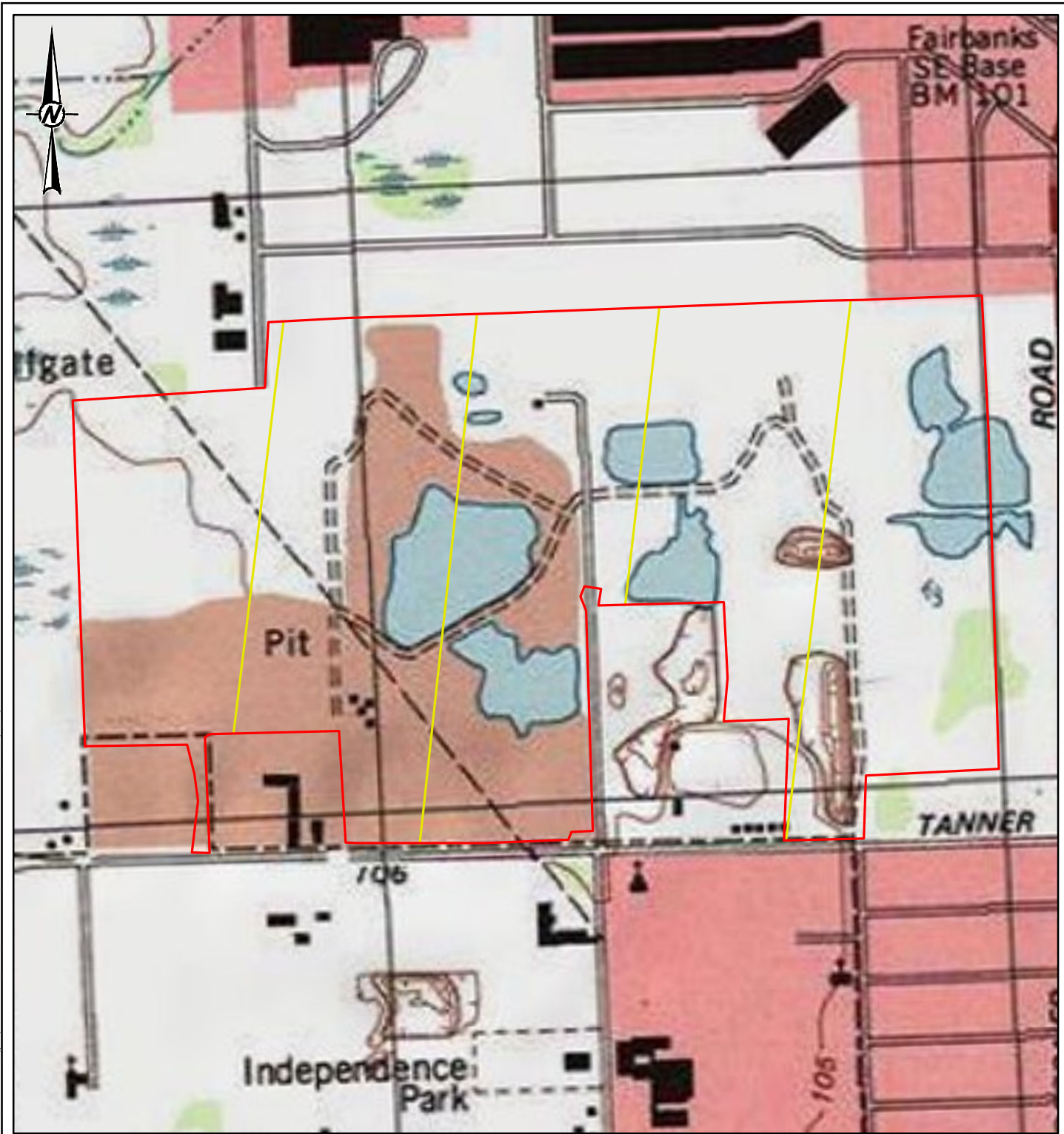
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DESIGNED	GFD	
PREPARED	GFD	
REVIEWED	JM	
APPROVED	JMT	



PROJECT NO.	CONTROL	REV.	FIGURE
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LEGEND

- SURVEY AREA
- TRANSECTS



REFERENCE(S)

1. SURVEY AREA, TRANSECTS. GOLDER ASSOCIATES, INC., 2020.
2. SERVICE LAYER CREDITS: COPYRIGHT © 2013 NATIONAL GEOGRAPHIC SOCIETY, I-CUBED

COORDINATE SYSTEM: NAD 1983 STATEPLANE TEXAS SOUTH CENTRAL FIPS 4204 FEET
 PROJECTION: LAMBERT CONFORMAL CONIC
 DATUM: NORTH AMERICAN 1983

CLIENT

USA WASTE OF TEXAS LANDFILLS, INC.

PROJECT

HAWTHORN PARK LANDFILL EXPANSION

TITLE

TPWD HABITAT ASSESSMENT CONSULTATION
 USGS TOPOGRAPHIC MAP

CONSULTANT

YYYY-MM-DD	2020-03-25
DESIGNED	GFD
PREPARED	GFD
REVIEWED	JM
APPROVED	JMT

PROJECT NO.
189426901

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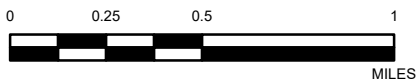


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- SURVEY AREA
- TRANSECTS
- 1-MILE BUFFER
- ELEMENT OCCURENCES



REFERENCE(S)

1. SURVEY AREA, TRANSECTS, GOLDER ASSOCIATES, INC., 2020.
2. ELEMENT OCCURENCES, TEXAS NATURAL DIVERSITY DATABASE, 2020.
3. SERVICE LAYER CREDITS: SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRIID, IGN, AND THE GIS USER COMMUNITY

COORDINATE SYSTEM: NAD 1983 STATEPLANE TEXAS SOUTH CENTRAL FIPS 4204 FEET
 PROJECTION: LAMBERT CONFORMAL CONIC
 DATUM: NORTH AMERICAN 1983

CLIENT

USA WASTE OF TEXAS LANDFILLS, INC.

PROJECT

HAWTHORN PARK LANDFILL EXPANSION

TITLE

TPWD HABITAT ASSESSMENT CONSULTATION
 ELEMENT OCCURENCES MAP

CONSULTANT

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DESIGNED GFD

PREPARED GFD

REVIEWED JM

APPROVED JMT

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FIGURE
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Appendix B

Note: Appendix B of the State Listed Species Habitat Assessment Report contains the same Datasheets as the Aquatic Resource Delineation Report Appendix B.

**SEE THIS PERMIT AMENDMENT APPLICATION,
PART II, APPENDIX IID-2C, AQUATIC RESOURCE
DELINEATION REPORT FOR DATASHEETS.**

Appendix C

Note: Appendix C of the State Listed Species Habitat Assessment Report contains the same Photologs as the Aquatic Resource Delineation Report Appendix C.

**SEE THIS PERMIT AMENDMENT APPLICATION,
PART II, APPENDIX IID-2C, AQUATIC RESOURCE
DELINEATION REPORT FOR PHOTOLOGS.**

Appendix D

Last Update: 3/4/2020

HARRIS COUNTY

AMPHIBIANS

cajun chorus frog *Pseudacris fouquettei*

Aquatic and terrestrial: Habitats of this ground-dwelling frog are diverse and include forests, fields, swamps, marshes, irrigation ditches, and temporarily flooded areas (Bartlett and Bartlett 1999, Lemmon et al. 2008). Eggs are laid in small clusters that adhere to submerged vegetation in shallow temporary pools, ditches, and flooded areas where emergent vegetation or a grassy margin is present (Dundee and Rossman 1989).

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: SU

Houston toad *Anaxyrus houstonensis*

Terrestrial and aquatic: Primary terrestrial habitat is forests with deep sandy soils. Juveniles and adults are presumed to move through areas of less suitable soils using riparian corridors. Aquatic habitats can include any water body from a tire rut to a large lake.

Federal Status: LE State Status: E SGCN: Y
Endemic: Y Global Rank: G1 State Rank: S1

southern crawfish frog *Lithobates areolatus areolatus*

Terrestrial and aquatic: The terrestrial habitat is primarily grassland and can vary from pasture to intact prairie; it can also include small prairies in the middle of large forested areas. Aquatic habitat is any body of water but preferred habitat is ephemeral wetlands.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G4T4 State Rank: S3

southern dusky salamander *Desmognathus conanti*

Aquatic and terrestrial: The vegetated riparian and aquatic zones of spring-fed, sandy bottom streams and baygalls in forested areas. Eggs are laid on land under rocks and logs close to the stream edge.

Federal Status: State Status: SGCN: N
Endemic: Global Rank: G5 State Rank: S1

Strecker's chorus frog *Pseudacris streckeri*

Terrestrial and aquatic: Wooded floodplains and flats, prairies, cultivated fields and marshes. Likes sandy substrates.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S3

Woodhouse's toad *Anaxyrus woodhousii*

Terrestrial and aquatic: A wide variety of terrestrial habitats are used by this species, including forests, grasslands, and barrier island sand dunes. Aquatic habitats are equally varied.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: SU

BIRDS

bald eagle *Haliaeetus leucocephalus*

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HARRIS COUNTY

BIRDS

Found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3B,S3N

black rail *Laterallus jamaicensis*

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

Federal Status: PT	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S2

Franklin's gull *Leucophaeus pipixcan*

This species is only a spring and fall migrant throughout Texas. It does not breed in or near Texas. Winter records are unusual consisting of one or a few individuals at a given site (especially along the Gulf coastline). During migration, these gulls fly during daylight hours but often come down to wetlands, lake shore, or islands to roost for the night.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2N

mountain plover *Charadrius montanus*

Breeding: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding: shortgrass plains and bare, dirt (plowed) fields; primarily insectivorous

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2

piping plover *Charadrius melodus*

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.

Federal Status: LT	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2N

red knot *Calidris canutus rufa*

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HARRIS COUNTY

BIRDS

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. After molting in late summer, this species is in a drab gray-and-white non-breeding plumage, typically held from September through April. In the non-breeding plumage, the knot might be confused with the omnipresent Sanderling. During this plumage, look for the knot's prominent pale eyebrow and whitish flanks with dark barring. The Red Knot prefers the shoreline of coast and bays and also uses mudflats during rare inland encounters. Primary prey items include coquina clam (*Donax* spp.) on beaches and dwarf surf clam (*Mulinia lateralis*) in bays, at least in the Laguna Madre. 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.

Federal Status: LT State Status: SGCN: Y
Endemic: N Global Rank: G4T2 State Rank: SNRN

red-cockaded woodpecker *Picoides borealis*

Cavity nests in older pine (60+ years); forages in younger pine (30+ years); prefers longleaf, shortleaf, and loblolly

Federal Status: LE State Status: E SGCN: Y
Endemic: N Global Rank: G3 State Rank: S2B

reddish egret *Egretta rufescens*

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

Federal Status: State Status: T SGCN: Y
Endemic: N Global Rank: G4 State Rank: S3B

swallow-tailed kite *Elanoides forficatus*

Lowland forested regions, especially swampy areas, ranging into open woodland; marshes, along rivers, lakes, and ponds; nests high in tall tree in clearing or on forest woodland edge, usually in pine, cypress, or various deciduous trees

Federal Status: State Status: T SGCN: Y
Endemic: N Global Rank: G5 State Rank: S2B

western burrowing owl *Athene cunicularia hypugaea*

Open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G4T4 State Rank: S2

white-faced ibis *Plegadis chihi*

Prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; currently confined to near-coastal rookeries in so-called hog-wallow prairies. Nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats.

Federal Status: State Status: T SGCN: Y
Endemic: N Global Rank: G5 State Rank: S4B

white-tailed hawk *Buteo albicaudatus*

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HARRIS COUNTY

BIRDS

Near coast on prairies, cordgrass flats, and scrub-live oak; further inland on prairies, mesquite and oak savannas, and mixed savanna-chaparral; breeding March-May

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S4B

whooping crane *Grus americana*

Small ponds, marshes, and flooded grain fields for both roosting and foraging. Potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties.

Federal Status: LE	State Status: E	SGCN: Y
Endemic: N	Global Rank: G1	State Rank: S1N

wood stork *Mycteria americana*

Prefers to nest in large tracts of baldcypress (*Taxodium distichum*) or red mangrove (*Rhizophora mangle*); forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: SHB,S2N

CRUSTACEANS

Houston burrowing crayfish *Fallicambarus houstonensis*

All species in the genus *Fallicambarus* are primary burrowers (Guiasu, 2007). It is clearly a primary burrower with 100% of adult and subadult specimens known from excavated burrows. Large numbers of juveniles were collected from Temporary pools (October through February) (Johnson, 2008).

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G2	State Rank: S3

FISH

alligator gar *Atractosteus spatula*

From the Red River to the Rio Grande (Hubbs et al. 2008); occurs in the Trinity River upstream of Lake Livingston. Found in rivers, streams, lakes, swamps, bayous, bays and estuaries typically in pools and backwater habitats. Floodplains inundated with flood waters provide spawning and nursery habitats.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S4

Sabine shiner *Notropis sabiniae*

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.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S3

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HARRIS COUNTY

FISH

saltmarsh topminnow *Fundulus jenkinsi*

Occupies estuaries and the edges of saltmarsh habitats along the Gulf coast in salinities of 4-20 ppt in *Spartina* dominated tidal creeks and wetlands (Peterson & Ross 1991; Peterson & Turner 1994; Lopez et al. 2010; and Griffith 1974). Requires access to small interconnected tidal creeks for feeding and reproduction. Spawning occurs from March to August during high tide events (Robertson Thesis, 2016). Non-migratory.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S1

silverband shiner *Notropis shumardi*

In Texas, found from Red River to Lavaca River; Main channel with moderate to swift current velocities and moderate to deep depths; associated with turbid water over silt, sand, and gravel.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S4

southern flounder *Paralichthys lethostigma*

This is an estuarine-dependent species that inhabits riverine, estuarine and coastal waters, and prefers muddy, sandy, or silty substrates (Reagan and Wingo 1985). Individuals can tolerate wide temperature (~5-35°C) and salinity ranges (0-60 ppt). Southern Flounder spawn in offshore waters of the Gulf of Mexico from October to February (Reagan and Wingo 1985). The oceanic larval stage is pelagic and lasts 30–60 days. Metamorphosing individuals enter estuaries and migrate towards low-salinity headwaters, where settlement occurs (Burke et al. 1991, Walsh et al. 1999). The young fish enter the bays during late winter and early spring, occupying seagrass; some may move further into coastal rivers and bayous. Juveniles remain in estuaries until the onset of sexual maturation (approximately two years), at which time they migrate out of estuaries to join adults on the inner continental shelf. Adult southern flounder leave the bays during the fall for spawning in the Gulf of Mexico. They spawn for the first time when two years old at depths of 50 to 100 feet. Although most of the adults leave the bays and enter the Gulf for spawning during the winter, some remain behind and spend winter in the bays. Those in the Gulf will reenter the bays in the spring. The spring influx is gradual and does not occur with large concentrations that characterize the fall emigration.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

western creek chubsucker *Erimyzon claviformis*

Eastern Texas streams from the Red River to the San Jacinto drainage. Habitat includes silt-, sand-, and gravel-bottomed pools of clear headwaters, creeks, and small rivers; often near vegetation; occasionally in lakes. Spawning occurs in river mouths or pools, riffles, lake outlets, or upstream creeks. Prefers headwaters, but seldom occurs in springs.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2S3

INSECTS

American bumblebee *Bombus pensylvanicus*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G3G4	State Rank: SNR

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HARRIS COUNTY

INSECTS

bay skipper *Euphyes bayensis*

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

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G2G3	State Rank: S1

MAMMALS

American badger *Taxidea taxus*

Generalist. Prefers areas with soft soils that sustain ground squirrels for food. When inactive, occupies underground burrow. Young are born in underground burrows.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

big brown bat *Eptesicus fuscus*

Any wooded areas or woodlands except south Texas. Riparian areas in west Texas.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

big free-tailed bat *Nyctinomops macrotis*

Habitat data sparse but records indicate that species prefers to roost in crevices and cracks in high canyon walls, but will use buildings, as well; reproduction data sparse, gives birth to single offspring late June-early July; females gather in nursery colonies; winter habits undetermined, but may hibernate in the Trans-Pecos; opportunistic insectivore

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G5	State Rank: S3

eastern red bat *Lasiurus borealis*

Found in a variety of habitats in Texas. Usually associated with wooded areas. Found in towns especially during migration.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S4

eastern spotted skunk *Spilogale putorius*

Generalist; open fields prairies, croplands, fence rows, farmyards, forest edges & woodlands. Prefer wooded, brushy areas & tallgrass prairies. S.p. ssp. interrupta found in wooded areas and tallgrass prairies, preferring rocky canyons and outcrops when such sites are available.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S1S3

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HARRIS COUNTY

MAMMALS

hoary bat

Lasiurus cinereus

Known from montane and riparian woodland in Trans-Pecos, forests and woods in east and central Texas.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S4

humpback whale

Megaptera novaeangliae

Inhabits tropical, subtropical, temperate, and subpolar waters world wide. Migrate up to 5,000 miles between colder water (feeding grounds) and warmer water (calving grounds) each year. They will use both open ocean and coastal waters, sometimes including inshore areas such as bays, and are often found near the surface; however, this species is rare in the Gulf of Mexico. The northwest Atlantic/Gulf of Mexico distinct population segment is not considered at risk of extinction and is not listed as Endangered on the Endangered Species Act.

Federal Status: LE	State Status: E	SGCN: N
Endemic: N	Global Rank: G4	State Rank: SNR

long-tailed weasel

Mustela frenata

Includes brushlands, fence rows, upland woods and bottomland hardwoods, forest edges & rocky desert scrub. Usually live close to water.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

Louisiana black bear

Ursus americanus luteolus

Bottomland hardwoods, floodplain forests, upland hardwoods with mixed pine; marsh. Possible as transient; bottomland hardwoods and large tracts of inaccessible forested areas.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5T2	State Rank: SNA

Mexican free-tailed bat

Tadarida brasiliensis

Roosts in buildings in east Texas. Largest maternity roosts are in limestone caves on the Edwards Plateau. Found in all habitats, forest to desert.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

mink

Neovison vison

Intimately associated with water; coastal swamps & marshes, wooded riparian zones, edges of lakes. Prefer floodplains.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S4

mountain lion

Puma concolor

Generalist; found in a wide range of habitats statewide. Found most frequently in rugged mountains & riparian zones.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2S3

plains spotted skunk

Spilogale putorius interrupta

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HARRIS COUNTY

MAMMALS

Generalist; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie

Federal Status:	State Status:	SGCN: N
Endemic: N	Global Rank: G4T4	State Rank: S1S3

Rafinesque's big-eared bat *Corynorhinus rafinesquii*

Historically, lowland pine and hardwood forests with large hollow trees. roosts in cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S2

southeastern myotis bat *Myotis austroriparius*

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.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S3

southern short-tailed shrew *Blarina carolinensis*

Found in East Texas pine forests and agricultural land. May favor areas with abundant leaf litter and fallen logs (Baumgardner et al. 1992). Nest sites are probably under logs, stumps and other debris.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S4

swamp rabbit *Sylvilagus aquaticus*

Primarily found in lowland areas near water including: cypress bogs and marshes, floodplains, creeks and rivers.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

thirteen-lined ground squirrel *Ictidomys tridecemlineatus*

Prefers short grass prairies with deep soils for burrowing. Frequently found in grazed ranchland, mowed pastures, and golf courses.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

tricolored bat *Perimyotis subflavus*

Forest, woodland and riparian areas are important. Caves are very important to this species.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G2G3	State Rank: S3S4

western hog-nosed skunk *Conepatus leuconotus*

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HARRIS COUNTY

MAMMALS

Habitats include woodlands, grasslands & deserts, to 7200 feet, most common in rugged, rocky canyon country; little is known about the habitat of the ssp. *telmalestes*

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S4

MOLLUSKS

Louisiana pigtoe *Pleurobema riddellii*

Occurs in small streams to large rivers in slow to moderate currents in substrates of clay, mud, sand, and gravel. Not known from impoundments (Howells 2010f; Randklev et al. 2013b; Troia et al. 2015). [Mussels of Texas 2019]

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G1G2	State Rank: S1

sandbank pocketbook *Lampsilis satura*

Occurs in small streams to large rivers in slow to moderate current in sandy mud to sand and gravel substrate. Can occur in a variety of habitats but most common in littoral habitats such as banks or backwaters or in protected areas along point bars (Randklev et al. 2013b; Randklev et al. 2014a; Troia et al. 2015). [Mussels of Texas 2019]

Federal Status:	State Status: T	SGCN: Y
Endemic:	Global Rank: G2?	State Rank: S1

REPTILES

alligator snapping turtle *Macrochelys temminckii*

Aquatic: Perennial water bodies; rivers, canals, lakes, and oxbows; also swamps, bayous, and ponds near running water; sometimes enters brackish coastal waters. Females emerge to lay eggs close to the waters edge.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S2

American alligator *Alligator mississippiensis*

Aquatic: Coastal marshes; inland natural rivers, swamps and marshes; manmade impoundments.

Federal Status:	State Status:	SGCN: N
Endemic: N	Global Rank: G5	State Rank: S4

common garter snake *Thamnophis sirtalis*

Terrestrial and aquatic: Habitats used include the grasslands and modified open areas in the vicinity of aquatic features, such as ponds, streams or marshes. Damp soils and debris for cover are thought to be critical.

Federal Status:	State Status:	SGCN: N
Endemic:	Global Rank: G5	State Rank: S2

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HARRIS COUNTY

REPTILES

eastern box turtle *Terrapene carolina*

Terrestrial: 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.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S3

loggerhead sea turtle *Caretta caretta*

Inhabits tropical, subtropical, and temperate waters worldwide, including the Gulf of Mexico. They migrate from feeding grounds to nesting beaches/barrier islands and some nesting does occur in Texas (April to September). Beaches that are narrow, steeply sloped, with coarse-grain sand are preferred for nesting. Newly hatched individuals depend on floating algae/seaweed for protection and foraging, which eventually transport them offshore and into open ocean. Juveniles and young adults spend their lives in open ocean, offshore before migrating to coastal areas to breed and nest. Foraging areas for adults include shallow continental shelf waters.

Federal Status: LT State Status: T SGCN: Y
Endemic: Global Rank: G3 State Rank: S4

slender glass lizard *Ophisaurus attenuatus*

Terrestrial: 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.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S3

smooth softshell *Apalone mutica*

Aquatic: Large rivers and streams; in some areas also found in lakes and impoundments (Ernst and Barbour 1972). Usually in water with sandy or mud bottom and few aquatic plants. Often basks on sand bars and mudflats at edge of water. 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).

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S3

Texas diamondback terrapin *Malaclemys terrapin littoralis*

Coastal marshes, tidal flats, coves, estuaries, and lagoons behind barrier beaches; brackish and salt water; burrows into mud when inactive. Bay islands are important habitats. Nests on oyster shell beaches.

Federal Status: State Status: SGCN: Y
Endemic: Y Global Rank: G4T3Q State Rank: S2

Texas horned lizard *Phrynosoma cornutum*

Terrestrial: Open habitats with sparse vegetation, including grass, prairie, 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. Occurs to 6000 feet, but largely limited below the pinyon-juniper zone on mountains in the Big Bend area.

Federal Status: State Status: T SGCN: Y
Endemic: N Global Rank: G4G5 State Rank: S3

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HARRIS COUNTY

REPTILES

timber (canebrake) rattlesnake *Crotalus horridus*

Terrestrial: Swamps, floodplains, upland pine and deciduous woodland, riparian zones, abandoned farmland. Limestone bluffs, sandy soil or black clay. Prefers dense ground cover, i.e. grapevines, palmetto.

Federal Status: State Status: T SGCN: Y
Endemic: N Global Rank: G4 State Rank: S4

western box turtle *Terrapene ornata*

Terrestrial: 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.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S3

western hognose snake *Heterodon nasicus*

Terrestrial: Shortgrass or mixed grass prairie, with gravel or sandy soils. Often found associated with draws, floodplains, and more mesic habitats within the arid landscape. Frequently occurs in shrub encroached grasslands.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S4

PLANTS

awnless bluestem *Bothriochloa exaristata*

Coastal prairies on black clay; Perennial; Flowering April-Dec; Fruiting April- Dec

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G4 State Rank: S3

coastal gay-feather *Liatris bracteata*

Coastal prairie grasslands of various types, from salty prairie on low- lying somewhat saline clay loams to upland prairie on nonsaline clayey to sandy loams; flowering in fall

Federal Status: State Status: SGCN: Y
Endemic: Y Global Rank: G2G3 State Rank: S2S3

corkwood *Leitneria pilosa ssp. pilosa*

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

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G3T2 State Rank: S2

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HARRIS COUNTY

PLANTS

Correll's false dragon-head *Physostegia correllii*

Wet, silty clay loams on streambanks, in creek beds, irrigation channels and roadside drainage ditches; or seepy, mucky, sometimes gravelly soils along riverbanks or small islands in the Rio Grande; or underlain by Austin Chalk limestone along gently flowing spring-fed creek in central Texas; flowering May-September

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G2 State Rank: S2

giant sharpstem umbrella-sedge *Cyperus cephalanthus*

In Texas on saturated, fine sandy loam soils, along nearly level fringes of deep prairie depressions; also in depression area within coastal prairie remnant on heavy black clay; in Louisiana, most sites are coastal prairie on poorly drained sites, some on slightly elevated areas surrounded by standing shallow water, and on moderately drained sites; soils include very strongly acid to moderately alkaline silt loams and silty clay loams; flowering/fruitletting May-June, August-September, and possibly other times in response to rainfall

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G3?Q State Rank: S1

goldenwave tickseed *Coreopsis intermedia*

In deep sandy soils of sandhills in openings in or along margins of post oak woodlands and pine-oak forests of east Texas; Perennial; Flowering/Fruitletting May-Aug

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G3 State Rank: S3

Houston daisy *Rayjacksonia aurea*

On and around naturally barren or sparsely vegetated saline slick spots or pimple mounds on coastal prairies, usually on sandy to sandy loam soils, occasionally in pastures and on roadsides in similar soil types where mowing may mimic natural prairie disturbance regimes; flowering late September-November (-December)

Federal Status: State Status: SGCN: Y
Endemic: Y Global Rank: G2 State Rank: S1

Indianola beakrush *Rhynchospora indianolensis*

Locally abundant in cattle pastures in some areas (at least during wet years), possibly becoming a management problem in such sites; Perennial; Flowering/Fruitletting April-Nov

Federal Status: State Status: SGCN: Y
Endemic: Y Global Rank: G3Q State Rank: S3

Oklahoma grass pink *Calopogon oklahomensis*

Mesic, acidic, sandy to loamy prairies, pine savannas, oak woodlands, edges of bogs, and frequently mowed meadows (Goldman, Magrath & Catling 2002). Flowering March-July.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G3 State Rank: S1S2

panicked indigobush *Amorpha paniculata*

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HARRIS COUNTY

PLANTS

A stout shrub, 3 m (9 ft) tall that grows in acid seep forests, peat bogs, wet floodplain forests, and seasonal wetlands on the edge of Saline Prairies in East Texas. It is distinguished from other *Amorpha* species by its fuzzy leaflets with prominent raised veins underneath, and the flower panicles, which are 8 to 16 inches long and slender, held above the foliage. Perennial; Flowering summer

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G2G3	State Rank: S2

Shinner's sunflower *Helianthus occidentalis ssp. plantagineus*

Mostly in prairies on the Coastal Plain, with several slightly disjunct populations in the Pineywoods and South Texas Brush Country.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5T2T3	State Rank: S4

South Texas false cudweed *Pseudognaphalium austrotexanum*

In sandy grasslands on eroded area above saline flats; along edge of sendero through mesquite woodland and shrub mottes on sandy loam; on gravel and silt bars and flats in scour plain of streams (TEX-LL specimens Carr 23682, 29264, 22647, 27206). Oct-Jan, sometimes in spring.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

Texas ladies'-tresses *Spiranthes brevilabris var. brevilabris*

Sandy soils in moist prairies, incl. blackland/Fleming prairies, calcareous prairie pockets surrounded by pines, pine-hardwood forest, open pinelands, wetland pine savannahs/flatwoods, and dry to moist fields, meadows, and roadsides. Delicate, nearly ephemeral orchid, producing winter rosettes, flowers Feb-Apr. Historically endemic to SE coastal plain.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G1G2	State Rank: S1

Texas meadow-rue *Thalictrum texanum*

Mostly found in woodlands and woodland margins on soils with a surface layer of sandy loam, but it also occurs on prairie pimple mounds; both on uplands and creek terraces, but perhaps most common on claypan savannas; soils are very moist during its active growing season; flowering/fruitleting (January-)February-May, withering by midsummer, foliage reappears in late fall(November) and may persist through the winter

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2Q	State Rank: S2

Texas prairie dawn *Hymenoxys texana*

In poorly drained, sparsely vegetated areas (slick spots) at the base of mima mounds in open grassland or almost barren areas on slightly saline soils that are sticky when wet and powdery when dry; flowering late February-early April

Federal Status: LE	State Status: E	SGCN: Y
Endemic: Y	Global Rank: G2	State Rank: S2

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HARRIS COUNTY

PLANTS

Texas tauschia

Tauschia texana

Occurs in loamy soils in deciduous forests or woodlands on river and stream terraces; Perennial; Flowering/Fruiting Feb-April

Federal Status:

State Status:

SGCN: Y

Endemic: Y

Global Rank: G3

State Rank: S3

Texas willkommia

Willkommia texana var. *texana*

Mostly in sparsely vegetated shortgrass patches within taller prairies on alkaline or saline soils on the Coastal Plain (Carr 2015).

Federal Status:

State Status:

SGCN: Y

Endemic: Y

Global Rank: G3G4T3

State Rank: S3

Texas windmill grass

Chloris texensis

Sandy to sandy loam soils in relatively bare areas in coastal prairie grassland remnants, often on roadsides where regular mowing may mimic natural prairie fire regimes; flowering in fall

Federal Status:

State Status:

SGCN: Y

Endemic: Y

Global Rank: G2

State Rank: S2

Tharp's dropseed

Sporobolus tharpii

Occurs on barrier islands, shores of lagoons and bays protected by the barrier islands, and on shores of a few near-coastal ponds. Plants occur at the bases of dunes, in interdune swales and sandflats, and on upper beaches. The substrate is of Holocene age.

Federal Status:

State Status:

SGCN: Y

Endemic: Y

Global Rank: G3

State Rank: S3

threeflower broomweed

Thurovia triflora

Near coast in sparse, low vegetation on a veneer of light colored silt or fine sand over saline clay along drier upper margins of ecotone between between salty prairies and tidal flats; further inland associated with vegetated slick spots on prairie mima mounds; flowering September-November

Federal Status:

State Status:

SGCN: Y

Endemic: Y

Global Rank: G2G3

State Rank: S2S3

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Appendix E

Element Occurrence Record

Scientific Name: Anaxyrus houstonensis **Occurrence #:** 3 **Eo Id:** 3746
Common Name: Houston toad **Track Status:** Track all extant and selected historical EOs
Identification Confirmed: Y - Yes **TX Protection Status:** E
Global Rank: G1 **State Rank:** S1 **Federal Status:** LE

Location Information:

Directions

VICINITY OF TANNER AND CAMPBELL ROADS, CITY OF HOUSTON, HARRIS COUNTY, TEXAS (Type Locality) and FAIRBANKS (Paratypes Locality).

Survey Information:

First Observation: 1952 **Survey Date:** **Last Observation:** 1976
Eo Type: **Eo Rank:** H **Eo Rank Date:** 1984-01-01

Observed Area:

Comments:

General Description: SANDY SUBSTRATE, BREEDS IN STOCK TANKS AND TEMPORARY POOLS. EXTENSIVE URBANIZATION TAKING PLACE.

Comments: FEARED EXTIRPATED, URBANIZATION THREATENS. NOT A PROTECTABLE LOCATION.

Protection Comments: PROTECT IF SPECIES PRESENT.

Management Comments: FIND RECENT INDIVIDUAL

Data:

EO Data: TYPE LOCALITY OF THIS TOAD NOTED AS VICINITY OF TANNER AND CAMPBELL ROADS. PARATYPES LOCALITY NOTED SIMPLY AS FAIRBANKS. BREEDS IN SPRING AFTER RAIN (FEB.), USUALLY IN RAIN POOLS, SOMETIMES TANKS. WEAK BURROWER, NEEDS SAND SUBSTRATE. HABITAT DISTURBANCE MAY FACILITATE HYBRIDS WITH OTHER BUFO SP.

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Element Occurrence Record

Citation:

BROWN, L.E., ET. AL., 1983. AGENCY REVIEW DRAFT OF THE RECOVERY PLAN FOR THE HOUSTON TOAD (BUFO HOUSTONENSIS). USF& WS, ALBUQUERQUE, NM. 48PP.

BROWN, LAUREN E., 1971. NATURAL HYBRIDIZATION AND TREND TOWARD EXTINCTION IN SOME RELICT TEXAS TOAD POPULATIONS. SOUTHWESTERN NATURALIST 16(2):185-199.

QUINN, HUGH R. AND GREG MENGDEN. 1984. REPRODUCTION AND GROWTH OF BUFO HOUSTONENSIS (BUFONIDAE). S.W. NAT. 29(2): 189-195.

QUINN, HUGH. NO DATE. CURATOR OF REPTILES HOUSTON ZOOLOGICAL GARDENS PARKS & RECREATION DEPARTMENT PH-713/520-3208.

Specimen:

University of Michigan Museum of Zoology. 1952. J.C. Wottring and W.J. Greer, three specimens, UMMZ 127825-7. 18 May 1952.

Element Occurrence Record

Scientific Name: Bothriochloa exaristata

Occurrence #: 4

Eo Id: 10481

Common Name: awnless bluestem

Track Status: Track all extant and selected historical EOs

Identification Confirmed: Y - Yes

TX Protection Status:

Global Rank: G4

State Rank: S3

Federal Status:

Location Information:

Directions

SMALL PATCH AT PRAIRIE ALONG GESSNER RD CA 100 YDS S OF TANNER RD AT NW EDGE OF HOUSTON.

Survey Information:

First Observation:

Survey Date:

Last Observation: 1986-09-16

Eo Type:

Eo Rank:

Eo Rank Date:

Observed Area:

Comments:

General Description: PRAIRIE HABITAT NOT DESCRIBED ON SPECIMEN LABEL.

Comments:

Protection

Comments:

Management

Comments:

Data:

EO Data:

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Citation:

BROWN, L.E. (10682). 1986. SPECIMEN # NONE SPRING BRANCH SCIENCE CENTER.

Specimen:

BROWN, L.E. (10682). 1986. SPECIMEN # NONE SPRING BRANCH SCIENCE CENTER. (S86BRO01TXUS)

Element Occurrence Record

Scientific Name: Bothriochloa exaristata

Occurrence #: 27

Eo Id: 10742

Common Name: awnless bluestem

Track Status: Track all extant and selected historical EOs

Identification Confirmed:

TX Protection Status:

Global Rank: G4

State Rank: S3

Federal Status:

Location Information:

Directions

Small patch of prairie vegetation along Gessner Road ca. 100 yds S of Tanner Rd. at NW edge of Houston.

Survey Information:

First Observation:

Survey Date:

Last Observation: 1986-09-16

Eo Type:

Eo Rank:

Eo Rank Date:

Observed Area:

Comments:

General

Description:

Comments: Complete label citation: Small patch of prairie vegetation along Gessner Road ca. 100 yds S of Tanner Rd. at NW edge of Houston, 16 Sep 1986, L. E. Brown 10682 (SBSC).

Protection

Comments:

Management

Comments:

Data:

EO Data:

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Citation:

Specimen:

L. E. Brown 10682 (SBSC).

Element Occurrence Record

Scientific Name: Chloris texensis

Occurrence #: 17

Eo Id: 6663

Common Name: Texas windmill grass

Track Status: Track all extant and selected historical EOs

Identification Confirmed: Y - Yes

TX Protection Status:

Global Rank: G2

State Rank: S2

Federal Status:

Location Information:

Directions

1.3 MILES SOUTH OF HWY 290 (IN NORTHWEST HOUSTON) ON GESSNER ROAD;0.5 MILE WEST OF TANNER ROAD;0.2 MILE SOUTH ON CLARA TO HOUSTON COMMUNITY COLLEGE; IN FIELD BEHIND (EAST OF) BLDGS.

Survey Information:

First Observation: 1985-10-23

Survey Date: 1985-10-23

Last Observation: 1999-11-06

Eo Type:

Eo Rank: B

Eo Rank Date: 1985-10-23

Observed Area: 10.00

Comments:

General Description: LEVEL, WET, GRASSY FIELD; SEASONALLY INUNDATED (WET AT THE SURVEY DATE); SANDY SOIL WITH CLAY POCKETS; FORMER FOOTBALL STADIUM AND FIELD

Comments:

Protection

Comments:

Management MOWED TWICE PER YEAR

Comments:

Data:

EO Data: IN 1985, IN FLOWER AND FRUIT; APPROXIMATELY 100 MATURE, HEALTHY INDIVIDUALS; IN 1997, NONE SEEN, CULTIVATED GRASSES HAVE BEEN PLANTED, MOWED TO CA. 4 INCHES; IN 1998, 2000-2002 SITE NOT SURVEYED; 16 NOVEMBER 1999, 150 INFLORESCENCES COUNTED

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Element Occurrence Record

Citation:

POOLE, J. M. 1985. FIELD SURVEY TO HOUSTON COMMUNITY COLLEGE OF OCTOBER 23, 1985.

BROWN, LARRY E. HOUSTON COMMUNITY COLLEGE (PROFESSOR). 726 HORNCastle, CHANNELVIEW, TEXAS. 77530. (H) 713/452-1105

LINAM, LEE ANN. NO DATE. WILDLIFE DIVERSITY BRANCH, TEXAS PARKS AND WILDLIFE DEPARTMENT, 200 HOOTS HOLLER, WIMBERLEY, TX 78676; PHONE (512) 847-9480; leeann.linam@tpwd.state.tx.us

Linam, Lee Ann. 2000. Performance Report for Project 72: Monitoring program for species of concern in Texas (Texas Nature Tracker data). Grant No. E-1-11, Endangered and Threatened Species Conservation. 14 November 2000.

Linam, L. A. 2002. Final Report. Project WER 09(72): Implementation of candidate species monitoring. Grant No. E-9 Endangered and Threatened Species Conservation. Submitted to Texas Parks and Wildlife Department, Austin, TX. 1 November 2002.

Specimen:

ROBERT A. VINES ENVIRONMENTAL SCIENCE CENTER HERBARIUM (SPRING BRANCH SCIENCE CENTER). 1985. L.E. BROWN #?, SPECIMEN # ? SB. 23 OCTOBER 1985.

Stephen F. Austin State University Herbarium. 1985. L.E. Brown #9604B, Specimen # ? ASTC. 24 October 1985.

Element Occurrence Record

Scientific Name: Coreopsis intermedia

Occurrence #: 17

Eo Id: 1609

Common Name: goldenwave tickseed

Track Status: Track all extant and selected historical EOs

Identification Confirmed: Y - Yes

TX Protection Status:

Global Rank: G3

State Rank: S3

Federal Status:

Location Information:

Directions

ABOUT 5 MILES SOUTH OF DECO [LABEL SAYS FREESTONE COUNTY; HOWEVER, THE ONLY "DECO" I COULD FIND IS IN HARRIS COUNTY - WRC]

Survey Information:

First Observation:

Survey Date:

Last Observation: 1944-06-16

Eo Type:

Eo Rank: H

Eo Rank Date: 2006-12-07

Observed Area:

Comments:

General Description: SANDY WOODLAND

Comments:

Protection

Comments:

Management

Comments:

Data:

EO Data: ERECT PERENNIAL HERB; COROLLA BRIGHT YELLOW

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Citation:

LUNDELL, C.L. AND A.A. LUNDELL (?). 1944. SPECIMEN # NONE TEX-LL.

Specimen:

LUNDELL, C.L. AND A.A. LUNDELL (?). 1944. SPECIMEN # NONE TEX-LL. (S44LUNTXTXUS)

University of Texas at Austin, Lundell Herbarium. 1944. C.L. Lundell #12959 and A.A. Lundell, Specimen # none TEX-LL. 16 June 1944.

Element Occurrence Record

Scientific Name: Hymenoxys texana **Occurrence #:** 4 **Eo Id:** 1574
Common Name: Texas prairie dawn **Track Status:** Track all extant and selected historical EOs
Identification Confirmed: Y - Yes **TX Protection Status:** E
Global Rank: G2 **State Rank:** S2 **Federal Status:** LE

Location Information:

Directions

CA. 0.5 MILES SOUTHWEST OF GESSNER & CLAY ROADS IN NORTHWEST HOUSTON. CA 0.2 MILES NORTH OF KEMPFORREST ROAD DEAD END.

Survey Information:

First Observation: **Survey Date:** 1988-03-29 **Last Observation:** 1988-03-29
Eo Type: **Eo Rank:** C **Eo Rank Date:**
Observed Area: 2.00

Comments:

General Description: REMNANT UNBURNED COASTAL PRAIRIE WITH LARGE MIMA MOUNDS ON LISSIE FORMATION (QUATERNARY AGE). MAPPED AS GESSNER SOIL, PROBABLY NARTA SERIES (TYPIC NATRAQUALFS).

Comments: SITE #6,7,8 IN RECOVERY PLAN. ON WEST BELT MAP SENT BY JULIE MASSEY OF THE USFWS FIELD OFFICE IN HOUSTON.

Protection

Comments:

Management

Comments:

Data:

EO Data: SITE #8 ESTIMATED APPROXIMATELY 100 ROBUST PLANTS NEAR ANT MOUND. SITES #6 & #7 HAVE BEEN SCRAPED. #6 PROBABLY HAS BEEN EXTIRPATED, ALL OF THESE ARE MAPPED AS A SINGLE OCCURRENCE SINCE THEY WERE ORIGINALLY A POPULATION PRIOR TO DISTURBANCE

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Citation:

ORZELL, STEVE AND JACKIE POOLE. 1988. FIELD SURVEY OF HYMENOXYS TEXANA SITES, 28-30 MARCH 1988.

YOUNG, STEPHEN M. AND LARRY E. BROWN. 1987. TEXAS BITTERWEED (HYMENOXYS TEXANA) RECOVERY PLAN.

Element Occurrence Record

Specimen:

Element Occurrence Record

Scientific Name: Hymenoxys texana **Occurrence #:** 7 **Eo Id:** 7337
Common Name: Texas prairie dawn **Track Status:** Track all extant and selected historical EOs
Identification Confirmed: Y - Yes **TX Protection Status:** E
Global Rank: G2 **State Rank:** S2 **Federal Status:** LE

Location Information:

Directions

1.3 MI SOUTH OF HWY 290 ON GESSNER ROAD, 0.5 MI WEST ON TANNER ROAD, 0.2 MI SOUTH ON CLARA TO HOUSTON COMMUNITY COLLEGE, IN FIELD EAST OF BUILDING

Survey Information:

First Observation: 1986 **Survey Date:** 1986-03-11 **Last Observation:** 1988-03-30
Eo Type: **Eo Rank:** B **Eo Rank Date:**
Observed Area: 10.00

Comments:

General Description: LEVELLED GRASSY FIELD; FORMER COASTAL PRAIRIE WITH MIMA MOUNDS; SEASONALLY SATURATED; SALINE FINE SANDY LOAM WITH CLAY HARDPAN; WITH GRATIOLA FLAVA, CHAETOPAPPA ASTEROIDES

Comments: SITE #5 IN RECOVERY PLAN.

Protection

Comments:

Management MOWED TWICE PER YEAR

Comments:

Data:

EO Data: IN FLOWER; APPROXIMATELY 200 HEALTHY INDIVIDUALS ABOUT HALF IN FLOWER; SOME FLOWER HEADS EATEN BY INSECTS ON 86-03-11, TWO COLONIES WITH AN ESTIMATED 625 PLANTS ON 88-03-30.

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Citation:

POOLE, J.M. 1986. FIELD SURVEY TO HOUSTON COMMUNITY COLLEGE/CY-FAIR CAMPUS OF 11 MARCH 1986.
YOUNG, STEPHEN M. AND LARRY E. BROWN. 1987. TEXAS BITTERWEED (HYMENOXYSTEXANA) RECOVERY PLAN.

Element Occurrence Record

Specimen:

Element Occurrence Record

Scientific Name: Hymenoxys texana **Occurrence #:** 8 **Eo Id:** 4961
Common Name: Texas prairie dawn **Track Status:** Track all extant and selected historical EOs
Identification Confirmed: Y - Yes **TX Protection Status:** E
Global Rank: G2 **State Rank:** S2 **Federal Status:** LE

Location Information:

Directions

SEVERAL SMALL POPULATIONS NEAR OIL WELL, NORTH OF CLAY ROAD & EAST OF INTERSECTION WITH ADDICKS-FAIRBANKS ROAD (NORTH ELDRIDGE PARKWAY) ALONG AND EAST OF PIPELINE IN ADDICKS RESERVOIR

Survey Information:

First Observation: 1988-03-29 **Survey Date:** 1988-03-29 **Last Observation:** 2000-SPRG
Eo Type: **Eo Rank:** A **Eo Rank Date:** 1988-03-29
Observed Area: 40.00

Comments:

General Description: IN 1988, ON OR NEAR BASE OF MIMA MOUNDS WITH BARE, WHITE, SALINE "SLICK SPOTS" IN DEGRADED UPPER COASTAL PRAIRIE REMNANT ON LISSIE FORMATION (QUATERNARY); PROBABLY NARTA SOIL; 1996, PORTIONS OF (A) AND (B) BECOMING OVERGROWN; 1997 (C) BECOMING OVERGROWN; 1998 (B) NOT AS OVERGROWN, HORSES OPENING UP COVER, (C) OVERGROWN; 2000 (B) BETTER HABITAT, MORE OPEN THAN LAST YEAR

Comments: IN 1988, SITE #9 IN RECOVERY PLAN; SITE #1,2,3 IN GALVESTON CORPS OF ENGINEERS MAP & REPORT; BARROWS 1996, 2001 ADDICKS HYMENOXYS TEXANA #043-045, 050, 054-056, SUBPOP (A) ADDICKS HYMENOXYS TEXANA #043-045, 050, (B) ADDICKS HYMENOXYS TEXANA # 054, (C) ADDICKS HYMENOXYS TEXANA #055-056

Protection

Comments:

Management

Comments:

Data:

EO Data: In 1988, estimated 12,100 total plants observed on 88-03-29 growing with annual herbs and some drought tolerant low perennial herbs; largest mima mound ca 25 ft across with ca 10,000 plants around perimeter of base; 1993-2000, 3 subpopulations a,b,c; 1993(a) 200-500 plants with nickel size rosettes; 1994(a) >1200 plants with nickel to half dollar size rosettes, (b) <10 plants with dime size rosettes, (c) 300-500 plants with quarter to half dollar size rosettes; 1995 no data; 1996(a) 510 plants with dime to half dollar size rosettes, (b) 0 plants, (c) no data; 1997(a) 271 plants with nickel to quarter size rosettes, (b) 0 plants, (c) 25 plants with quarter to half dollar size rosettes; 1998(a) 90 plants with dime to half dollar size rosettes, (b) and (c) 0 plants; 1999(a) 108 plants with dime to quarter size rosettes, (b) 0 plants, (c) no data; 2000(a) 258 plants with dime to quarter size rosettes, some in bloom, (b) 0 plants, (c) 4 plants with dime to nickel size rosettes (plants dead, too late in season)

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Element Occurrence Record

Reference:

Citation:

ORZELL, STEVE AND JACKIE POOLE. 1988. FIELD SURVEY OF HYMENOXYS TEXANA SITES, 28-30 MARCH 1988.

Barrows, James. 2001. Email of 23 February to Sandy Birnbaum, Texas Parks and Wildlife Department, Texas Natural Diversity Database Manager, concerning observations for *Hymenoxys texana* at the Addicks and Barker reservoirs .

Barrows, James. 1996. Maps and directions, sent to Bill Carr on 31 July 1996, for population sites of *Hymenoxys texana* for survey years from 1987 through 1996 at the Addicks and Barker reservoirs.

YOUNG, STEPHEN M. AND LARRY E. BROWN. 1987. TEXAS BITTERWEED (*HYMENOXYS TEXANA*) RECOVERY PLAN.

SHIPLEY, VAN V. 1987. ANNUAL REPORT FOR *HYMENOXYS TEXANA*.

Specimen:

Element Occurrence Record

Scientific Name: Hymenoxys texana **Occurrence #:** 9 **Eo Id:** 281
Common Name: Texas prairie dawn **Track Status:** Track all extant and selected historical EOs
Identification Confirmed: Y - Yes **TX Protection Status:** E
Global Rank: G2 **State Rank:** S2 **Federal Status:** LE

Location Information:

Directions

CA. 900 FEET NORTH OF CLAY ROAD & WEST OF ADDICKS-FAIRBANK ROAD (NORTH ELDRIDGE PARKWAY) IN ADDICKS RESERVOIR

Survey Information:

First Observation: 1988-03-29 **Survey Date:** 1988-03-29 **Last Observation:** 2000-SPRG
Eo Type: **Eo Rank:** B **Eo Rank Date:** 1988-03-29

Observed Area:

Comments:

General Description: IN 1988, DEGRADED BUT RECOVERABLE GRAZED COASTAL PRAIRIE WITH SCATTERED MYRICA CERIFERA AND ILEX VOMITORIA; LISSIE FORMATION; PROBABLY NARTA SOIL SERIES (TYPIC NATRAQUALFS); 1998 AREA ALONG FENCELINE OVERGROWN

Comments: IN 1988, CITY PARK PLANS FOR PICNIC AREA & NATURE TRAILS; SITE #18 IN RECOVERY PLAN; SITE #4 IN GALVESTON CORPS REPORT; POPULATION CONSISTS OF NUMEROUS SUBPOPULATIONS; BARROWS 1996, 2001 ADDICKS HYMENOXYS TEXANA #013, 014, 035, 036, 038, 057-060, 062; BARROWS 2001 HAS DATA BROKEN DOWN FOR EACH SUBPOPULATION

Protection

Comments:

Management

Comments:

Data:

EO Data: Three colonies observed on 88-03-29 estimated between 1,200-2,100 plants (lower western portion of population); 1993-2000 data is totals for 10 subpopulations; 1993, 200-400 plants (late blooming) with nickel to quarter size rosettes; 1994, >6000 healthy plants with all sizes of rosettes; 1995, 580-850 plants with dime to half dollar size rosettes (most plants unhealthy to moderately healthy); 1996, 1595 plants with dime to half dollar size rosettes (majority of plants healthy); 1997, 945 plants with dime to silver dollar size rosettes; 1998, 1205 plants with dime to half dollar size rosettes; 1999, 1819 plants with dime to silver dollar size rosettes (portion of population scattered, another portion has stalks eaten off); 2000, 2535 plants (majority of plants blooming) with dime to silver dollar size rosettes (portion of population looked half dead, portion of population scattered)

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Element Occurrence Record

Citation:

Barrows, James. 2001. Email of 23 February to Sandy Birnbaum, Texas Parks and Wildlife Department, Texas Natural Diversity Database Manager, concerning observations for *Hymenoxys texana* at the Addicks and Barker reservoirs .

Barrows, James. 1996. Maps and directions, sent to Bill Carr on 31 July 1996, for population sites of *Hymenoxys texana* for survey years from 1987 through 1996 at the Addicks and Barker reservoirs.

UNPUBLISHED MAP. U.S. CORPS OF ENGINEERS, GALVESTON DISTRICT. 1988. HYMENOXYIS TEXANA LOCATIONS FROM 1988 SURVEY OF ADDICKS-BARKER RESERVOIRS BY VAN SHIPLEY.

ORZELL, STEVE AND JACKIE POOLE. 1988. FIELD SURVEY OF HYMENOXYIS TEXANA SITES, 28-30 MARCH 1988.

SHIPLEY, VAN V. 1987. ANNUAL REPORT FOR HYMENOXYIS TEXANA.

YOUNG, STEPHEN M. AND LARRY E. BROWN. 1987. TEXAS BITTERWEED (*HYMENOXYIS TEXANA*) RECOVERY PLAN.

Specimen:

Element Occurrence Record

Scientific Name: Hymenoxys texana

Occurrence #: 25

Eo Id: 4035

Common Name: Texas prairie dawn

Track Status: Track all extant and selected historical EOs

Identification Confirmed: Y - Yes

TX Protection Status: E

Global Rank: G2

State Rank: S2

Federal Status: LE

Location Information:

Directions

NORTH OF CLAY ROAD AND WEST OF ADDICKS - FAIRBANKS ROAD (N. ELDRIDGE PARKWAY) IN ADDICKS RESERVOIR.

Survey Information:

First Observation:

Survey Date: 1988

Last Observation: 1988

Eo Type:

Eo Rank:

Eo Rank Date:

Observed Area: 1.00

Comments:

General

Description:

Comments:

Protection

Comments:

Management

Comments:

Data:

EO Data: SITE NEEDS SURVEY. MR. VAN SHIPLEY OF THE GALVESTON CORPS OF ENGINEERS SENT TOPO-MAP PLOTTED LOCATIONS (NO OTHER DATA), BASED ON HIS 1988 SURVEY OF ADDICKS - BARKER RESERVOIRS.

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Citation:

UNPUBLISHED MAP. U.S. CORPS OF ENGINEERS, GALVESTON DISTRICT. 1988. HYMENOXYS TEXANA LOCATIONS FROM 1988 SURVEY OF ADDICKS-BARKER RESERVOIRS BY VAN SHIPLEY.

Specimen:

Element Occurrence Record

Scientific Name: Hymenoxys texana **Occurrence #:** 26 **Eo Id:** 6938
Common Name: Texas prairie dawn **Track Status:** Track all extant and selected historical EOs
Identification Confirmed: Y - Yes **TX Protection Status:** E
Global Rank: G2 **State Rank:** S2 **Federal Status:** LE

Location Information:

Directions

CA 0.5-0.9 AIR MILES WEST OF ADDICKS - FAIRBANKS ROAD, 300-3000 FEET NORTH OF CLAY ROAD IN ADDICKS RESERVOIR

Survey Information:

First Observation: 1988 **Survey Date:** 1988 **Last Observation:** 2000-SPRG

Eo Type: **Eo Rank:** **Eo Rank Date:**

Observed Area:

Comments:

General Description: SPARSELY VEGETATED, UNSHADED OPENINGS ON COMPARATIVELY WELL-DRAINED LIGHT COLORED SANDY SOIL; 1996, PORTION OF SITE OVERGROWN, LEAF LITTER; 1997, PORTION OF SITE HAD STANDING WATER, PORTION OF SITE COVERED WITH ALGAE (DEADMAN'S FINGERS); 1998, PORTION OF SITE WET AND OVERGROWN; 2000, PORTION OF SITE HAD STANDING WATER

Comments: POPULATIONS AHT 037-042, AND 051-053 IN ARMY CORPS 1994 REPORT; BARROWS 1996, 2001 AHT #'S 037, 039-042, 051-053; BARROWS 2001 CONTAINS DATA BROKEN DOWN FOR EACH SUBPOPULATION

Protection Comments:

Management Comments:

Data:

EO Data: Mr. Van Shipley of the Galveston Corps of Engineers sent topo-map plotted locations (no other data), based on his 1988 survey of Addicks-Barker reservoirs; (1994-2000 data is totals for 8 subpopulations); Jim Barrows (army corps) found between 5000-9000 plants in 1994 with all sizes of rosettes, most plants healthy; 1995, no data; 1996, 2410 plants with dime to half dollar size rosettes, most plants healthy; 1997, 986 plants with dime to half dollar size rosettes; 1998, 745 plants with dime to silver dollar size rosettes; 1999, 1987 plants with dime to half dollar size rosettes; 2000, 2585 plants with dime to silver dollar size rosettes

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Element Occurrence Record

Citation:

Barrows, James. 2001. Email of 23 February to Sandy Birnbaum, Texas Parks and Wildlife Department, Texas Natural Diversity Database Manager, concerning observations for *Hymenoxys texana* at the Addicks and Barker reservoirs .

Barrows, James. 1996. Maps and directions, sent to Bill Carr on 31 July 1996, for population sites of *Hymenoxys texana* for survey years from 1987 through 1996 at the Addicks and Barker reservoirs.

BARROWS, J. 1994. U.S. ARMY CORPS OF ENGINEERS 1994 HYMENOXY'S TEXANA SURVEY, ADDICKS RESERVOIR TEXAS NATIONAL GUARD LEASE. ENVIRONMENTAL RESOURCES BRANCH, U.S. ARMY CORPS OF ENGINEERS, GALVESTON DISTRICT.

UNPUBLISHED MAP. U.S. CORPS OF ENGINEERS, GALVESTON DISTRICT. 1988. HYMENOXY'S TEXANA LOCATIONS FROM 1988 SURVEY OF ADDICKS-BARKER RESERVOIRS BY VAN SHIPLEY.

Specimen:

Element Occurrence Record

Scientific Name: Hymenoxys texana **Occurrence #:** 29 **Eo Id:** 12480
Common Name: Texas prairie dawn **Track Status:** Track all extant and selected historical EOs
Identification Confirmed: Y - Yes **TX Protection Status:** E
Global Rank: G2 **State Rank:** S2 **Federal Status:** LE

Location Information:

Directions

CA 0.2 MILES WEST OF ADDICKS - FAIRBANKS ROAD (N. ELDRIDGE PARKWAY), CA 0.4 MILES NORTH OF CLAY ROAD IN ADDICKS RESERVOIR.

Survey Information:

First Observation: **Survey Date:** 1988 **Last Observation:** 1988
Eo Type: **Eo Rank:** **Eo Rank Date:**
Observed Area: 1.00

Comments:

General

Description:

Comments:

Protection

Comments:

Management

Comments:

Data:

EO Data: SITE NEEDS SURVEY. MR. VAN SHIPLEY OF THE GALVESTON CORPS OF ENGINEERS SENT TOPO-MAP PLOTTED LOCATIONS (NO OTHER DATA) BASED ON HIS 1988 SURVEY OF ADDICKS-BARKER RESERVOIRS.

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Citation:

UNPUBLISHED MAP. U.S. CORPS OF ENGINEERS, GALVESTON DISTRICT. 1988. HYMENOXYS TEXANA LOCATIONS FROM 1988 SURVEY OF ADDICKS-BARKER RESERVOIRS BY VAN SHIPLEY.

Specimen:

Element Occurrence Record

Scientific Name: Hymenoxys texana **Occurrence #:** 30 **Eo Id:** 6199
Common Name: Texas prairie dawn **Track Status:** Track all extant and selected historical EOs
Identification Confirmed: Y - Yes **TX Protection Status:** E
Global Rank: G2 **State Rank:** S2 **Federal Status:** LE

Location Information:

Directions

JUST WEST OF ADDICKS - FAIRBANKS (NORTH ELDRIDGE PARKWAY), CA 0.3 MILES NORTH OF CLAY ROAD IN ADDICKS RESERVOIR

Survey Information:

First Observation: 1988 **Survey Date:** 1988 **Last Observation:** 2000-SPRG
Eo Type: **Eo Rank:** **Eo Rank Date:**

Observed Area:

Comments:

General

Description:

Comments: BARROWS 1996, 2001 AHT #S 015, 016

Protection

Comments:

Management

Comments:

Data:

EO Data: In 1988, site needs survey; Mr. Van Shipley of the Galveston Corps of Engineers sent topo-map plotted locations (no other data) based on his 1988 survey of Addicks-Barker reservoirs; 1993, >500 healthy plants with quarter size rosettes; 1994, 5500-6000 healthy plants with nickel to quarter size rosettes; 1995, 4000-5000 healthy plants with nickel to half dollar size rosettes; 1996, 1250 plants (northern portion of population scattered) with nickel to half dollar size rosettes; 1997, 900-950 healthy plants with nickel to silver dollar size rosettes; 1998, 3300 plants with nickel to half dollar size rosettes (majority of rosettes nickel size); 1999, ca. 1400 plants with nickel to quarter size rosettes; 2000, 900 plants with dime to nickel size rosettes (most were dead)

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Element Occurrence Record

Citation:

Barrows, James. 2001. Email of 23 February to Sandy Birnbaum, Texas Parks and Wildlife Department, Texas Natural Diversity Database Manager, concerning observations for *Hymenoxys texana* at the Addicks and Barker reservoirs .

Barrows, James. 1996. Maps and directions, sent to Bill Carr on 31 July 1996, for population sites of *Hymenoxys texana* for survey years from 1987 through 1996 at the Addicks and Barker reservoirs.

UNPUBLISHED MAP. U.S. CORPS OF ENGINEERS, GALVESTON DISTRICT. 1988. HYMENOXYS TEXANA LOCATIONS FROM 1988 SURVEY OF ADDICKS-BARKER RESERVOIRS BY VAN SHIPLEY.

Specimen:

Element Occurrence Record

Scientific Name: Hymenoxys texana

Occurrence #: 33

Eo Id: 1540

Common Name: Texas prairie dawn

Track Status: Track all extant and selected historical EOs

Identification Confirmed: Y - Yes

TX Protection Status: E

Global Rank: G2

State Rank: S2

Federal Status: LE

Location Information:

Directions

BEAR CREEK PARK, ADDICKS RESERVOIR

Survey Information:

First Observation:

Survey Date:

Last Observation: 1993

Eo Type:

Eo Rank:

Eo Rank Date:

Observed Area:

Comments:

General

Description:

Comments:

Protection

Comments:

Management

Comments:

Data:

EO Data:

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Citation:

ERFLING, E. 1993. FAX SHEETS WITH LOCATIONS OF HYMENOXYS TEXANA. USFWS, CLEAR LAKE.

Specimen:

Element Occurrence Record

Scientific Name: Hymenoxys texana **Occurrence #:** 34 **Eo Id:** 686
Common Name: Texas prairie dawn **Track Status:** Track all extant and selected historical EOs
Identification Confirmed: Y - Yes **TX Protection Status:** E
Global Rank: G2 **State Rank:** S2 **Federal Status:** LE

Location Information:

Directions

ADDICKS RESERVOIR, WEST SIDE OF ADDICKS-FAIRBANKS ROAD CA. 2800 FEET SOUTH OF CLAY ROAD

Survey Information:

First Observation: 1993 **Survey Date:** **Last Observation:** 2000-SPRG
Eo Type: **Eo Rank:** **Eo Rank Date:**

Observed Area:

Comments:

General Description: 1993 AND 1994, AREA OVERGROWN

Comments: BARROWS 1996, 2001 AHT #012

Protection Comments:

Management Comments:

Data:

EO Data: 1993, <25 plants with nickel size rosettes; 1994, 1 plant with quarter size rosette; 1995 and 1997, no plants observed; 1996, 60 plants with dime to quarter size rosettes; 1998, 75 plants with nickel size rosettes; 1999, 150 plants with dime to nickel size rosettes; 2000, 150 plants with nickel to half dollar size rosettes

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Citation:

Barrows, James. 2001. Email of 23 February to Sandy Birnbaum, Texas Parks and Wildlife Department, Texas Natural Diversity Database Manager, concerning observations for Hymenoxys texana at the Addicks and Barker reservoirs .

Barrows, James. 1996. Maps and directions, sent to Bill Carr on 31 July 1996, for population sites of Hymenoxys texana for survey years from 1987 through 1996 at the Addicks and Barker reservoirs.

ERFLING, E. 1993. FAX SHEETS WITH LOCATIONS OF HYMENOXYS TEXANA. USFWS, CLEAR LAKE.

Element Occurrence Record

Specimen:

Element Occurrence Record

Scientific Name: Hymenoxys texana **Occurrence #:** 35 **Eo Id:** 5563
Common Name: Texas prairie dawn **Track Status:** Track all extant and selected historical EOs
Identification Confirmed: Y - Yes **TX Protection Status:** E
Global Rank: G2 **State Rank:** S2 **Federal Status:** LE

Location Information:

Directions

ADDICKS RESERVOIR, BOTH SIDES OF CLAY ROAD 1700 FEET EAST OF ADDICKS-FAIRBANKS ROAD

Survey Information:

First Observation: 1993 **Survey Date:** **Last Observation:** 2000-SPRG
Eo Type: **Eo Rank:** **Eo Rank Date:**

Observed Area:

Comments:

General Description: 1993-2000, AREA OVERGROWN (BOTH SIDES OF ROAD)

Comments: BARROWS 1996, 2001 AHT #'S 003, 005; AHT #003, SOUTH SIDE OF CLAY ROAD; AHT #005, NORTH SIDE OF CLAY ROAD

Protection Comments:

Management Comments:

Data:

EO Data: Population south of road: 1993, >15 plants; 1994, 20-50 plants with dime size rosettes; 1995-2000, no plants observed; population north of road: 1993, 100 plants; 1994, 50 healthy plants with half dollar size rosettes; 1995, 50-75 healthy plants with nickel to half dollar size rosettes; 1996, 50 plants with nickel to quarter size rosettes; 1997, 30 scattered plants with nickel to half dollar size rosettes; 1998, 150 plants with dime to quarter size rosettes; 1999, 200 plants with nickel size rosettes; 2000, 275 plants with dime to quarter size rosettes

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Element Occurrence Record

Citation:

Barrows, James. 2001. Email of 23 February to Sandy Birnbaum, Texas Parks and Wildlife Department, Texas Natural Diversity Database Manager, concerning observations for *Hymenoxys texana* at the Addicks and Barker reservoirs .

Barrows, James. 1996. Maps and directions, sent to Bill Carr on 31 July 1996, for population sites of *Hymenoxys texana* for survey years from 1987 through 1996 at the Addicks and Barker reservoirs.

ERFLING, E. 1993. FAX SHEETS WITH LOCATIONS OF HYMENOXYS TEXANA. USFWS, CLEAR LAKE.

Specimen:

Element Occurrence Record

Scientific Name: Hymenoxys texana **Occurrence #:** 36 **Eo Id:** 2420
Common Name: Texas prairie dawn **Track Status:** Track all extant and selected historical EOs
Identification Confirmed: Y - Yes **TX Protection Status:** E
Global Rank: G2 **State Rank:** S2 **Federal Status:** LE

Location Information:

Directions

ADDICKS RESERVOIR, SOUTH OF CLAY ROAD 2500 FEET EAST OF ADDICKS-FAIRBANKS ROAD

Survey Information:

First Observation: 1993 **Survey Date:** 2000 **Last Observation:** 1995-SPRG
Eo Type: **Eo Rank:** **Eo Rank Date:**

Observed Area:

Comments:

General Description: 1993-2000, AREA OVERGROWN

Comments: BARROWS 1996, 2001 AHT #004; ERFLING 1993 POPULATION MAPPED NORTH OF CLAY ROAD, BARROWS 1996, 2001 POPULATION MAPPED SOUTH OF CLAY ROAD; OCCURRENCE DATA IS FOR POPULATION SOUTH OF ROAD

Protection Comments:

Management Comments:

Data:

EO Data: 1993, >50 plants with nickel to half dollar size rosettes; 1994, 7 plants with quarter size rosettes; 1995, 5 plants; 1996-2000, no plants observed

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Citation:

Barrows, James. 2001. Email of 23 February to Sandy Birnbaum, Texas Parks and Wildlife Department, Texas Natural Diversity Database Manager, concerning observations for Hymenoxys texana at the Addicks and Barker reservoirs .

Barrows, James. 1996. Maps and directions, sent to Bill Carr on 31 July 1996, for population sites of Hymenoxys texana for survey years from 1987 through 1996 at the Addicks and Barker reservoirs.

ERFLING, E. 1993. FAX SHEETS WITH LOCATIONS OF HYMENOXYS TEXANA. USFWS, CLEAR LAKE.

Element Occurrence Record

Specimen:

Element Occurrence Record

Scientific Name: Hymenoxys texana

Occurrence #: 37

Eo Id: 7275

Common Name: Texas prairie dawn

Track Status: Track all extant and selected historical EOs

Identification Confirmed: Y - Yes

TX Protection Status: E

Global Rank: G2

State Rank: S2

Federal Status: LE

Location Information:

Directions

ADDICKS RESERVOIR, SOUTH OF CLAY ROAD AND EAST OF ADDICKS-FAIRBANKS ROAD

Survey Information:

First Observation:

Survey Date:

Last Observation: 1993

Eo Type:

Eo Rank:

Eo Rank Date:

Observed Area:

Comments:

General

Description:

Comments:

Protection

Comments:

Management

Comments:

Data:

EO Data:

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Citation:

ERFLING, E. 1993. FAX SHEETS WITH LOCATIONS OF HYMENOXYS TEXANA. USFWS, CLEAR LAKE.

Specimen:

Element Occurrence Record

Specimen:

Element Occurrence Record

Scientific Name: Hymenoxys texana

Occurrence #: 57

Eo Id: 2082

Common Name: Texas prairie dawn

Track Status: Track all extant and selected historical EOs

Identification Confirmed: Y - Yes

TX Protection Status: E

Global Rank: G2

State Rank: S2

Federal Status: LE

Location Information:

Directions

WEST AND EAST EDGE OF FAIRBANKS-WHITE OAK ROAD, 0.1-0.2 MILE NORTH OF WEST LITTLE YORK ROAD

Survey Information:

First Observation: 1998-04-29

Survey Date: 1998-04-29

Last Observation: 1998-04-29

Eo Type:

Eo Rank:

Eo Rank Date:

Observed Area:

Comments:

General

Description:

Comments:

Protection

Comments:

Management

Comments:

Data:

EO Data: Majority of plants are located in east right-of-way of fairbanks-white oak road, with a few plants also occurring on other side of fence; plants on west side of road had recently died, but were still identifiable; east roadside plants occur just south of pipeline right-of-way, west roadside plants occur north of pipeline right-of-way

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Citation:

BROWN, L.E. 1998. LETTER TO EDITH ERFLING OF USFWS, CLEAR LAKE OFFICE. 3 MAY 1998.

ERFLING, EDITH. 2000. LETTER TO DORINDA SCOTT OF TPWD FROM EDITH ERFLING, USFWS, CLEAR LAKE OFFICE. 8 FEBRUARY 2000.

Element Occurrence Record

Specimen:

Element Occurrence Record

Scientific Name: *Hymenoxys texana* **Occurrence #:** 59 **Eo Id:** 5168
Common Name: Texas prairie dawn **Track Status:** Track all extant and selected historical EOs
Identification Confirmed: Y - Yes **TX Protection Status:** E
Global Rank: G2 **State Rank:** S2 **Federal Status:** LE

Location Information:

Directions

CA. 1.3 AIR MILES NORTHEAST OF INTERSECTION OF CLAY ROAD AND ADDICKS FAIRBANKS ROAD (ELDRIDGE PARKWAY), CA. 1400 FEET WEST OF ADDICKS DAM IN ADDICKS FLOOD CONTROL RESERVOIR

Survey Information:

First Observation: 1993 **Survey Date:** **Last Observation:** 2000
Eo Type: **Eo Rank:** **Eo Rank Date:**

Observed Area:

Comments:

General

Description:

Comments: BARROWS 1996 SOURCE CONTAINS MAPS AND DIRECTIONS, BARROWS 2001 SOURCE CONTAINS OCCURRENCE DATA, AHT #063-065; 1996 DROUGHT YEAR (MAJORITY OF PLANTS UNDERSIZED AND DRIED UP)

Protection

Comments:

Management

Comments:

Data:

EO Data: 1993, >1000 healthy plants; 1994-1995, no data; 1996, ca. 110 plants, ca. Nickel to half dollar size rosettes; 1997, no data; 1998, ca. 70 plants, nickel to half dollar size rosettes; 1999, no data, 2000, ca. 415 scattered plants with dime to half dollar size rosettes, 2 in bloom

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Citation:

Barrows, James. 2001. Email of 23 February to Sandy Birnbaum, Texas Parks and Wildlife Department, Texas Natural Diversity Database Manager, concerning observations for *Hymenoxys texana* at the Addicks and Barker reservoirs .

Barrows, James. 1996. Maps and directions, sent to Bill Carr on 31 July 1996, for population sites of *Hymenoxys texana* for survey years from 1987 through 1996 at the Addicks and Barker reservoirs.

Element Occurrence Record

Specimen:

Element Occurrence Record

Scientific Name: *Hymenoxys texana* **Occurrence #:** 60 **Eo Id:** 5167
Common Name: Texas prairie dawn **Track Status:** Track all extant and selected historical EOs
Identification Confirmed: Y - Yes **TX Protection Status:** E
Global Rank: G2 **State Rank:** S2 **Federal Status:** LE

Location Information:

Directions

ADDICKS RESERVOIR, CA. 500 FEET NORTH OF CLAY ROAD AND CA. 800 FEET EAST OF ADDICKS-FAIRBANKS ROAD (ELDRIDGE ROAD)

Survey Information:

First Observation: 1994-SPRG **Survey Date:** **Last Observation:** 2000-SPRG
Eo Type: **Eo Rank:** **Eo Rank Date:**

Observed Area:

Comments:

General Description: 2000, GOOD HABITAT, NOT OVERGROWN

Comments: BARROWS SOURCES 1996, 2001 AHT #'S 046-049, EODATA IS COMBINED FROM ALL FOUR POPULATIONS

Protection Comments:

Management Comments:

Data:

EO Data: 1994, 250-350 plants with nickel to half dollar size rosettes; 1995, no data; 1996, ca. 615 plants with dime to half dollar size rosettes; 1997, 535-590 plants with dime to quarter size rosettes (some plants looked "chewed up"); 1998, 172 plants with nickel to quarter size rosettes, few plants in bloom; 1999, 565 plants with dime to quarter size rosettes; 2000, 151 plants (too late in season)

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Citation:

Barrows, James. 2001. Email of 23 February to Sandy Birnbaum, Texas Parks and Wildlife Department, Texas Natural Diversity Database Manager, concerning observations for *Hymenoxys texana* at the Addicks and Barker reservoirs .

Barrows, James. 1996. Maps and directions, sent to Bill Carr on 31 July 1996, for population sites of *Hymenoxys texana* for survey years from 1987 through 1996 at the Addicks and Barker reservoirs.

Element Occurrence Record

Specimen:

Element Occurrence Record

Scientific Name: Liatris bracteata **Occurrence #:** 15 **Eo Id:** 4891
Common Name: coastal gay-feather **Track Status:** Track all extant and selected historical EOs
Identification Confirmed: Y - Yes **TX Protection Status:**
Global Rank: G2G3 **State Rank:** S2S3 **Federal Status:**

Location Information:

Directions

"ALONG GESSNER ROAD BETWEEN CLAY AND TANNER ROADS AT NORTHWEST EDGE OF HOUSTON"

Survey Information:

First Observation: **Survey Date:** **Last Observation:** 1985-10-10
Eo Type: **Eo Rank:** **Eo Rank Date:**
Observed Area:

Comments:

General Description: "SANDY SOIL" OF COASTAL PRAIRIE GRASSLAND

Comments:

Protection Comments:

Management Comments:

Data:

EO Data: "MANY STEMS COMING FROM A LARGE UNDERGROUND CORM"; SPECIMEN IN FLOWER

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Citation:

Specimen:

TEXAS A & M UNIVERSITY, TRACY HERBARIUM. 1985. L.E. BROWN #9516, SPECIMEN # 179279 TAES. 10 OCTOBER 1985.

Element Occurrence Record

Scientific Name: *Liatris bracteata* **Occurrence #:** 18 **Eo Id:** 4194
Common Name: coastal gay-feather **Track Status:** Track all extant and selected historical EOs
Identification Confirmed: Y - Yes **TX Protection Status:**
Global Rank: G2G3 **State Rank:** S2S3 **Federal Status:**

Location Information:

Directions

ADDICKS TRAINING AREA (TEXAS NATIONAL GUARD); CA. 50-2000 FEET NORTH OF CLAY ROAD, 1.5-1.9 ROAD MILES EAST OF STATE ROUTE 6, EAST OF LANGHAM CREEK, WITHIN ADDICKS RESERVOIR

Survey Information:

First Observation: **Survey Date:** 1994-09-26 **Last Observation:** 1994-09-27
Eo Type: **Eo Rank:** **Eo Rank Date:**

Observed Area:

Comments:

General Description: MOST COMMONLY SEEN ALONG MARGIN OF SMALL BUT CONSPICUOUS, DISCRETE "BARE" (SPARSELY VEGETATED) AREAS WITHIN LARGER INTERCONNECTED GRASSLAND OPENINGS RIMMED BY WATER OAK-YAUPON WOODLANDS; GRASSLANDS WITH DENSE COVER OF SPARTINA SPARTINAE, MUHLENBERGIA CAPILLARIS, IVA ANGUSTIFOLIA, IVA ANNUA, ETC.; "BARE AREAS" WITH SOMEWHAT SALINE, FINE-TEXTURED SOILS THAT IN THIS SEASON ARE ROCK-HARD ON SURFACE AND CONSIDERABLY DRIER THAN ADJACENT SOILS; UNLIKE OTHER RARE PLANT SPECIES IN THESE BARE AREAS (e.g., HYMENOXYS TEXANA, MACHAERANTHERA AUREA, AND THUROVIA TRIFLORA), LIATRIS BRACTEATA ALSO RANGES OUT INTO THE ADJACENT, MORE NON-DESCRIPT GRASSLAND OR IVA-LAND; IN WETTER PARTS OF THAT COMMUNITY IT IS REPLACED BY LIATRIS ACIDOTA

Comments: GEOLOGY IS LISSIE FORMATION CONSISTING OF CLAY, SILT, SAND, AND MINOR AMOUNTS OF GRAVEL; PORTIONS OF SURFACE ARE DOTTED WITH ROUNDED SHALLOW DEPRESSIONS AND SLIGHTLY ELEVATED PIMPLE MOUNDS, HOWEVER, PIMPLE MOUNDS ARE NOT VERY CONSPICUOUS HERE; SOIL ANALYSIS AT ONE SITE REVEALED A HIGH CONCENTRATION OF SALTS IN THE LIGHT SANDY SOIL OF THE BARE SPOTS AND LOWER LEVELS OF THE SAME SALTS IN DARKER SOILS FROM WHICH HYMENOXYS TEXANA WAS ABSENT, PRESUMABLE THESE NARTA SOILS ARE THE SOILS FOUND ON LOWER SLOPING PORTIONS OF MIMA OR PIMPLE MOUNDS AMOUNTS OF GRAVEL; SOIL ANALYSIS AT ONE SITE REVEALED A HIGH CONCENTRATION OF SALTS IN THE LIGHT SANDY SOIL OF THE BARE SPOTS AND LOWER LEVELS OF THE SAME SALTS IN DARKER SOILS FROM WHICH HYMENOXYS TEXANA WAS ABSENT, PRESUMABLE THESE NARTA SOILS ARE THE SOILS FOUND ON LOWER SLOPING PORTIONS OF MIMA OR PIMPLE MOUNDS

Protection

Comments:

Management

Comments:

Data:

Element Occurrence Record

EO Data: WITH HYMENOXYS TEXANA, MACHAERANTHERA AUREA, AND THUROVIA TRIFLORA; PLANTS FREQUENT, BUT NOT COMMON; SEEN WITH HYMENOXYS TEXANA AND AT SCATTERED POINTS OUTSIDE OF HYMENOXYS TEXANA HABITAT; IN FLOWER ON 26-27 SEPTEMBER 1994; ASSOCIATES INCLUDE (IN BARE AREAS) GOSSYPIANTHUS LANUGINOSUS, MACHAERANTHERA AUREA, OPUNTIA SP., PARTULACA PILOSA, SIDA CILIARIS, SPOROBOLUS PYRAMIDATUS, TALINUM PARVIFLORUM, THUROVIA TRIFLORA, AND (MOSTLY ALONG MARGINS) HELENIUM AMARUM VAR. AMARUM, IVA ANNUA, IVA ANGUSTIFOLIA

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Citation:

BARROWS, J. 1994. U.S. ARMY CORPS OF ENGINEERS 1994 HYMENOXYS TEXANA SURVEY, ADDICKS RESERVOIR TEXAS NATIONAL GUARD LEASE. ENVIRONMENTAL RESOURCES BRANCH, U.S. ARMY CORPS OF ENGINEERS, GALVESTON DISTRICT.

CARR, W.R. 1994. FIELD SURVEY TO BARKER DAM DROP ZONE (TEXAS NATIONAL GUARD) OF 27 SEPTEMBER 1994.

Specimen:

Element Occurrence Record

Scientific Name: Liatris bracteata **Occurrence #:** 23 **Eo Id:** 6508
Common Name: coastal gay-feather **Track Status:** Track all extant and selected historical EOs
Identification Confirmed: Y - Yes **TX Protection Status:**
Global Rank: G2G3 **State Rank:** S2S3 **Federal Status:**

Location Information:

Directions

WEST HOUSTON, CORNER OF SOMMERMEYER AND WINDFERN, BETWEEN ROAD AND RAILROAD TRACKS IN UNMOWED HERBACEOUS AREA IN FULL SUN

Survey Information:

First Observation: 1978 **Survey Date:** **Last Observation:** 1978-10-08
Eo Type: **Eo Rank:** **Eo Rank Date:**

Observed Area:

Comments:

General Description: HABITAT NOT DESCRIBED IN DETAIL ON SPECIMEN LABEL

Comments:

Protection Comments:

Management Comments:

Data:

EO Data:

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Citation:

Specimen:

Robert A. Vines Environmental Science Center Herbarium (Spring Branch Science Center), Houston. 1978. C.D. Peterson #166, 186, Specimen # none SBSC. 8 October 1978.

Element Occurrence Record

Scientific Name: Lithobates areolatus areolatus

Occurrence #: 3

Eo Id: 1329

Common Name: southern crawfish frog

Track Status: Track all extant and selected historical EOs

Identification Confirmed: Y - Yes

TX Protection Status:

Global Rank: G4T4

State Rank: S3

Federal Status:

Location Information:

Directions

12 miles NW of Houston. These directions are generalized as this EO consists of multiple source features.

Survey Information:

First Observation: 1952-02-01

Survey Date: 1952-02-01

Last Observation: 1952-02-01

Eo Type:

Eo Rank: H

Eo Rank Date: 1952-02-01

Observed Area:

Comments:

General

Description:

Comments:

Protection

Comments:

Management

Comments:

Data:

EO Data: 1952: A specimen was collected. 1 Feb 1952: Five specimens were collected.

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Citation:

Hibbitts, Toby, and Daniel Saenz. 2013. Report for TPWD; Status and breeding biology of the crawfish frog (Lithobates areolatus). Received 1 November 2013. 13 pp.

Specimen:

Element Occurrence Record

Biodiversity Research and Teaching Collections, Texas A&M University, College Station, TX; Cooper, E. H. (#EHC121), Catalog # 9067, 1 Feb 1952, BRTC.

Biodiversity Research and Teaching Collections, Texas A&M University, College Station, TX; Cooper, E. H. (#EHC64), Catalog # 9066, 1 Feb 1952, BRTC.

Biodiversity Research and Teaching Collections, Texas A&M University, College Station, TX; Cooper, E. H. (#EHC65), Catalog # 9068, 1 Feb 1952, BRTC.

Biodiversity Research and Teaching Collections, Texas A&M University, College Station, TX; Grelen, T. D. (#TDG112), Catalog # 9069, 1 Feb 1952, BRTC.

Biodiversity Research and Teaching Collections, Texas A&M University, College Station, TX; Grelen, T. D. (#TDG113), Catalog # 9070, 1 Feb 1952, BRTC.

Museum of Zoology, University of Michigan, Ann Arbor, MI; Jesse Haver (#unknown), Catalog # 105233, 1952, UMMZ.

Element Occurrence Record

Scientific Name: Rayjacksonia aurea **Occurrence #:** 18 **Eo Id:** 3071
Common Name: Houston daisy **Track Status:** Track all extant and selected historical EOs
Identification Confirmed: Y - Yes **TX Protection Status:**
Global Rank: G2 **State Rank:** S1 **Federal Status:**

Location Information:

Directions

1.3 MILES SOUTH OF HWY 290 (IN NORTHWEST HOUSTON) ON GESSNER ROAD;0.5 MILE WEST ON TANNER ROAD;0.2 MILE SOUTH ON CLARA TO HOUSTON COMMUNITY COLLEGE; IN FIELD BEHIND (EAST OF) BLDGS.

Survey Information:

First Observation: 1985-10-23 **Survey Date:** 1985-10-23 **Last Observation:** 1999-11
Eo Type: **Eo Rank:** B **Eo Rank Date:** 1985-10-23
Observed Area: 10.00

Comments:

General Description: LEVEL, WET, GRASSY FIELD; SEASONALLY INUNDATED (WET AT THE SURVEY DATE); SANDY SOIL WITH CLAY POCKETS; FORMER FOOTBALL STADIUM AND FIELD; IN 1997, IN ONE "OPEN" PATCH WITH LOTS OF HELENIUM INTERSPERSED

Comments: SAMPLING METHODS - A 0.5 X 0.5 METER QUADRAT SUBDIVIDED INTO 0.01 SQUARE METER CELLS WAS USED TO DETERMINE AN INDEX CANOPY COVER BASED UPON TOTAL NUMBER OF 0.01 SQUARE METER CELLS OCCUPIED

Protection Comments:

Management Comments: MOWED TWICE PER YEAR

Data:

EO Data: IN 1985, IN FLOWER; APPROXIMATELY 200 MATURE, HEALTHY INDIVIDUALS; IN VERY SLIGHT DEPRESSIONS; IN 1997, IN ONE "OPEN" PATCH; IN 1998, 2000-2002 SITE NOT SURVEYED; IN NOVEMBER 1999, 2.25 SQUARE METERS SURVEYED WITH 7 OCCUPIED QUADRATS WITH 59 OCCUPIED CELLS

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Element Occurrence Record

Citation:

POOLE, J. M. 1985. FIELD SURVEY TO HOUSTON COMMUNITY COLLEGE OF OCTOBER 23, 1985.

BROWN, LARRY E. HOUSTON COMMUNITY COLLEGE (PROFESSOR). 726 HORNCastle, CHANNELVIEW, TEXAS. 77530. (H) 713/452-1105

LINAM, LEE ANN. NO DATE. WILDLIFE DIVERSITY BRANCH, TEXAS PARKS AND WILDLIFE DEPARTMENT, 200 HOOTS HOLLER, WIMBERLEY, TX 78676; PHONE (512) 847-9480; leeann.linam@tpwd.state.tx.us

Linam, L. A. 2002. Final Report. Project WER 09(72): Implementation of candidate species monitoring. Grant No. E-9 Endangered and Threatened Species Conservation. Submitted to Texas Parks and Wildlife Department, Austin, TX. 1 November 2002.

Specimen:

Element Occurrence Record

Scientific Name: Rayjacksonia aurea

Occurrence #: 22

Eo Id: 8222

Common Name: Houston daisy

Track Status: Track all extant and selected historical EOs

Identification Confirmed: Y - Yes

TX Protection Status:

Global Rank: G2

State Rank: S1

Federal Status:

Location Information:

Directions

CA. 50-2000 FEET NORTH OF CLAY ROAD, 1.5-1.9 ROAD MILES EAST OF STATE ROUTE 6, EAST OF LANGHAM CREEK, WITHIN ADDICKS RESERVOIR, ADDICKS TRAINING AREA (TEXAS NATIONAL GUARD)

Survey Information:

First Observation: 1994-09-27

Survey Date: 1994-09-26

Last Observation: 2001

Eo Type:

Eo Rank:

Eo Rank Date:

Observed Area:

Comments:

General Description: SEVERAL SMALL BUT CONSPICUOUS, DISCRETE "BARE" (SPARSELY VEGETATED) AREAS WITHIN LARGER INTERCONNECTED GRASSLAND OPENINGS RIMMED BY WATER OAK-YAUPON WOODLANDS; GRASSLANDS WITH DENSE COVER OF SPARTINA SPARTINAE, MUHLENBERGIA CAPILLARIS, IVA ANGUSTIFOLIA, IVA ANNUA, ETC.; "BARE AREAS" WITH SOMEWHAT SALINE, FINE-TEXTURED SOILS THAT IN THIS SEASON ARE ROCK-HARD ON SURFACE AND CONSIDERABLY DRIER THAN ADJACENT SOILS

Comments: THIS PORTION OF ADDICKS RESERVOIR IS NOT CURRENTLY GRAZED (SEPTEMBER 1994); GEOLOGY IS LISSIE FORMATION CONSISTING OF CLAY, SILT, SAND, AND MINOR AMOUNTS OF GRAVEL; PORTIONS OF SURFACE ARE DOTTED WITH ROUNDED SHALLOW DEPRESSIONS AND SLIGHTLY ELEVATED PIMPLE MOUNDS, HOWEVER, PIMPLE MOUNDS ARE NOT VERY CONSPICUOUS HERE; SOIL ANALYSIS AT ONE SITE REVEALED A HIGH CONCENTRATION OF SALTS IN THE LIGHT SANDY SOIL OF THE BARE SPOTS AND LOWER LEVELS OF THE SAME SALTS IN DARKER SOILS FROM WHICH HYMENOXYS TEXANA WAS ABSENT, PRESUMABLE THESE NARTA SOILS ARE THE SOILS FOUND ON LOWER SLOPING PORTIONS OF MIMA OR PIMPLE MOUNDS AMOUNTS OF GRAVEL; SOIL ANALYSIS AT ONE SITE REVEALED A HIGH CONCENTRATION OF SALTS IN THE LIGHT SANDY SOIL OF THE BARE SPOTS AND LOWER LEVELS OF THE SAME SALTS IN DARKER SOILS FROM WHICH HYMENOXYS TEXANA WAS ABSENT, PRESUMABLE THESE NARTA SOILS ARE THE SOILS FOUND ON LOWER SLOPING PORTIONS OF MIMA OR PIMPLE MOUNDS; QUANTITATIVE SAMPLING METHODS ENTAIL USING A 0.5 X 0.5 METER QUADRAT SUBDIVIDED INTO 0.01 SQUARE METER CELLS, AN INDEX OF CANOPY COVER IS DETERMINED BASED ON TOTAL NUMBER OF 0.01 SQUARE METER CELLS OCCUPIED

Protection

Comments:

Management

Comments:

Data:

Element Occurrence Record

EO Data: IN 1994, WITH HYMENOXYS TEXANA, LIATRIS BRACTEATA, AND THUROVIA TRIFLORA; CA. 300 PLANTS ASSOCIATED WITH HYMENOXYS TEXANA AND CA. 20 PLANTS IN SMALL OPENING NOT KNOWN TO SUPPORT HYMENOXYS TEXANA; JUST BEGINNING TO FLOWER ON 26-27 SEPTEMBER 1994; ASSOCIATES INCLUDE (IN BARE AREAS) GOSSYPIANTHUS LANUGINOSUS, OPUNTIA SP., PORTULACA PILOSA, SIDA CILIARIS, SPOROBOLUS PYRAMIDATUS, TALINUM PARVIFLORUM, THUROVIA TRIFLORA, AND (MOSTLY ALONG MARGINS) HELENIUM AMARUM VAR. AMARUM, IVA ANNUA, IVA ANGUSTIFOLIA, LIATRIS BRACTEATA; IN 1997 SITE NOT SURVEYED; IN 1998, 10 NOVEMBER 1999, AND 2001 PRESENCE CONFIRMED; 3 NOVEMBER 2000, 129.5 SQUARE METERS SURVEYED WITH 234 OCCUPIED QUADRATS WITH 2533 OCCUPIED CELLS; IN 2002 ACCESS TO ADDICKS RESERVOIR WAS NOT ALLOWED DUE TO HOUSTON AREA RECEIVING 12 INCHES OF RAIN

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>
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Reference:

Citation:

Linam, L. A. 2002. Final Report. Project WER 09(72): Implementation of candidate species monitoring. Grant No. E-9 Endangered and Threatened Species Conservation. Submitted to Texas Parks and Wildlife Department, Austin, TX. 1 November 2002.

BARROWS, J. 1994. U.S. ARMY CORPS OF ENGINEERS 1994 HYMENOXYS TEXANA SURVEY, ADDICKS RESERVOIR TEXAS NATIONAL GUARD LEASE. ENVIRONMENTAL RESOURCES BRANCH, U.S. ARMY CORPS OF ENGINEERS, GALVESTON DISTRICT.

CARR, W.R. 1994. FIELD SURVEY TO BARKER DAM DROP ZONE (TEXAS NATIONAL GUARD) OF 27 SEPTEMBER 1994.

Specimen:

UNIVERSITY OF TEXAS HERBARIUM. 1994. W.R. CARR #14192.

Element Occurrence Record

Scientific Name: Rayjacksonia aurea

Occurrence #: 23

Eo Id: 2226

Common Name: Houston daisy

Track Status: Track all extant and selected historical EOs

Identification Confirmed: Y - Yes

TX Protection Status:

Global Rank: G2

State Rank: S1

Federal Status:

Location Information:

Directions

ADDICKS RESERVOIR, CA. 500-1000 FEET NORTH OF CLAY ROAD, 1.9-2.0 ROAD MILES EAST OF STATE ROUTE 6, EAST OF LANGHAM CREEK

Survey Information:

First Observation: 1994-09-27

Survey Date: 1994-09-27

Last Observation: 2001

Eo Type:

Eo Rank:

Eo Rank Date:

Observed Area:

Comments:

General Description: IN AND ALONG MARGIN OF "BARE" (SPARSELY VEGETATED) AREAS IN COASTAL PRAIRIE GRASSLAND PROBABLY DOMINATED BY SPARTINA SPARTINAE, MUHLENBERGIA CAPILLARIS, ETC., BUT FAIRLY HEAVILY GRAZED TO THE POINT THAT PASTURE WEEDS SUCH AS CROTON CAPITATUS, HELENIUM AMARUM VAR. AMARUM, IVA ANGUSTIFOLIA, AND IVA ANNUA ARE ABUNDANT; WOODY PLANT INVASION IS SIGNIFICANT; ILEX VOMITORIA IS RATHER COMMON; ONE LOCATION IS AT BASE OF A 2-FOOT-HIGH MIMA MOUND, ANOTHER IS A SLICK SPOT ON MORE LEVEL TERRAIN

Comments: THIS PORTION OF ADDICKS RESERVOIR IS CURRENTLY (SEPT. 1994) GRAZED BY CATTLE; GEOLOGY IS LISSIE FORMATION CONSISTING OF CLAY, SILT, SAND, AND MINOR AMOUNTS OF GRAVEL; PORTIONS OF SURFACE ARE DOTTED WITH ROUNDED SHALLOW DEPRESSIONS AND SLIGHTLY ELEVATED PIMPLE MOUNDS, HOWEVER, PIMPLE MOUNDS ARE NOT VERY CONSPICUOUS HERE; SOIL ANALYSIS AT ONE SITE REVEALED A HIGH CONCENTRATION OF SALTS IN THE LIGHT SANDY SOIL OF THE BARE SPOTS AND LOWER LEVELS OF THE SAME SALTS IN DARKER SOILS FROM WHICH HYMENOXYS TEXANA WAS ABSENT, PRESUMABLE THESE NARTA SOILS ARE THE SOILS FOUND ON LOWER SLOPING PORTIONS OF MIMA OR PIMPLE MOUNDS AMOUNTS OF GRAVEL; SOIL ANALYSIS AT ONE SITE REVEALED A HIGH CONCENTRATION OF SALTS IN THE LIGHT SANDY SOIL OF THE BARE SPOTS AND LOWER LEVELS OF THE SAME SALTS IN DARKER SOILS FROM WHICH HYMENOXYS TEXANA WAS ABSENT, PRESUMABLE THESE NARTA SOILS ARE THE SOILS FOUND ON LOWER SLOPING PORTIONS OF MIMA OR PIMPLE MOUNDS; QUANTITATIVE SAMPLING METHODS ENTAIL USING A 0.5 X 0.5 METER QUADRAT SUBDIVIDED INTO 0.01 SQUARE METER CELLS, AN INDEX CANOPY COVER IS DETERMINED BASED ON TOTAL NUMBER OF 0.01 SQUARE METER CELLS OCCUPIED

Protection

Comments:

Management

Comments:

Data:

Element Occurrence Record

EO Data: IN 1994, WITH HYMENOXYS TEXANA AND THUROVIA TRIFLORA; 50-100 PLANTS; ASSOCIATES INCLUDE (IN BARE AREAS) GOSSYPIANTHUS LANUGINOSUS, OPUNTIA SP., PORTULACA PILOSA, SIDA CILIARIS, SPOROBOLUS PYRAMIDATUS, TALINUM PARVIFLORUM, THUROVIA TRIFLORA, AND (MOSTLY ALONG MARGINS) HELENIUM AMARUM VAR. AMARUM, IVA ANNUA, IVA ANGUSTIFOLIA; IN 1997, SITE NOT SURVEYED; IN 1998 PRESENCE CONFIRMED; 10 NOVEMBER 1999, 17.75 SQUARE METERS SURVEYED WITH 40 OCCUPIED QUADRATS WITH 309 OCCUPIED CELLS; 21 OCTOBER 2000, 33 SQUARE METERS SURVEYED WITH 43 OCCUPIED QUADRATS WITH 124 OCCUPIED CELLS; IN 2001, PRESENCE CONFIRMED; IN 2002, ACCESS TO ADDICKS RESERVOIR WAS NOT ALLOWED DUE TO THE HOUSTON AREA RECEIVING 12 INCHES OF RAIN

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Citation:

Linam, L. A. 2002. Final Report. Project WER 09(72): Implementation of candidate species monitoring. Grant No. E-9 Endangered and Threatened Species Conservation. Submitted to Texas Parks and Wildlife Department, Austin, TX. 1 November 2002.

BARROWS, J. 1994. U.S. ARMY CORPS OF ENGINEERS 1994 HYMENOXYS TEXANA SURVEY, ADDICKS RESERVOIR TEXAS NATIONAL GUARD LEASE. ENVIRONMENTAL RESOURCES BRANCH, U.S. ARMY CORPS OF ENGINEERS, GALVESTON DISTRICT.

CARR, W.R. 1994. FIELD SURVEY TO BARKER DAM DROP ZONE (TEXAS NATIONAL GUARD) OF 27 SEPTEMBER 1994.

Specimen:

Element Occurrence Record

Scientific Name: Sporobolus tharpaii

Occurrence #: 8

Eo Id: 10084

Common Name: Tharp's dropseed

Track Status: Track all extant and selected historical EOs

Identification Confirmed: Y - Yes

TX Protection Status:

Global Rank: G3

State Rank: S3

Federal Status:

Location Information:

Directions

Along Gessner Road ca. 100 yards N of intersection with Tanner Road at NW edge of Houston.

Survey Information:

First Observation:

Survey Date:

Last Observation: 1986-09-27

Eo Type:

Eo Rank:

Eo Rank Date:

Observed Area:

Comments:

General Description: In a bare spot.

Comments: Complete specimen citation: A single large plant with many flowering stems in a bare spot along Gessner Road ca. 100 yards N of intersection with Tanner Road at NW edge of Houston; unusual specimen in that the spikelets are too small for tharpaii and too large for wrightii; 27 Sep 1986, L. E. Brown 10706 (TEX-LL).

Protection

Comments:

Management

Comments:

Data:

EO Data: 1986-09-27: A single large plant with many flowering stems. On label, Brown noted: "unusual specimen in that the spikelets are too small for [S.] tharpaii and too large for [S.] wrightii." Brown apparently eventually decided to call it S. tharpaii; the specimen was annotated as such by S. L. Hatch, July 1993.

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

Reference:

Citation:

Brown, L. E. (10706). 1986. Specimen # none TEX-LL.

Specimen:

Brown, L. E. (10706). 1986. Specimen # none TEX-LL. (S86BROTXTXUS)

1/22/2020

Element Occurrence Record

Element Occurrence Record

Scientific Name: Thurovia triflora **Occurrence #:** 16 **Eo Id:** 6498
Common Name: threeflower broomweed **Track Status:** Track all extant and selected historical EOs
Identification Confirmed: Y - Yes **TX Protection Status:**
Global Rank: G2G3 **State Rank:** S2S3 **Federal Status:**

Location Information:

Directions

ADDICKS TRAINING AREA (TEXAS NATIONAL GUARD); CA. 50-2000 FEET NORTH OF CLAY ROAD, 1.5-1.9 ROAD MILES EAST OF STATE ROUTE 6, EAST OF LANGHAM CREEK, WITHIN ADDICKS RESERVOIR

Survey Information:

First Observation: **Survey Date:** 1994-09-26 **Last Observation:** 1994-09-27
Eo Type: **Eo Rank:** **Eo Rank Date:**
Observed Area:

Comments:

General Description: STRICTLY WITHIN SMALL BUT CONSPICUOUS, DISCRETE "BARE" (SPARSELY VEGETATED) AREAS WITHIN LARGER INTERCONNECTED GRASSLAND OPENINGS RIMMED BY WATER OAK-YAUPON WOODLANDS; GRASSLANDS WITH DENSE COVER OF SPARTINA SPARTINAE, MUHLENBERGIA CAPILLARIS, IVA ANGUSTIFOLIA, IVA ANNUA, ETC.; "BARE AREAS" WITH SOMEWHAT SALINE, FINE-TEXTURED SOILS THAT IN THIS SEASON ARE ROCK-HARD ON SURFACE AND CONSIDERABLY DRIER THAN ADJACENT SOILS

Comments: GEOLOGY IS LISSIE FORMATION CONSISTING OF CLAY, SILT, SAND, AND MINOR AMOUNTS OF GRAVEL; PORTIONS OF SURFACE ARE DOTTED WITH ROUNDED SHALLOW DEPRESSIONS AND SLIGHTLY ELEVATED PIMPLE MOUNDS, HOWEVER, PIMPLE MOUNDS ARE NOT VERY CONSPICUOUS HERE; SOIL ANALYSIS AT ONE SITE REVEALED A HIGH CONCENTRATION OF SALTS IN THE LIGHT SANDY SOIL OF THE BARE SPOTS AND LOWER LEVELS OF THE SAME SALTS IN DARKER SOILS FROM WHICH HYMENOXYS TEXANA WAS ABSENT, PRESUMABLE THESE NARTA SOILS ARE THE SOILS FOUND ON LOWER SLOPING PORTIONS OF MIMA OR PIMPLE MOUNDS AMOUNTS OF GRAVEL; SOIL ANALYSIS AT ONE SITE REVEALED A HIGH CONCENTRATION OF SALTS IN THE LIGHT SANDY SOIL OF THE BARE SPOTS AND LOWER LEVELS OF THE SAME SALTS IN DARKER SOILS FROM WHICH HYMENOXYS TEXANA WAS ABSENT, PRESUMABLE THESE NARTA SOILS ARE THE SOILS FOUND ON LOWER SLOPING PORTIONS OF MIMA OR PIMPLE MOUNDS

Protection

Comments:

Management

Comments:

Data:

EO Data: WITH HYMENOXYS TEXANA, LIATRIS BRACTEATA, AND MACHAERANTHERA AUREA; PLANTS FREQUENT, BUT ONLY IN BARE SPOTS; IN FLOWER ON 26-27 SEPTEMBER 1994; ASSOCIATES INCLUDE (IN BARE AREAS) GOSSYPIANTHUS LANUGINOSUS, MACHAERANTHERA AUREA, OPUNTIA SP., PORTULACA PILOSA, SIDA CILIARIS, SPOROBOLUS PYRAMIDATUS, TALINUM PARVIFLORUM, AND (MOSTLY ALONG MARGINS) HELENIUM AMARUM VAR. AMARUM, IVA ANNUA, IVA ANGUSTIFOLIA, LIATRIS BRACTEATA

Element Occurrence Record

Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>
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Reference:

Citation:

BARROWS, J. 1994. U.S. ARMY CORPS OF ENGINEERS 1994 HYMENOXYS TEXANA SURVEY, ADDICKS RESERVOIR TEXAS NATIONAL GUARD LEASE. ENVIRONMENTAL RESOURCES BRANCH, U.S. ARMY CORPS OF ENGINEERS, GALVESTON DISTRICT.

CARR, W.R. 1994. FIELD SURVEY TO BARKER DAM DROP ZONE (TEXAS NATIONAL GUARD) OF 27 SEPTEMBER 1994.

Specimen:

Element Occurrence Record

Scientific Name: *Thurovia triflora* **Occurrence #:** 17 **Eo Id:** 217
Common Name: threeflower broomweed **Track Status:** Track all extant and selected historical EOs
Identification Confirmed: Y - Yes **TX Protection Status:**
Global Rank: G2G3 **State Rank:** S2S3 **Federal Status:**

Location Information:

Directions

ADDICKS RESERVOIR; CA. 500-1000 FEET NORTH OF CLAY ROAD, 1.9-2.0 ROAD MILES EAST OF STATE ROUTE 6, EAST OF LANGHAM CREEK

Survey Information:

First Observation: **Survey Date:** 1994-09-27 **Last Observation:** 1994-09-27
Eo Type: **Eo Rank:** **Eo Rank Date:**

Observed Area:

Comments:

General Description: STRICTLY WITHIN "BARE" (SPARSELY VEGETATED) AREAS IN COASTAL PRAIRIE GRASSLAND PROBABLY DOMINATED BY SPARTINA SPARTINAE, MUHLENBERGIA CAPILLARIS, ETC., BUT FAIRLY HEAVILY GRAZED TO THE POINT THAT PASTURE WEEDS SUCH AS CROTON CAPITATUS, HELENIUM AMARUM VAR. AMARUM, IVA ANGUSTIFOLIA, AND IVA ANNUA ARE ABUNDANT; WOODY PLANT INVASION IS SIGNIFICANT, ILEX VOMITORIA IS RATHER COMMON; ONE LOCATION AT BASE OF A 2-FOOT-HIGH MIMA MOUND, ANOTHER IS IN A SLICK SPOT ON MORE LEVEL TERRAIN

Comments: SITE CURRENTLY (SEPT. 1994) GRAZED BY CATTLE; GEOLOGY IS LISSIE FORMATION CONSISTING OF CLAY, SILT, SAND, AND MINOR AMOUNTS OF GRAVEL; PORTIONS OF SURFACE ARE DOTTED WITH ROUNDED SHALLOW DEPRESSIONS AND SLIGHTLY ELEVATED PIMPLE MOUNDS, HOWEVER, PIMPLE MOUNDS ARE NOT VERY CONSPICUOUS HERE; SOIL ANALYSIS AT ONE SITE REVEALED A HIGH CONCENTRATION OF SALTS IN THE LIGHT SANDY SOIL OF THE BARE SPOTS AND LOWER LEVELS OF THE SAME SALTS IN DARKER SOILS FROM WHICH HYMENOXYS TEXANA WAS ABSENT, PRESUMABLE THESE NARTA SOILS ARE THE SOILS FOUND ON LOWER SLOPING PORTIONS OF MIMA OR PIMPLE MOUNDS AMOUNTS OF GRAVEL; SOIL ANALYSIS AT ONE SITE REVEALED A HIGH CONCENTRATION OF SALTS IN THE LIGHT SANDY SOIL OF THE BARE SPOTS AND LOWER LEVELS OF THE SAME SALTS IN DARKER SOILS FROM WHICH HYMENOXYS TEXANA WAS ABSENT, PRESUMABLE THESE NARTA SOILS ARE THE SOILS FOUND ON LOWER SLOPING PORTIONS OF MIMA OR PIMPLE MOUNDS

Protection

Comments:

Management

Comments:

Data:

EO Data: WITH HYMENOXYS TEXANA AND MACHAERANTHERA AUREA; ASSOCIATES INCLUDE (IN BARE AREAS) GOSSYPIANTHUS LANUGINOSUS, MACHAERANTHERA AUREA, OPUNTIA SP., PORTULACA PILOSA, SIDA CILIARIS, SPOROBOLUS PYRAMIDATUS, TALINUM PARVIFLORUM, AND (MOSTLY ALONG MARGINS) HELENIUM AMARUM VAR. AMARUM, IVA ANNUA, IVA ANGUSTIFOLIA

Community Information:

Element Occurrence Record

Scientific Name:

Stratum:

Dominant:

Lifeform:

Composition Note:

Reference:

Citation:

BARROWS, J. 1994. U.S. ARMY CORPS OF ENGINEERS 1994 HYMENOXYS TEXANA SURVEY, ADDICKS RESERVOIR TEXAS NATIONAL GUARD LEASE. ENVIRONMENTAL RESOURCES BRANCH, U.S. ARMY CORPS OF ENGINEERS, GALVESTON DISTRICT.

CARR, W.R. 1994. FIELD SURVEY TO BARKER DAM DROP ZONE (TEXAS NATIONAL GUARD) OF 27 SEPTEMBER 1994.

Specimen:

Appendix IIE-1D
TPWD Correspondence



May 28, 2020

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Carter P. Smith
Executive Director

Ms. Ashley Thompson
Golder Associates, Inc.
14950 Heathrow Forest Parkway, Suite 280
Houston, Texas 77032

RE: Request for Review and Comment- Hawthorn Park Landfill Proposed Expansion; Houston, Harris County, Texas

Dear Ms. Thompson:

Texas Parks and Wildlife Department (TPWD) received the request for review of the proposed project referenced above for rare, threatened and endangered species.

Project Description

USA Waste is proposing expansion of the existing Hawthorn Park Landfill. The expansion includes increasing the permitted area for landfill development to approximately 211 acres by including additional adjacent properties and previously abandoned road rights-of-ways (ROWs). Approximately 96% of the proposed permit area has been previously developed as part of ongoing landfill operations, recycling areas, access roads, and drainage features. The expansion will also include completion of a detention basin located adjacent and east of the property. The detention pond will encompass approximately 45 acres and was approved by the City of Houston and Harris County Flood Control District in 1995. Construction of this detention pond has continued as part of ongoing landfill construction and operations.

TPWD, as the state agency with primary responsibility for protecting the state's fish and wildlife resources and in accordance with the authority granted by Parks and Wildlife Code §12.0011, hereby provides the following recommendations to minimize the adverse impacts to the state's fish and wildlife resources in the construction and operation of the proposed project. Please reference TPWD 43957 in any return correspondence on this project.

Construction Recommendations

General Construction Recommendations

Recommendation: TPWD recommends providing pre-construction training to all construction personnel for the identification and reporting of protected species, as well as describing the relevant rules and regulations that protect wildlife, including the penalties for harassing or harming protected species. This could include

Ms. Ashley Thompson

Page 2

May 28, 2020

preparing a leaflet to be used as a training refresher for construction personnel on the identification and reporting of protected species.

Federal Law: Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) prohibits direct and affirmative purposeful action that reduce migratory birds, their eggs, or their nests, by killing or capturing, to human control, except when specifically authorized by the Department of the Interior. This protection applies to most native bird species, including ground nesting species. The U.S. Fish and Wildlife Service (USFWS) Migratory Bird Office can be contacted at (505) 248-7882 for more information on potential impacts to migratory birds.

Recommendation: TPWD recommends any vegetation clearing be scheduled outside of the general bird nesting season of March 15th to September 15th; however, if clearing must occur during nesting season, nest surveys should be conducted prior to clearing. Nest surveys should be conducted no more than 5 days prior to construction in order to maximize detection of active nests. If nests are observed during surveys, a vegetation buffer area of no less than 150-feet in diameter should remain around the nest until all young have fledged.

Federal Law: Endangered Species Act

Federally-listed animal species and their habitat are protected from take on any property by the Endangered Species Act (ESA). Take of a federally-listed species can be allowed if it is incidental to an otherwise lawful activity and must be permitted in accordance with Section 7 or 10 of the ESA. Any take of a federally-listed species or its habitat without the required take permit (or allowance) from the USFWS is a violation of the ESA.

Recommendation: The USFWS should be contacted for species occurrence data, guidance, permitting, survey protocols, and mitigation for federally listed species.

Recommendation: If federally-listed species are encountered during construction, work should stop immediately. The USFWS – Clear Lake Ecological Services Office should be contacted at (281) 286-8282 regarding compliance with the ESA.

State Law: Parks and Wildlife Code – Chapter 64, Birds

Texas Parks and Wildlife (TPW) Code Section 64.002, regarding protection of nongame birds, provides that, “no person may . . . catch, kill, injure, pursue, or possess . . . a bird that is not a game bird.” TPW Code Section 64.003, regarding destroying nests or eggs, provides that, “[n]o person may destroy or take the nests, eggs, or young and any wild game bird, wild bird, or wild fowl” TPW Code Chapter 64 does not allow for incidental take and, therefore, is more restrictive than the MBTA.

Recommendation: Please review the *Federal Law: Migratory Bird Treaty Act* section above for recommendations as they are also applicable for Chapter 64 of the TPW Code compliance.

Species of Concern/Special Features

In addition to state and federally-protected species, TPWD tracks special features, natural communities, and rare species that are not listed as threatened or endangered but are considered to be SGCN. TPWD actively promotes their conservation and considers it important to evaluate and, if necessary, minimize impacts to rare species and their habitat to reduce the likelihood of endangerment and preclude the need to list. These species and communities are tracked in the TXNDD.

Recommendation: Please review the TPWD county list of rare and protected species for Harris County because species in addition to those discussed in this letter could be present within the project area depending upon habitat availability. Please review the updated county list for this and all other proposed projects moving forward. The USFWS should be contacted for species occurrence data, guidance, permitting, survey protocols, and mitigation for federally-listed species.

Determining the actual presence of a species in a given area depends on many variables including daily and seasonal activity cycles, environmental activity cues, preferred habitat, transiency and population density (both wildlife and human). The absence of a species can be demonstrated only with great difficulty and then only with repeated negative observations, taking into account all the variable factors contributing to the lack of detectable presence. If encountered during construction, measures should be taken to avoid impacting all wildlife, regardless of listing status.

Recommendation: If during construction, the project area is found to contain rare species, natural plant communities, or special features, TPWD recommends that precautions be taken to avoid impacts to them.

Recommendation: Implementation of the *General Construction Recommendations*, discussed above, would serve to minimize risk to many SGCN and other species of wildlife.

Data Reporting and the Texas Natural Diversity Database

TPWD maintains records of occurrence for protected and rare species, or SGCN, within the Texas Natural Diversity Database (TXNDD) and these data are publicly available by request. The TXNDD is intended to assist users in avoiding harm to rare species or significant ecological features. The TXNDD is updated continuously, and relies partially on information submitted by private parties, such as developers or their consultants. Given the small proportion of public versus private land in Texas, the TXNDD does not include a representative inventory of rare resources in the state.

Ms. Ashley Thompson

Page 4

May 28, 2020

Although it is based on the best data available to TPWD regarding rare species, the data from the TXNDD do not provide a definitive statement as to the presence, absence, or condition of special species, natural communities, or other significant features within a project area. Determining the actual presence of a species in a given area depends on many variables including daily and seasonal activity cycles, environmental activity cues, preferred habitat, transiency, and population density (both wildlife and human). The absence of a species can be demonstrated only with great difficulty, and then only with repeated negative observations, taking into account all the variable factors contributing to the lack of detectable presence. Please note that the absence of TXNDD information in an area does not imply that a species is absent from that area. These data are not inclusive and cannot be substituted for field surveys.

Recommendation: To aid in the scientific knowledge of a species' status and current range, TPWD encourages reporting encounters of protected and rare species to the TXNDD according to the data submittal instructions found at the TPWD Texas Natural Diversity Database: [Submit Data](#) webpage.

Thank you for considering project impacts to Texas' fish, wildlife, and plant resources. If you have any questions, please contact me at Rachel.Lange@tpwd.texas.gov or (979)732-4213.

Sincerely,



Rachel Lange
Wildlife Habitat Assessment Program
Wildlife Division

RAL/43957

**APPENDIX IIE-2
U.S. FISH AND WILDLIFE SERVICE (USFWS)
DOCUMENTATION**

Appendix IIE-2A
Request for Review Letter



May 15, 2020

Chuck Ardizzone

Project Leader
Texas Coastal Ecological Services Field Office
Houston Field Office
17629 El Camino Real #211
Houston, TX 77058

Mr. Ardizzone,

The applicant, Golder Associates Inc. (Golder) on behalf of USA Waste of Texas Landfills, Inc (USA Waste) is requesting U.S. Fish and Wildlife Service (USFWS) concurrence on effect determinations for federally listed threatened and endangered (T&E) species associated with the Hawthorn Park Landfill Expansion Project (Project) for compliance with Section 7 of the Endangered Species Act of 1973. The Project is located on an approximate 253-acre tract, north of Tanner Road, west of Gessner Road, and east of the Sam Houston Parkway in Houston, Harris County, Texas. (Please refer to the attached maps in the Federally Listed T&E Species Habitat Assessment Report).

USA Waste is proposing expansion of the existing Hawthorn Park Landfill currently permitted as Texas Commission on Environmental Quality (TCEQ) Municipal Solid Waste (MSW) Permit No. 2185. This report is completed in compliance with applicable TCEQ MSW permitting requirements for Wetlands (30 Texas Administrative Code [TAC] §330.61(m)) and Endangered or Threatened Species (30 TAC §330.61(n)). The Project's expansion includes increasing the permitted area for landfill development to approximately 211 acres by including additional adjacent properties and previously abandoned road rights-of-ways (ROWs). Approximately 96% of the proposed permit area has been previously developed as part of ongoing landfill operations, recycling areas, access roads, and drainage features.

The expansion will also include completion of a detention basin located adjacent and east of the property. The detention pond will encompass approximately 45 acres and was approved by the City of Houston and Harris County Flood Control District in 1995. Construction of this detention pond has continued as part of ongoing landfill construction and operations.

Golder biologists conducted a site assessment for the Project on March 9-12, 2020 to identify the presence of any federally listed T&E species or presence of suitable habitats. The USFWS IPaC database was reviewed and identified five federally listed T&E species as potentially occurring within the Project survey area, no critical habitats for any federally listed species are located within the Project. Golder also reviewed the Project survey area for any species or species habitat, protected under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA).

The Project is surrounded on all sides by commercial and residential developments. The Project's survey area is primarily composed of an existing landfill and there are sections devoted for concrete recycling and organic mulching. The site is heavily disturbed, covered by fill, and contains primarily herbaceous vegetation.

Three of the five species identified on the IPaC are only required for review of wind related projects and therefore, were not assessed during the habitat assessment. These included the least tern (*Sterna antillarum*), piping plover (*Charadrius melodus*), and red knot (*Calidris canutus rufa*). The Project survey area is located far inland from habitat capable of supporting the west Indian manatee (*Trichechus manatus*). Additionally, due to the high modifications to natural habitats and the past and current disturbances associated with the land use of the Project's survey area no suitable habitat for the Texas prairie dawn-flower (*Hymenoxys texana*) exists. Therefore, it is Golder's professional opinion that the Project will have *No Effect* on the five federally listed T&E species including the least tern, piping plover, red knot, west Indian manatee and Texas prairie dawn-flower.

Golder is requesting review by the USFWS with these No Effect determinations, if upon review, you agree please send a response indicating USFWS's approval of their compliance in coordination with the Endangered Species Act. A copy of the Federally Listed Species Habitat Assessment Report has been included for your convenience. Please contact Ashley Thompson at (941) 773-1848 or by email at Ashley_Thompson@Golder.com for any questions or require further information.



Ashley Thompson
Senior Biologist



Jacob Trahan
Project Manager

Attachments: Attachment 1: Federally Listed Species Habitat Assessment Report

Appendix IIE-2B

Federally Listed Species Habitat Assessment Report



REPORT

Federally Listed Species Habitat Assessment Report

Hawthorn Park Landfill Expansion Project

Submitted to:

U.S. Fish and Wildlife Service - Texas Coastal Ecological Services Field Office

Houston Field Office
17629 El Camino Real #211
Houston, TX 77058

Submitted by:

Golder Associates, Inc.

14950 Heathrow Forest Parkway, Suite 280
Houston, Texas 77032

189426901

May 2020

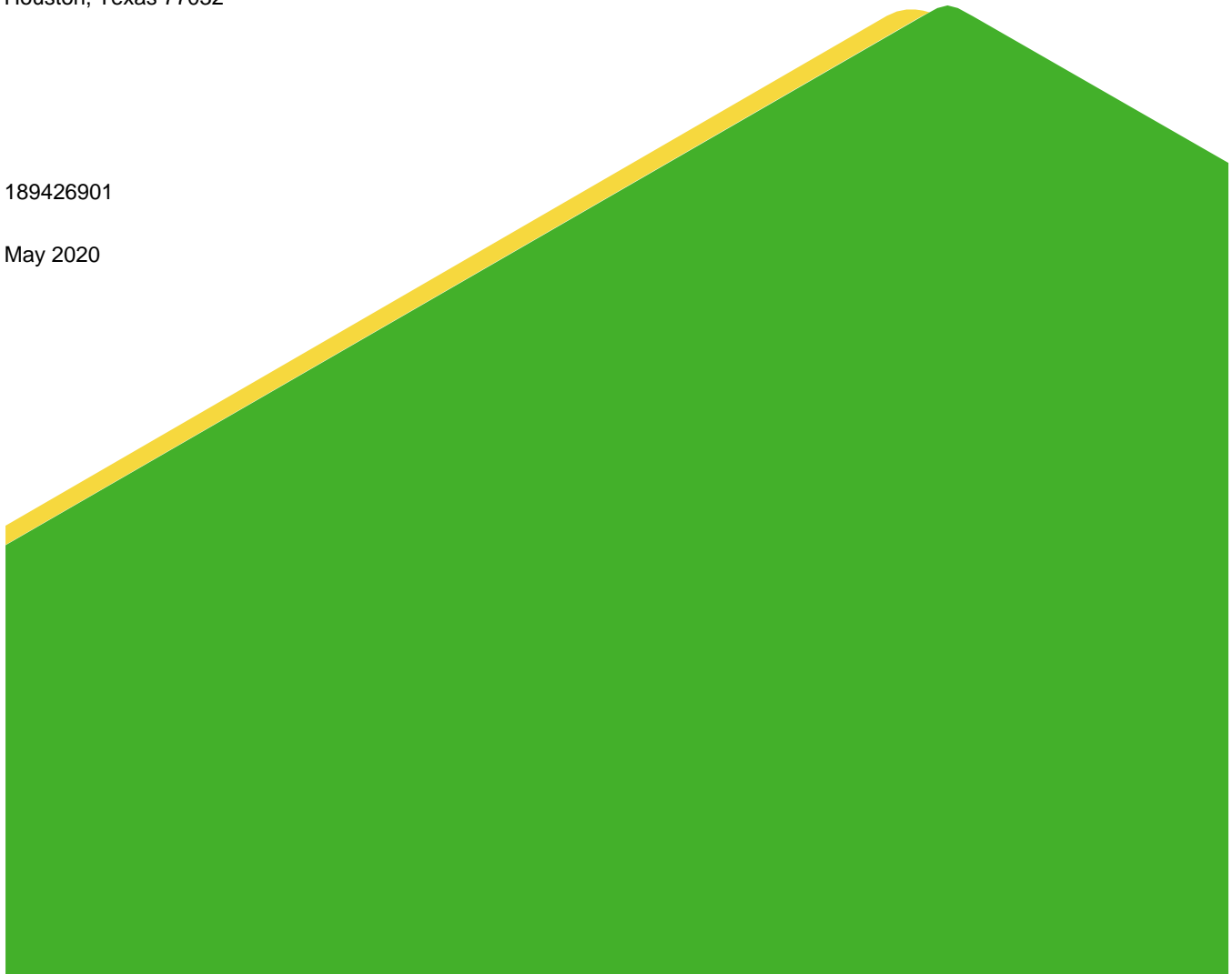


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- Appendix A – Project Maps
- Appendix B – Datasheets
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1.0 INTRODUCTION

Golder Associates (Golder) was retained by USA Waste of Texas Landfills, Inc (USA Waste) to perform a biological resource habitat assessment for federally listed Threatened and Endangered (T&E) species and designated critical habitat for the Hawthorn Park Landfill Expansion Project (Project). USA Waste is proposing expansion of the existing Hawthorn Park Landfill currently permitted as Texas Commission on Environmental Quality (TCEQ) Municipal Solid Waste (MSW) Permit No. 2185 located north of Tanner Road, west of Gessner Road, and east of the Sam Houston Parkway in Houston, Harris County, Texas as shown in Appendix A. This report is completed in compliance with applicable TCEQ MSW permitting requirements for Wetlands (30 Texas Administrative Code [TAC] §330.61(m)) and Endangered or Threatened Species (30 TAC §330.61(n)). The biological resource habitat assessment consisted of the identification of species occurrence, potentially suitable habitat, and any designated critical habitat located within the Project's approximate 253-acre survey area (survey area).

2.0 PROJECT DESCRIPTION

The Project's expansion includes increasing the permitted area for landfill development to approximately 211 acres by including additional adjacent properties and previously abandoned road rights-of-ways (ROWs). Approximately 96% of the proposed permit area has been previously developed as part of ongoing landfill operations, recycling areas, access roads, and drainage features.

The expansion will also include completion of a detention basin located adjacent and east of the property. The detention pond will encompass approximately 45 acres and was approved by the City of Houston and Harris County Flood Control District in 1995. Construction of this detention pond has continued as part of ongoing landfill construction and operations.

3.0 METHODOLOGY

3.1 Background Review

Prior to conducting field surveys, Golder reviewed published information for the survey area to gain an understanding of the existing site conditions. Golder reviewed information from the following sources:

- United States Geologic Survey (USGS) topographic survey maps;
- Historic and current aerial photographs;
- Natural Resources Conservation Service (NRCS) soil survey database; and
- United States Fish and Wildlife Service (USFWS) Information for Planning and Consulting (IPaC) online mapping system.

3.1.1 USGS Topographic Survey Maps and Aerial Photography

Golder reviewed the USGS 7.5 Quadrangle Topographic Map, Hedwig Village, Texas prior to conducting field surveys. The topographic maps identified areas that historically contained ponds and streams throughout the Project survey area. Recent aerial photography reveals a system of ponds and drainage ditches that direct the flow of stormwater from the west to the east across the Project area.

3.1.2 NWI Wetlands

The USFWS NWI data shows potential wetlands and ponds located throughout the Project survey area. These NWI features are included in the Project mapping provided as Appendix A.

3.1.3 Soils

The NRCS soils data lists two soil series within the Project (Appendix A). Table 1 below presents the soil data for the Project survey area.

Table 1: NRCS Soils Located within the Project Survey Area

Soil Series Map Unit	Soil Map Unit Symbol	Slope Percentage	Hydric Rating
Cyfair-Urban Land Complex	CyuA	0 – 1	Not Hydric
Addicks-Urban Land Complex	Ak	0 – 1	Hydric

3.1.4 USFWS IPaC

The USFWS IPaC identified five federally listed T&E species as potentially occurring within the Project survey area, three of which (the least tern, piping plover, and red knot) are only required for review of wind related projects and therefore, are not discussed any further. The IPaC did not identify the presence or any federally designated critical habitats occurring within the Project. Table 2 below lists the remaining two species, along with their general habitat requirements, and habitat presence within the Project survey area.

Table 2: Federally Listed T&E Species Within the Survey Area

Listed Species	Federal Status	Habitat Requirements	Habitat Likely within Project
West Indian Manatee (<i>Trichechus manatus</i>)	Threatened	The west Indian manatee is found in marine areas containing brackish water with underwater seagrass and eelgrass. The Project survey area is located far inland and does not contain any suitable habitat capable of supporting the species.	No
Texas Prairie Dawn-flower (<i>Hymenoxys texana</i>)	Endangered	The Texas prairie dawn is a flowering plant historically found along the coastal prairie region of Texas. Suitable habitat for this species consists of areas containing Gessner and Katy fine sandy loam soils, typically located at the base of pimple mounds. The Project survey area contains clay and sandy clay loam soils and is heavily disturbed due to past land use as	No

Listed Species	Federal Status	Habitat Requirements	Habitat Likely within Project
		landfill among other construction activities. No Gessner or Katy fine sandy loams or pimple mounds are located within the Project survey area. The Project survey area does not contain any suitable habitat capable of supporting the species.	

3.2 Threatened and Endangered Species Surveys

Golder biologists conducted the biological resource survey on March 9-12, 2020 to determine the presence of federally listed T&E species or if suitable habitat for federally listed T&E species is present within the Project survey area. Surveys were conducted along meandering transects and field maps and a sub-meter GPS with the survey area boundaries were used for navigation. Observations were recorded and photographs were taken of general habitat characteristics. Additional focus was given to potential suitable habitat for protected species identified during the desktop review and potential nesting habitat for migratory birds. If any suitable habitat for federally listed species was observed within the survey area, a datapoint was collected using a sub-meter GPS. A photolog with representative site photographs taken during the survey are provided in Appendix C.

3.3 Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act

The survey area was surveyed for species and species habitat, protected under the Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Protection Act (BGEPA). Focus was given to potential suitable habitat identified during the initial background review and potential nesting habitat for MBTA and BGEPA species identified during field surveys. If any suitable habitat was observed within the survey area, a datapoint was collected using a sub-meter GPS and relevant features were documented. A photolog with representative site photographs taken during the survey are in Appendix C.

4.0 FIELD SURVEY RESULTS

Golder conducted the field surveys within the Project survey area, shown in the mapping exhibits provided in Appendix A. Datasheets documenting hydrology, vegetation, and soil conditions at the site are located in Appendix B. Photographs taken at the site depicting conditions documented within the Project survey areas are provided in Appendix C. Land use types within the upland areas consists of industrial areas, pipeline ROWs, forested areas, and existing restored portions of the landfill.

4.1 Vegetation

Characteristic vegetation observed within the Project survey area consisted of bermudagrass (*Cynodon dactylon*), Carolina geranium (*Geranium carolinianum*), huisache (*Vachellia farnesiana*), King Ranch bluestem (*Bothriochloa ischaemum*), sawtooth hackberry (*Rubus argutus*), white mulberry (*Morus alba*), field mustard (*Brassica rapa*), Texas thistle (*Cirsium texanum*), American elm (*Ulmus americana*), water oak (*Quercus nigra*), sugar hackberry (*Celtis laevigata*), Alabama supplejack (*Berchemia scandens*), American sycamore (*Platanus occidentalis*),

Chinese tallow (*Triadica sebifera*), woodrush flatsedge (*Cyperus entrerianus*), spikerush (*Eleocharis montevidensis*), broadleaf cattail (*Typha latifolia*), and black willow (*Salix nigra*).

4.2 Threatened and Endangered Species

The USFWS IPaC identified two federally listed T&E species that could potentially occur within the Project survey area, the west Indian manatee and Texas prairie dawn-flower. Table 3 below lists the species along with their general habitat requirements, and habitat presence within the Project survey area. Golder’s review of the Project survey areas revealed that no suitable habitat is present. Therefore, the Project should result in *No Effect* on the west Indian manatee or Texas prairie dawn-flower.

Table 3: Effects Determination for Federally Listed T&E Species within the Survey Area

Species Name	Federal Status	Habitat Requirements	Effect Determination
West Indian Manatee (<i>Trichechus manatus</i>)	Threatened	The west Indian manatee is found in marine areas containing brackish water with underwater seagrass and eelgrass. The Project survey area is located far inland and does not contain any suitable habitat capable of supporting the species. Due to the lack of suitable habitat within the Project, no impacts to the species are anticipated.	<i>No Effect</i>
Texas Prairie Dawn-flower (<i>Hymenoxys texana</i>)	Endangered	The Texas prairie dawn-flower is found along the coastal prairies of Texas in sparsely vegetated areas containing fine sandy soil, typically at the base of pimple mounds within undisturbed prairies. The Project survey area contains clay and sandy clay soils and is heavily vegetated with very little exposed soils. Additionally, significant ground disturbance has historically occurred throughout the Project survey area. Due to the lack of suitable habitat within the Project survey area, no impacts to the species are anticipated.	<i>No Effect</i>

4.3 MBTA and BGEPA

The survey area contains potentially suitable nesting habitat for multiple MBTA protected species and several unoccupied nests were identified during field surveys.

Golder biologists did not identify any unoccupied raptor nests within the survey area. Some sparse forested areas are located within the survey area; however, mature trees large enough to support eagle nesting were not identified. Therefore, it is not anticipated that the survey area could support nesting eagles.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Golder performed field surveys to identify the presence of federally listed T&E species, any suitable habitat for federally listed T&E species, and avian species protected under the MBTA and BGEPA within the Project survey area on March 9-12, 2020.

The Project is surrounded on all sides by commercial and residential developments. The Project's survey area is primarily composed of an existing landfill and there are sections devoted for concrete recycling and organic mulching. The site is heavily disturbed, covered by fill, and contains primarily herbaceous vegetation. Tree clearing would occur within the sparse forested area located on the north side of the site (Attachment A). The majority of the Project activities would be temporary in nature and would be allowed to revegetate following construction.

The USFWS IPaC identified five federally listed T&E species as potentially occurring within the Project survey area, three of which (the least tern, piping plover, and red knot) are only required for review of wind related projects and therefore, not discussed. Presence and/or habitat of the two remaining species, west Indian manatee and Texas prairie dawn-flower was not observed during the habitat assessment field surveys. Therefore, it is Golder's professional opinion that the Project will have *No Effect* on the five federally listed T&E species including the least tern, piping plover, red knot, west Indian manatee and Texas prairie dawn-flower. No federally designated critical habitat is located within the Project's survey area.

Golder's conclusion reflects our professional opinion based on conditions present at the time of the evaluation. Discrepancies may arise between current and future evaluation of biological resources at the Project due to changes in land use, vegetation, and/or hydrology. No warranties, implied or expressed, are made.

6.0 REFERENCES

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U.S. Department of Agriculture, Natural Resources Conservation Service. 2016. Field Indicators of Hydric Soils in the United States, Version 8.0. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.

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U.S. Fish and Wildlife Service. 2015. Texas Prairie Dawn-Flower – 5 Year Review: Summary and Evaluation. https://www.fws.gov/southwest/es/Documents/R2ES/TexasPrairieDawn_5YrReview_Aug2015.pdf. Accessed March 2020.

U.S. Geological Survey. 7.5 Minute Quadrangle Topographic Maps. 1982. Hedwig Village, Texas.

Signature Page



Jeremy Munz
Project Biologist

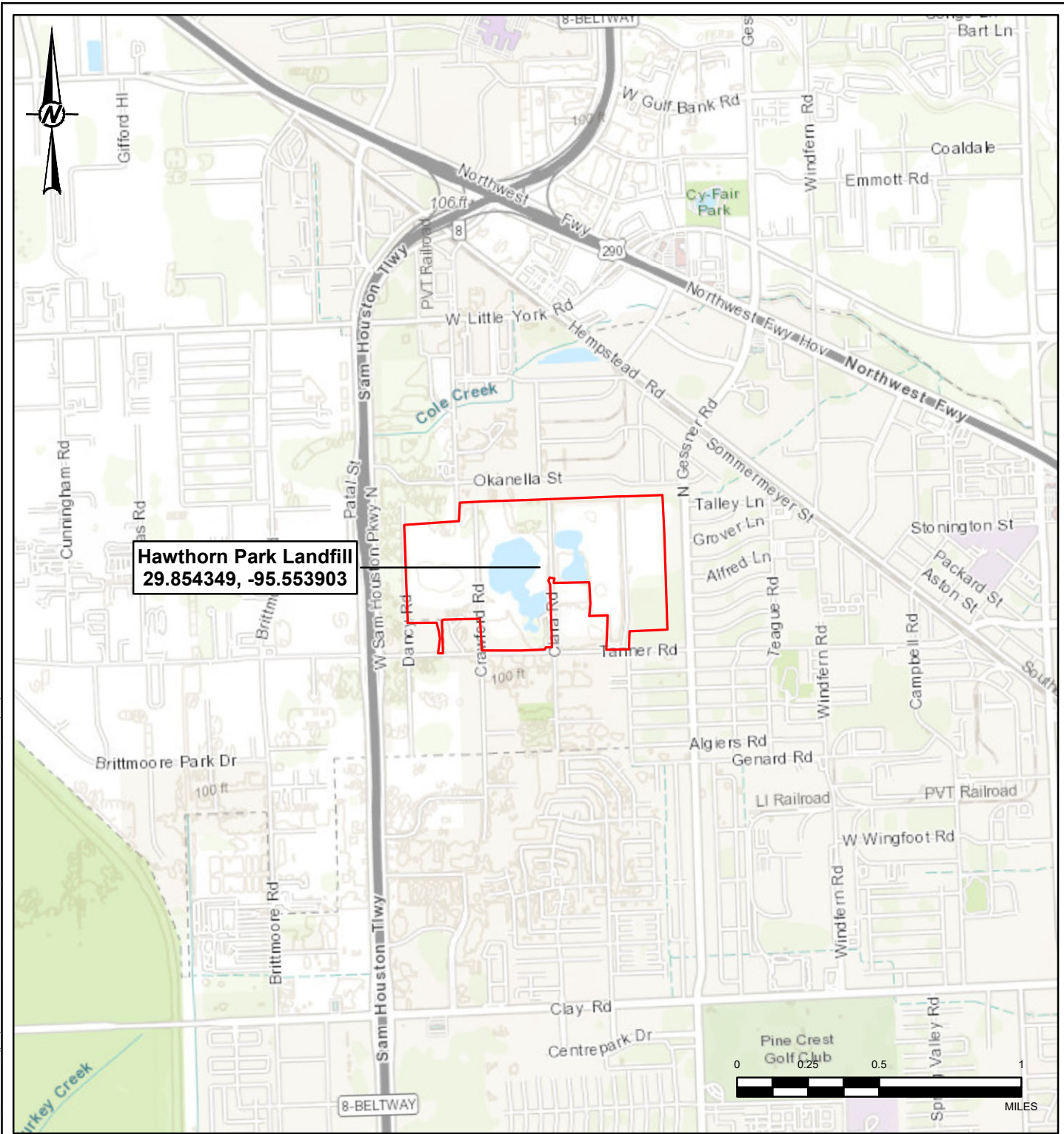


Jacob Trahan
Project Manager



golder.com

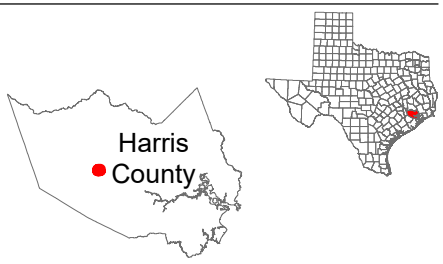
Appendix A



Hawthorn Park Landfill
29.854349, -95.553903

LEGEND

SURVEY AREA



CLIENT
 USA WASTE OF TEXAS LANDFILLS, INC.

PROJECT
 HAWTHORN PARK LANDFILL EXPANSION

TITLE
 USFWS SECTION 7 CONSULTATION
 SITE VICINITY MAP

CONSULTANT	YYYY-MM-DD	2020-03-25
	DESIGNED	GFD
	PREPARED	GFD
	REVIEWED	JM
	APPROVED	JMT

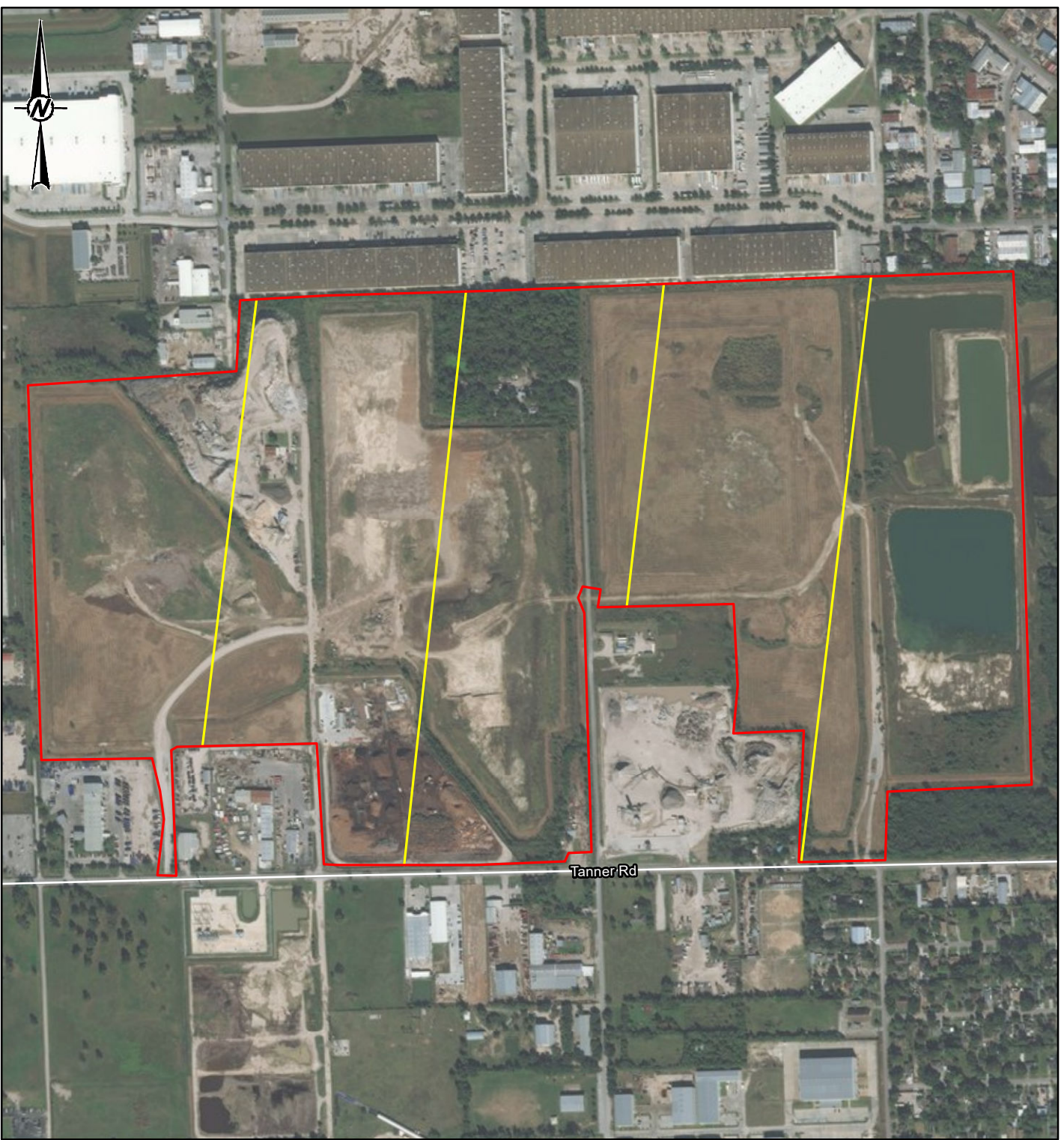
REFERENCE(S)
 1. SURVEY AREA. GOLDER ASSOCIATES, INC., 2020.
 2. SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEODATA, IGN, KADASTER NL, ORDANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY

COORDINATE SYSTEM: NAD 1983 STATEPLANE TEXAS SOUTH CENTRAL FIPS 4204 FEET
PROJECTION: LAMBERT CONFORMAL CONIC
DATUM: NORTH AMERICAN 1983

PROJECT NO.	CONTROL	REV.	FIGURE
189426901	B001	0	1

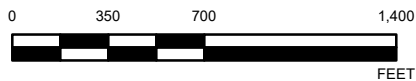
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1 in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSII



LEGEND

- ▭ SURVEY AREA
- TRANSECTS



REFERENCE(S)

1. SURVEY AREA, TRANSECTS, GOLDER ASSOCIATES, INC., 2020.
2. SERVICE LAYER CREDITS: SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRIID, IGN, AND THE GIS USER COMMUNITY

COORDINATE SYSTEM: NAD 1983 STATEPLANE TEXAS SOUTH CENTRAL FIPS 4204 FEET
 PROJECTION: LAMBERT CONFORMAL CONIC
 DATUM: NORTH AMERICAN 1983

CLIENT
 USA WASTE OF TEXAS LANDFILLS, INC.

PROJECT
 HAWTHORN PARK LANDFILL EXPANSION

TITLE
**USFWS SECTION 7 CONSULTATION
 AERIAL MAP**

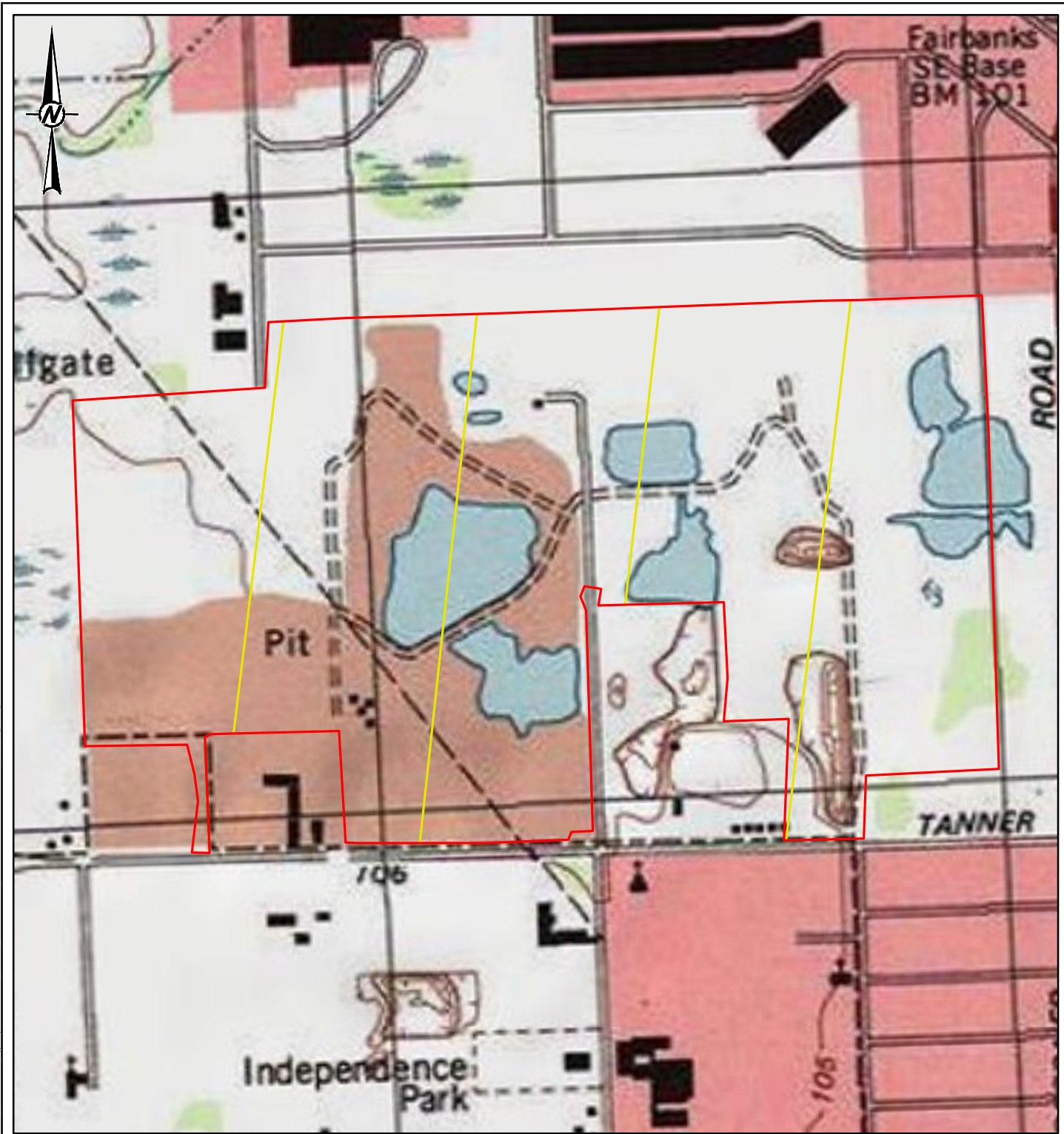
CONSULTANT	YYYY-MM-DD	2020-03-25
DESIGNED	GFD	
PREPARED	GFD	
REVIEWED	JM	
APPROVED	JMT	



PROJECT NO.	CONTROL	REV.	FIGURE
189426901	B002	0	2

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LEGEND

- SURVEY AREA
- TRANSECTS



REFERENCE(S)

1. SURVEY AREA, TRANSECTS. GOLDER ASSOCIATES, INC., 2020.
2. SERVICE LAYER CREDITS: COPYRIGHT © 2013 NATIONAL GEOGRAPHIC SOCIETY, I-CUBED

COORDINATE SYSTEM: NAD 1983 STATEPLANE TEXAS SOUTH CENTRAL FIPS 4204 FEET
 PROJECTION: LAMBERT CONFORMAL CONIC
 DATUM: NORTH AMERICAN 1983

CLIENT

USA WASTE OF TEXAS LANDFILLS, INC.

PROJECT

HAWTHORN PARK LANDFILL EXPANSION

TITLE

**USFWS SECTION 7 CONSULTATION
 USGS TOPOGRAPHIC MAP**

CONSULTANT

YYYY-MM-DD	2020-03-25
DESIGNED	GFD
PREPARED	GFD
REVIEWED	JM
APPROVED	JMT

PROJECT NO.
189426901

CONTROL
B003

REV.
0

FIGURE
3



1 in IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANS/A

PATH: G:\Projects\Waste Management of Texas\Hawthorn Park Landfill\09_PROJECTS\189426901_HawthornPark_Agency\Consultation\02_USFWS_Consultation\02_PRODUCTION\MXD\189426901_B003_Top_Map.mxd

Appendix B

Note: Appendix B of the Federally Listed Species Habitat Assessment Report contains the same Datasheets as the Aquatic Resource Delineation Report Appendix B.

**SEE THIS PERMIT AMENDMENT APPLICATION,
PART II, APPENDIX IID-2C, AQUATIC RESOURCE
DELINEATION REPORT FOR DATASHEETS.**

Appendix C

Note: Appendix C of the Federally Listed Species Habitat Assessment Report contains the same Photologs as the Aquatic Resource Delineation Report Appendix C.

**SEE THIS PERMIT AMENDMENT APPLICATION,
PART II, APPENDIX IID-2C, AQUATIC RESOURCE
DELINEATION REPORT FOR PHOTOLOGS.**

Appendix D



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:

March 16, 2020

Consultation Code: 02ETTX00-2020-SLI-1387

Event Code: 02ETTX00-2020-E-02871

Project Name: Hawthorn Landfill Expansion Project

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/endangered/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/endangered/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: 02ETTX00-2020-SLI-1387

Event Code: 02ETTX00-2020-E-02871

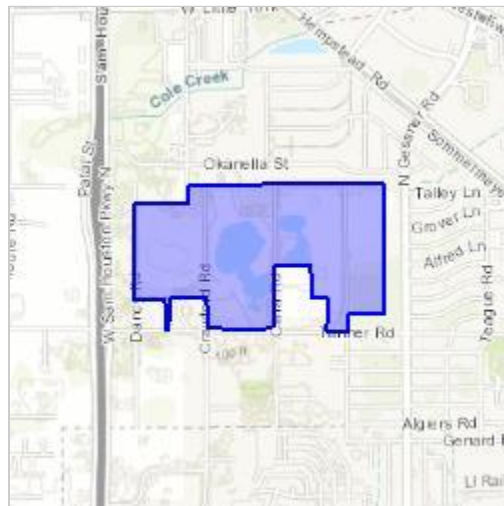
Project Name: Hawthorn Landfill Expansion Project

Project Type: Landfill

Project Description: USA Waste of Texas Landfills, Inc proposes to expand its existing Hawthorn landfill.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/29.8541370881867N95.55407817160888W>



Counties: Harris, TX

Endangered Species Act Species

There is a total of 5 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. Note that 3 of these species should be considered only under certain conditions.

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>	Threatened
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	

Birds

NAME	STATUS
<p>Least Tern <i>Sterna antillarum</i></p> <p>Population: interior pop. No critical habitat has been designated for this species. This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> ▪ Wind related projects within migratory route. <p>Species profile: https://ecos.fws.gov/ecp/species/8505</p>	Endangered
<p>Piping Plover <i>Charadrius melodus</i></p> <p>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. This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> ▪ Wind related projects within migratory route. <p>Species profile: https://ecos.fws.gov/ecp/species/6039</p>	Threatened
<p>Red Knot <i>Calidris canutus rufa</i></p> <p>No critical habitat has been designated for this species. This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> ▪ Wind related projects within migratory route. <p>Species profile: https://ecos.fws.gov/ecp/species/1864</p>	Threatened

Flowering Plants

NAME	STATUS
<p>Texas Prairie Dawn-flower <i>Hymenoxys texana</i></p> <p>No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6471</p>	Endangered

Critical habitats

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

Appendix IIE-2C
USFWS Correspondence

Tat, Emily

From: Bearb, Amber <amber_bearb@fws.gov>
Sent: Friday, July 31, 2020 11:30 AM
To: Thompson, Ashley
Subject: Re: [EXTERNAL] USA Waste- Hawthorn Park Landfill Expansion

EXTERNAL EMAIL

Ashley,

It was nice chatting with you on the phone this morning. You stated that you all are working with the USACE on this project under the existing permit SWG-1992-01983, correct?

Under Section 7 of the Endangered Species Act, the Federal Action agency or its designated non-federal representative, is required to consult with the Service. So in this case, it seems that the USACE is the federal agency (permit is the federal nexus). If that is correct, then they are required to make the determinations for each species under Section 7 and communicate that to our field office. If there is no federal nexus, then consultation under Section 7 is not required.

Thanks and please let me know if you have further questions!

Amber

Amber Bearb
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
Texas Coastal Ecological Services Field Office, Clear Lake
17629 El Camino Ste 211
Houston, Texas 77058
Office: 281-286-8282 ext. 26501
Cell: 346-815-7200
Direct: 281-212-1501

Currently in telework status - the best way to reach me is by the cell number listed above

From: Thompson, Ashley <Ashley_Thompson@golder.com>
Sent: Friday, July 31, 2020 10:15 AM
To: Bearb, Amber <amber_bearb@fws.gov>
Subject: RE: [EXTERNAL] USA Waste- Hawthorn Park Landfill Expansion

NOTE: This email chain appears to contain email from outside Golder

Good Morning Amber,

USA Waste is proposing expansion of the existing Hawthorn Park Landfill currently permitted as Texas Commission on Environmental Quality (TCEQ) Municipal Solid Waste (MSW) Permit No. 2185. The consultation package is completed in compliance with applicable TCEQ MSW permitting requirements for Endangered or Threatened Species (30 TAC §330.61(n)).

Please let me know if you have any more questions.

Thank you!
Ashley

From: Bearb, Amber <amber_bearb@fws.gov>
Sent: Friday, July 31, 2020 8:43 AM
To: Thompson, Ashley <Ashley_Thompson@golder.com>
Subject: Re: [EXTERNAL] USA Waste- Hawthorn Park Landfill Expansion

EXTERNAL EMAIL

Ashley,

Thank you for checking in. Can you please clarify the federal nexus (funding, authority, permitting) for this project?
Amber

Amber Bearb
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
Texas Coastal Ecological Services Field Office, Clear Lake
17629 El Camino Ste 211
Houston, Texas 77058
Office: 281-286-8282 ext. 26501
Cell: 346-815-7200
Direct: 281-212-1501

Currently in telework status - the best way to reach me is by the cell number listed above

From: Thompson, Ashley <Ashley_Thompson@golder.com>
Sent: Friday, July 31, 2020 6:39 AM
To: Ardizzone, Chuck CA <chuck_ardizzone@fws.gov>
Cc: Trahan, Jacob <Jacob_Trahan@golder.com>; Hoth, David <david_hoth@fws.gov>; Bearb, Amber <amber_bearb@fws.gov>
Subject: RE: [EXTERNAL] USA Waste- Hawthorn Park Landfill Expansion

NOTE: This email chain appears to contain email from outside Golder

Good Morning,

Just checking in on the USA Waste Hawthorn Park Project review? Please let me know if you all need anything else from us.

Thank you,

Ashley Thompson
Senior Project Biologist



Golder Associates Inc.
14950 Heathrow Forest Parkway, Suite 280, Houston, Texas, USA 77032
T: +1 281 821-6868 | D: +1 281 821-6868 x24013 | C: +1 941 773-1848 | golder.com
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From: Ardizzone, Chuck CA <chuck_ardizzone@fws.gov>
Sent: Thursday, July 9, 2020 10:10 AM
To: Thompson, Ashley <Ashley_Thompson@golder.com>
Cc: Trahan, Jacob <Jacob_Trahan@golder.com>; Hoth, David <david_hoth@fws.gov>; Bearb, Amber <amber_bearb@fws.gov>
Subject: Re: [EXTERNAL] USA Waste- Hawthorn Park Landfill Expansion

EXTERNAL EMAIL

Ashley,

just wanted to acknowledge this email and let you know I will have staff look at this and get back to as soon as possible. It will probably not be until next week.

Chuck Ardizzone
Project Leader
Texas Coastal Ecological Services
U.S. Fish & Wildlife Service
17629 El Camino Real, Ste 211
Houston, TX 77058
W: (281) 286-8282 Ext 26506
C: (713) 882-1912
F: (281) 488-5882

From: Thompson, Ashley <Ashley_Thompson@golder.com>
Sent: Thursday, July 9, 2020 09:55
To: Ardizzone, Chuck CA <chuck_ardizzone@fws.gov>
Cc: Trahan, Jacob <Jacob_Trahan@golder.com>
Subject: [EXTERNAL] USA Waste- Hawthorn Park Landfill Expansion

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Good Morning Chuck,

As we discussed, attached is a copy of the consultation package that we mailed to the Clear Lake office on May 15, 2020 for the USA Waste of Texas Hawthorn Park Landfill Expansion Project within Harris County. Please let us know if you have any questions.

I appreciate your help.

Thank you,

Ashley Thompson
Senior Project Biologist



Golder Associates Inc.
14950 Heathrow Forest Parkway, Suite 280, Houston, Texas, USA 77032
T: +1 281 821-6868 | D: +1 281 821-6868 x24013 | C: +1 941 773-1848 | golder.com
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