

APPENDIX C – WILDLIFE DOCUMENTS

Items included in Appendix C:

IPaC Report – USFWS

SGCN List – TPWD

Rare Species Listing – TPWD

WHAP Report – USACE

Prairie Assessment Report – USACE

DRAFT



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arlington Ecological Services Field Office

2005 Ne Green Oaks Blvd

Suite 140

Arlington, TX 76006-6247

Phone: (817) 277-1100 Fax: (817) 277-1129

<http://www.fws.gov/southwest/es/arlingtontexas/>

<http://www.fws.gov/southwest/es/EndangeredSpecies/lists/>



In Reply Refer To:

December 28, 2020

Consultation Code: 02ETAR00-2020-SLI-0338

Event Code: 02ETAR00-2021-E-01708

Project Name: Benbrook Lake Masterplan Revision

Subject: Updated 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 enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, which may occur within the boundary of your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under section 7(a)(1) of the Act, Federal agencies are directed to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Under and 7(a)(2) and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether their actions may affect threatened and endangered species and/or designated critical habitat. A Federal action is an activity or program authorized, funded, or carried out, in whole or in part, by a Federal agency (50 CFR 402.02).

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For Federal actions other than major construction activities, the Service suggests that a biological evaluation (similar to a Biological Assessment) be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

After evaluating the potential effects of a proposed action on federally listed species, one of the following determinations should be made by the Federal agency:

1. *No effect* - the appropriate determination when a project, as proposed, is anticipated to have no effects to listed species or critical habitat. A "no effect" determination does not require section 7 consultation and no coordination or contact with the Service is necessary. However, the action agency should maintain a complete record of their evaluation, including the steps leading to the determination of affect, the qualified personnel conducting the evaluation, habitat conditions, site photographs, and any other related information.
2. *May affect, but is not likely to adversely affect* - the appropriate determination when a proposed action's anticipated effects are insignificant, discountable, or completely beneficial. Insignificant effects relate to the size of the impact and should never reach the scale where "take" of a listed species occurs. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not be able to meaningfully measure, detect, or evaluate insignificant effects, or expect discountable effects to occur. This determination requires written concurrence from the Service. A biological evaluation or other supporting information justifying this determination should be submitted with a request for written concurrence.
3. *May affect, is likely to adversely affect* - the appropriate determination if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed action, and the effect is not discountable or insignificant. This determination requires formal section 7 consultation.

The Service recommends that candidate species, proposed species, and proposed critical habitat be addressed should consultation be necessary. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: <http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. 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. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy

guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

For additional information concerning migratory birds and eagle conservation plans, please contact the Service's Migratory Bird Office at 505-248-7882.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

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:

Arlington Ecological Services Field Office

2005 Ne Green Oaks Blvd

Suite 140

Arlington, TX 76006-6247

(817) 277-1100

Project Summary

Consultation Code: 02ETAR00-2020-SLI-0338

Event Code: 02ETAR00-2021-E-01708

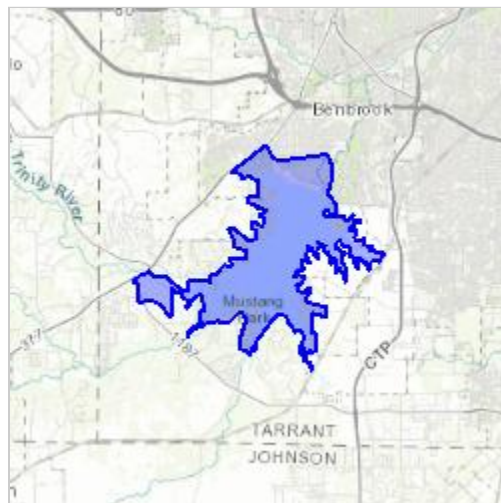
Project Name: Benbrook Lake Masterplan Revision

Project Type: LAND - MANAGEMENT PLANS

Project Description: The Benbrook Master Plan (Tarrant County, Texas) is the long-term strategic land use management document that guides the comprehensive management and development of all the project's recreational, natural, and cultural resources within the federal fee boundary. Under the guidance of ER-1130-2-550 Change 7, the Plan guides the efficient and cost-effective development, management, and use of project lands. It is a dynamic tool that provides for the responsible stewardship and sustainability of the project's resources for the benefit of present and future generations. The Plan works in tandem with the Operational Management Plan (OMP), which is the implementation tool for the resource objectives and development needs identified in the Master Plan. The Master Plan guides and articulates the USACE responsibilities pursuant to federal laws. Efforts are under way to revise the current Lake Master Plan. The Master Plan revision will update land classifications, plan for the modernization of existing parks, and inform the management of wildlife and other resource lands within USACE managed property at Benbrook Lake for the next 25 years

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/32.62580519829734N97.46908154978324W>



Counties: Tarrant, TX

Endangered Species Act Species

There is a total of 4 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 2 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.
-

Birds

NAME	STATUS
Least Tern <i>Sterna antillarum</i> Population: interior pop. No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8505	Endangered
Piping Plover <i>Charadrius melodus</i> Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is final critical habitat for this species. Your location is outside the critical habitat. This species only needs to be considered under the following conditions: <ul style="list-style-type: none">▪ Wind Energy Projects Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot <i>Calidris canutus rufa</i> No critical habitat has been designated for this species. This species only needs to be considered under the following conditions: <ul style="list-style-type: none">▪ Wind Energy Projects Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened
Whooping Crane <i>Grus americana</i> Population: Wherever found, except where listed as an experimental population There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/758	Endangered

Critical habitats

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

Last login December 28, 2021 06:21 AM MST

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

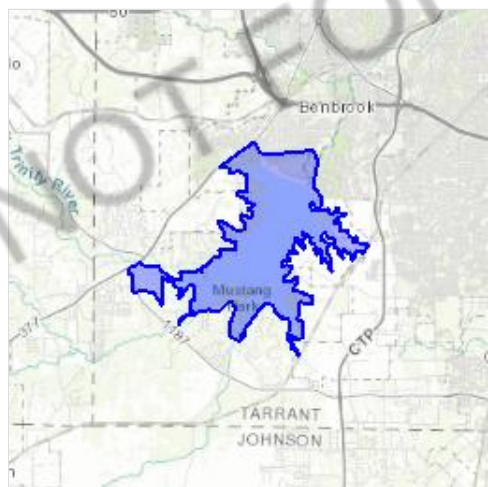
Project information

NAME

Benbrook Lake Masterplan Revision

LOCATION

Tarrant County, Texas



DESCRIPTION

The Benbrook Master Plan (Tarrant County, Texas) is the long-term strategic land use management document that guides the comprehensive management and development of all the project's recreational, natural, and cultural resources within the federal fee boundary. Under the guidance of ER-1130-2-550 Change 7, the Plan guides the efficient and cost-effective development, management, and use of project lands. It is a dynamic tool that provides for the responsible stewardship and sustainability of the project's resources for the benefit of present and future

generations. The Plan works in tandem with the Operational Management Plan (OMP), which is the implementation tool for the resource objectives and development needs identified in the Master Plan. The Master Plan guides and articulates the USACE responsibilities pursuant to federal laws. Efforts are under way to revise the current Lake Master Plan. The Master Plan revision will update land classifications, plan for the modernization of existing parks, and inform the management of wildlife and other resource lands within USACE managed property at Benbrook Lake for the next 25 years

Local office

Arlington Ecological Services Field Office

☎ (817) 277-1100

📠 (817) 277-1129

2005 Ne Green Oaks Blvd
Suite 140
Arlington, TX 76006-6247

<http://www.fws.gov/southwest/es/arlingtontexas/>

<http://www.fws.gov/southwest/es/EndangeredSpecies/lists/>

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.
2. [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.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS
------	--------

Least Tern *Sterna antillarum*

Endangered

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/8505>

Piping Plover *Charadrius melodus*

Threatened

This species only needs to be considered if the following condition applies:

- Wind Energy Projects

There is **final** critical habitat for this species. Your location is outside the critical habitat.

<https://ecos.fws.gov/ecp/species/6039>

Red Knot *Calidris canutus rufa*

Threatened

This species only needs to be considered if the following condition applies:

- Wind Energy Projects

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/1864>

Whooping Crane *Grus americana*

Endangered

There is **final** critical habitat for this species. Your location is outside the critical habitat.

<https://ecos.fws.gov/ecp/species/758>

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

American Golden-plover *Pluvialis dominica*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds elsewhere

Bald Eagle *Haliaeetus leucocephalus*

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1626>

Breeds Sep 1 to Jul 31

Buff-breasted Sandpiper *Calidris subruficollis*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9488>

Harris's Sparrow *Zonotrichia querula*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Lesser Yellowlegs *Tringa flavipes*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9679>

Marbled Godwit *Limosa fedoa*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9481>

Red-headed Woodpecker *Melanerpes erythrocephalus*

Breeds May 10 to Sep 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Semipalmated Sandpiper *Calidris pusilla*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Sprague's Pipit *Anthus spragueii*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/8964>

Willet *Tringa semipalmata*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

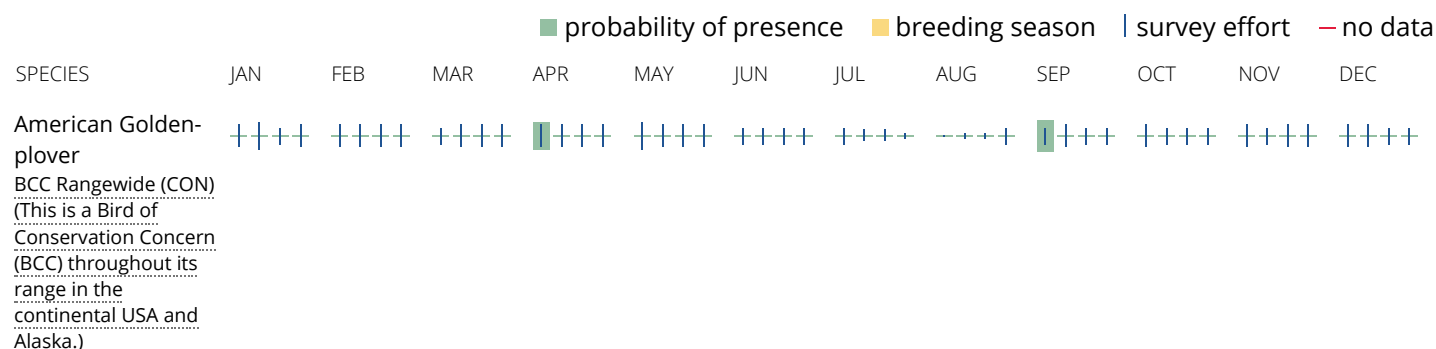
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

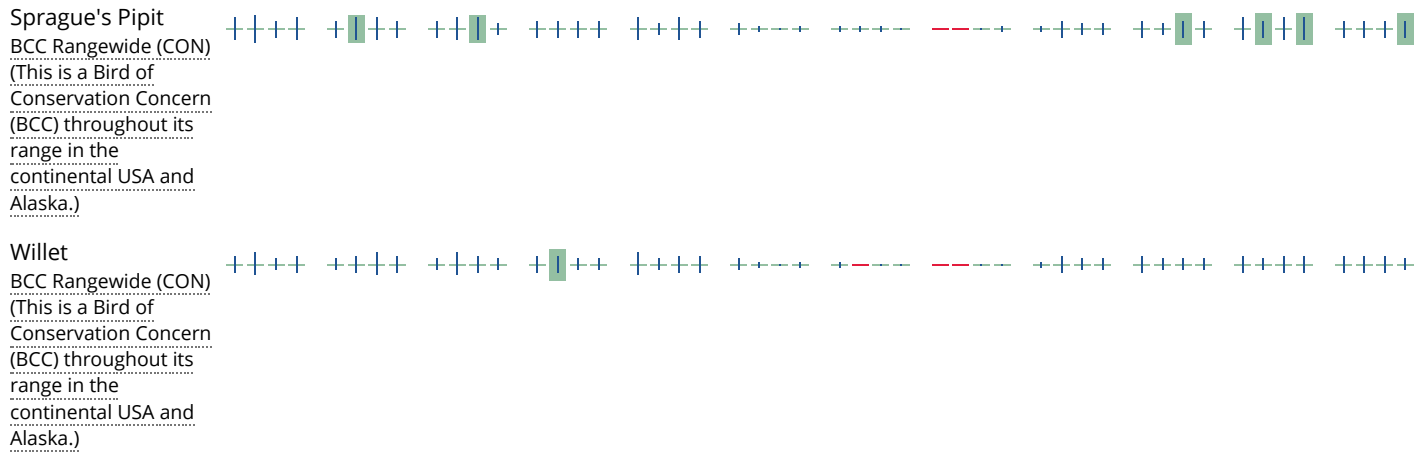
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



FOR CONSULTATION



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) and/or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird

on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review.

Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

Wildlife refuges and fish hatcheries

REFUGE AND FISH HATCHERY INFORMATION IS NOT AVAILABLE AT THIS TIME

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the [NWI map](#) to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the

geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

CROSS TIMBERS SPECIES OF GREATEST CONSERVATION NEED								
Scientific Name	Common Name	Status		Abundance Ranking		General Habitat Type(s) in Texas These are VERY broad habitat types as a starting place State of the practice resources are listed in each taxa line for more detailed information W.B. Davis and D.J. Schmidly. 1997 and 1994. Mammals of Texas (online and in print). Texas Tech University (1997) and Texas Parks and Wildlife Department (1994). http://www.nsrll.ttu.edu/tmot1/Default.htm (accessed 2011)	Other Notes	Endemic in Texas
		Federal	State	Global	State			
MAMMALS								
<i>Conepatus leuconotus</i>	Hog-nosed skunk			G5	S4	Shrubland, Savanna/Open Woodland, Barren/Sparse Vegetation,		N
<i>Dipodomys elator</i>	Texas kangaroo rat		T	G1G2	S2	Shrubland, Agricultural	status in review	Y
<i>Lutra canadensis</i>	River otter			G5	S4	Riparian	Appendix II, CITES	N
<i>Mustela frenata</i>	Long-tailed weasel			G5	S5	Forest, Woodland, Desert Scrub, Shrubland, Savanna/Open Woodland	Statewide	N
<i>Myotis velifer</i>	Cave myotis			G5	S4	Caves/Karst,		N
<i>Neovison vison</i>	Mink			G5	S4	Riparian, Riverine, Lacustrine, Freshwater Wetland		N
<i>Puma concolor</i>	Mountain lion			G5	S2	Forest, Woodland, Desert Scrub, Shrubland, Savanna/Open Woodland, Riparian	Statewide	N
<i>Spilogale putorius</i>	Eastern spotted skunk			G4T	S4	Savanna/Open Woodland, Grassland		N
<i>Sylvilagus aquaticus</i>	Swamp rabbit			G5	S5	Riparian, Freshwater Wetland		N
<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat			G5	S5	Cave/Karst, Artificial Refugia	Statewide	N
<i>Taxidea taxus</i>	American badger			G5	S5	Grassland, Desert scrub, Woodland, Savanna/Open Woodland, Forest		N
BIRDS						The Birds of North America Online (A. Poole, Ed.). 2005 (with current updates by species). Retrieved from The Birds of North America Online database: http://bna.birds.cornell.edu/BNA/ (accessed 2011). Supported by information from the Cornell Lab of Ornithology and the American Ornithologists' Union (http://www.aou.org/).		BIRDS ONLY: instead of endemism these numbers are for taxonomic sorting
<i>Anas acuta</i>	Northern Pintail			G5	S3B,S5N	Lacustrine, freshwater wetland, saltwater wetland, coastal, marine	Winter	2
<i>Colinus virginianus</i>	Northern Bobwhite			G5	S4B	Grassland, Shrubland, Savanna/Open Woodland	deleted for CHIH	4
<i>Tympanuchus cupido</i>	Greater Prairie-Chicken (Interior)			G4	S1B	Grassland	Year-round	6
<i>Meleagris gallopavo</i>	Wild Turkey			G5	S5B	Shrubland, Savanna/Open Woodland, Forest, Riparian, Agricultural	Year-round, added <i>merriami</i> for CHIH	8
<i>Egretta thula</i>	Snowy Egret			G5	S5B	Riparian, Riverine, Lacustrine, Freshwater Wetland, Saltwater Wetland, Estuary, Coastal, Cultural Aquatic	Breeding	12
<i>Egretta caerulea</i>	Little Blue Heron			G5	S5B	Riparian, Riverine, Lacustrine, Freshwater Wetland, Saltwater Wetland, Estuary, Coastal, Cultural Aquatic	Breeding	13
<i>Butorides virescens</i>	Green Heron			G5	S5B	Riparian, Riverine, Lacustrine, Freshwater Wetland, Cultural Aquatic	Breeding	16
<i>Ictinia mississippiensis</i>	Mississippi Kite			G5	S4B	Woodland, Forest, Riparian, Developed:Urban/Suburban/Rural	Breeding	20
<i>Haliaeetus leucocephalus</i>	Bald Eagle			G5	S3B,S3N	Riparian, Lacustrine, Freshwater Wetland, Saltwater Wetland	Year-round, added CRTB	22
<i>Circus cyaneus</i>	Northern Harrier			G5	S2B,S3N	Grassland, Shrubland	Year-round	23
<i>Buteo lineatus</i>	Red-shouldered Hawk			G5	S4B	Woodland, Forest, Riparian, Freshwater Wetland	Year-round	26
<i>Buteo swainsoni</i>	Swainson's Hawk			G5	S4B	Desert Scrub, Grassland, Shrubland	Breeding	28
<i>Pluvialis dominica</i>	American Golden-Plover			G5	S3	Grassland, Freshwater Wetland, Agricultural	Migrant	39
<i>Sternula antillarum</i>	Least Tern	LE*	E*	G4	S3B	Riverine, Lacustrine, Freshwater Wetland, Saltwater Wetland, Estuary, Coastal, Marine, Developed: Industrial	Year-round; subspecies <i>athalassos</i>	54
<i>Athene cunicularia</i>	Burrowing Owl			G4	S3B	Desert Scrub, Grassland, Shrubland, Agricultural, Developed	Year-round	63
<i>Asio flammeus</i>	Short-eared Owl			G5	S4N	Grassland, Shrubland, Agricultural	Winter	65
<i>Caprimulgus carolinensis</i>	Chuck-will's-widow			G5	S3S4B	Woodland, Forest, Riparian	Breeding	66
<i>Melanerpes erythrocephalus</i>	Red-headed Woodpecker			G5	S3B	Savanna/Open Woodland, Woodland, Forest, Riparian, Developed: Urban/Suburban/Rural	Year-round	67
<i>Tyrannus forficatus</i>	Scissor-tailed Flycatcher			G5	S3B	Desert Scrub, Grassland, Shrubland, Agricultural, Developed	Breeding	71
<i>Lanius ludovicianus</i>	Loggerhead Shrike			G4	S4B	Desert Scrub, Grassland, Shrubland, Savanna/Open Woodland, Agricultural, Developed	Year-round	73
<i>Vireo bellii</i>	Bell's Vireo			G5	S3B	Desert scrub, Shrubland, Riparian	Breeding	74
<i>Vireo atricapilla</i>	Black-capped Vireo	LE	E	G3	S2B	Shrubland	Breeding	75
<i>Poecile carolinensis</i>	Carolina Chickadee			G5	S5B	Woodland, Forest, Riparian, Developed: Urban/Suburban/Rural	Year-round	76
<i>Anthus spragueii</i>	Sprague's Pipit	C		G4	S3N	Barren/Sparse Vegetation, Grassland, Shrubland, Agricultural	Winter	80
<i>Dendroica chrysoparia</i> *	Golden-cheeked Warbler	LE	E	G2	S2B	Woodland	Breeding; *taxonomic change likely to <i>Setophaga chrysoparia</i>	83
<i>Aimophila cassinii</i>	Cassin's Sparrow			G5	S4B	Grassland, Shrubland	Breeding	92
<i>Aimophila ruficeps</i>	Rufous-crowned Sparrow			G5	S4B	Grassland	Year-round	95
<i>Spizella pusilla</i>	Field Sparrow			G5	S5B	Grassland, Shrubland, Savanna/Open Woodland	Year-round	96
<i>Ammodramus savannarum</i>	Grasshopper Sparrow			G5	S3B	Grassland, Agricultural	Year-round	97
<i>Chondestes grammacus</i>	Lark Sparrow			G5	S4B	Grassland, Shrubland, Savanna/Open Woodland	Year-round	98
<i>Ammodramus leconteii</i>	Le Conte's Sparrow					Grassland	Winter	101
<i>Zonotrichia querula</i>	Harris's Sparrow			G5	S4	Shrubland, Agricultural	Winter	103
<i>Calcarius mccownii</i>	McCown's Longspur			G4	S4	Grassland, Agricultural	Winter, TBPR (northern), ECPL (northern)	104
<i>Piranga rubra</i>	Summer Tanager			G5	S5B	Savanna/Open Woodland, Woodland, Forest, Riparian, Developed: Urban/Suburban/Rural	Breeding	106
<i>Passerina ciris</i>	Painted Bunting			G5	S4B	Shrubland, Agricultural	Breeding	107
<i>Spiza americana</i>	Dickcissel			G5	S4B	Grassland, Agricultural	Breeding	108
<i>Sturnella magna</i>	Eastern Meadowlark			G5	S5B	Grassland, Shrubland, Savanna/Open Woodland	Year-round; subspecies <i>lilliana</i> added for CHIH	109
<i>Icterus spurius</i>	Orchard Oriole			G5	S4B	Shrubland, Savanna/Open Woodland, Woodland, Riparian	Breeding	111
REPTILES AND AMPHIBIANS						J.E. Werler and J.R. Dixon. 2000. Texas Snakes: Identification, Distribution, and Natural History. University of Texas Press, Austin. 519 pgs. J.R. Dixon. 1987. Amphibians and Reptiles of Texas. Texas A&M University Press, College Station. 434 pp.		
<i>Anaxyrus (Bufo) woodhousii</i>	Woodhouse's toad			G5	SU	woodland, forest, freshwater wetland		N
<i>Apalone mutica</i>	smooth softshell turtle					riparian, riverine, lacustrine, freshwater wetland	added	N
<i>Cheilydra serpentina</i>	Common snapping turtle					riparina, riverine	added	N

Scientific Name	Common Name	Status		Abundance Ranking		General Habitat Type(s) in Texas	Other Notes	Endemic in Texas
		Federal	State	Global	State	These are VERY broad habitat types as a starting place		
						State of the practice resources are listed in each taxa line for more detailed information		
<i>Crotalus atrox</i>	Western diamondback rattlesnake				S4	barren/sparse vegetation, desert scrub, grassland, shrubland, savanna, woodland, caves/karst		N
<i>Crotalus horridus</i>	Timber (Canebrake) Rattlesnake		T	G4	S4	woodland, forest, riparian		N
<i>Eurycea chisolmensis</i>	Salado Springs salamander	C		G1	S1	freshwater wetland (springs)		Y
<i>Eurycea naufragia</i>	Georgetown Salamander	C		G1	S1	caves and karst, freshwater wetland (springs)		Y
<i>Graptemys versa</i>	Texas map turtle			G4	SU	riparian, riverine		Y
<i>Heterodon nasicus</i>	Western hognosed snake					desert scrub, grassland, shrubland	added	N
<i>Macrochelys temminckii</i>	alligator snapping turtle		T	G3G4	S3	riparian, riverine, cultural aquatic	added	N
<i>Nerodia harteri</i>	Brazos Water Snake		T		S1	riparian, riverine, cultural aquatic		Y
<i>Phrynosoma cornutum</i>	Texas horned lizard		T	G4G5	S4	desert scrub, grassland, savanna		N
<i>Pseudacris streckeri</i>	Strecker's Chorus Frog			G5	S3	grassland, savanna, woodland, riparian, cultural aquatic, freshwater wetland		N
<i>Sistrurus catenatus</i>	massasauga					grassland, barren/sparse vegetation, shrubland, coastal,	added	N
<i>Terrapene ornata</i>	Ornate box turtle			G5	S3	grassland, barren/sparse vegetation, deset scrub, savanna, woodland		N
<i>Thamnophis sirtalis annectans</i>	Texas Garter Snake (Eastern Texas/New Mexico)			G5	S2	riparian, around lacustrine and cultural aquatic sites		Y
<i>Trachemys scripta</i>	Red-eared slider					riparian, riverine, lacustrine, freshwater wetland, cultural aquatic	added	N
FRESHWATER FISHES						C. Thomas, T.H. Bonner and B.G. Whiteside. 2007. Freshwater Fishes of Texas: A Field Guide. Sponsored by The River Systems Institute at Texas State University, published by Texas A&M University Press. <i>Editor's Note: All freshwater fishes life history information in this table was sourced directly from the online version; citations are embedded in the online version at http://www.bio.txstate.edu/~tbonner/txfishes/</i>	Range in Texas, as known	
<i>Anguilla rostrata</i>	American eel			G4	S5	streams and reservoirs in drainages connected to marine environments	mouth upstream to and including the Kiamichi River), Sabine Lake (including minor	N
<i>Cycleptus elongatus</i>	Blue sucker		T	G3G4	S3	large, deep rivers, and deeper zones of lakes	(including minor coastal drainages west to Galveston Bay), Galveston Bay (including	N
<i>Hiodon alosoides</i>	Goldeye					large lakes; backwaters	Red River	N
<i>Ictalurus lupus</i>	Headwater catfish			G3	S2	clear streams and rivers with moderate gradients, deep spring runs	Guadalupe, and Colorado basins, but appears to be extirpated from these systems	N
<i>Macryhbopsis storeriana</i>	Silver chub					common over silt or mud, turbid water with very soft sand/silt substrate	other populations of this species, which range through the Mississippi River Basin to	N
<i>Micropterus treculii</i>	Guadalupe bass			G3	S3	small lentic environments; commonly taken in flowing water	of the Brazos, Colorado, Guadalupe, and San Antonio basins; species also found outside	Y
<i>Notropis bairdi</i>	Red River shiner					streambeds with widely fluctuating flows subject to high summer temperatures, high rates of evaporation,	Red River, from the mouth upstream to and including the Kiamichi River	N
<i>Notropis oxyrhynchus</i>	Sharpnose shiner	C		G3	S3	Moderate current velocities and depths, sand bottom	captured into the Red River drainage; introduced in Colorado River drainage	Y
<i>Notropis potteri</i>	Chub shiner		T	G4	S3	turbid, flowing water with silt or sand substrate; tolerant of high salinities	Brazos River, Colorado River, San Jacinto River, Trinity Rivers, and Galveston Bay	N
<i>Polyodon spathula</i>	Paddlefish		T	G4	S3	sized rivers, sluggish pools, backwaters, bayous, and oxbows with abundant zooplankton; large reservoirs if	eastward; currently only Red River, from the mouth upstream to and including the	N
INVERTEBRATES						www.bugguide.net – good tool for identification and taxonomic information. www.texasento.net – compilation of information on insects in Texas www.odonatacentral.org – resource for identification and distribution of damselflies and dragonflies www.butterfliesandmoths.org – resource for identification and distribution of Lepidoptera www.texasmussels.wordpress.com – resource for information on freshwater mussels in Texas Howells, R. G., R. W. Neck and H. D. Murray. 1996. Freshwater Mussels of Texas. Texas Parks and Wildlife Press, Austin		<i>Editor's Note: Most karst invertebrates are likely endemic</i>
<i>Amblycorypha uhleri</i>	A katydid			G2G3*	S2?*	Savanna/Open Woodland	Terrestrial - Insects - Grasshoppers	
<i>Arethaea ambulator</i>	A katydid			G2G3*	S2?*	Savanna/Open Woodland	Terrestrial - Insects - Grasshoppers	
<i>Bombus pensylvanicus</i>	American bumblebee			GU	SU*	Grassland, Savanna/Open Woodland	Terrestrial - Insect - Bee/Wasp/Ant	
<i>Pleurobema riddellii</i>	Louisiana pigtoe		T	G1G2	S1	Riverine	Aquatic - Freshwater - Mollusks; new state rank and threatened state status	
<i>Pogonomyrmex comanche</i>	Comanche harvester ant			G2G3*	S2*	Barren/Sparse Vegetation	Terrestrial - Insect - Bee/Wasp/Ant; ecoregions added	
<i>Potamilus amphichaenus</i>	Texas heelsplitter		T	G1G2	S1	Riverine	Aquatic - Freshwater - Mollusks; new state rank and threatened state status	
<i>Quadrula aurea</i>	Golden orb		T	G1	S2*	Riverine	Aquatic - Freshwater - Mollusks; new state rank and threatened state status	Y
<i>Quadrula houstonensis</i>	Smooth pimpleback		T	G2	S1S2*	Riverine	Aquatic - Freshwater - Mollusks; new state rank and threatened state status	Y
<i>Quadrula mitchelli</i>	False Spike		T	GH	SH	Riverine	Aquatic - Freshwater - Mollusks; new state rank and threatened state status	
<i>Taeniopteryx starki</i>	Texas willowfly			G1	S1	Riparian, Riverine	Aquatic - Insects - Stoneflies	
<i>Truncilla macrodon</i>	Texas fawnsfoot		T	G2Q	S1*	Riverine	Aquatic - Freshwater - Mollusks; new state rank and threatened state status	Y
PLANTS						J.M. Poole, W.R. Carr, D.M. Price and J.R. Singhurst. 2007. Rare Plants of Texas. Texas A&M University Press, College Station. D.S. Correll and M.C Johnston. 1979. Manual of the Vascular Plants of Texas. The University of Texas at Dallas, Richardson. M.C. Johnston. 1990. The Vascular Plants of Texas: A List Up-dating the Manual of the Vascular Plants of Texas, 2nd Edition. Marshall C. Johnston, Austin. F.W. Gould. 1975. The Grasses of Texas. Texas A & M University Press, College Station. S.D. Jones, J.K. Wipff, and P.M. Montgomery. 1997. Vascular Plants of Texas: A Comprehensive Checklist including Synonymy; Bibliography, and Index. University of Texas Press, Austin. R.A. Vines. 2004. Trees, Shrubs and Woody Vines of the Southwest. Blackburn Press.		
<i>Agalinis auriculata</i>	earleaf false foxglove			G3	SH	Savanna/Open Woodland; Grrassland	Terrestrial	N
<i>Agalinis densiflora</i>	Osage Plains false foxglove			G3	S2	Savanna/Open Woodland - Outcrops	Terrestrial	N
<i>Argythamnia aphoroides</i>	Hill Country wild-mercury			G2G3	S2S3	Savanna/Open Woodland	Terrestrial	Y
<i>Carex edwardsiana</i>	canyon sedge			G3G4S3S4	S3S4	Woodland (slopes above Riparian)	Wetland	Y
<i>Carex shinnerii</i>	Shinner's sedge			G3?	S2	Grassland	Wetland	N
<i>Clematis texensis</i>	scarlet leather-flower			G3G4	S3S4	Woodland	Terrestrial	Y
<i>Croton alabamensis</i> var. <i>texensis</i>	Texabama croton			G3T2	S2	Woodland	Terrestrial	Y
<i>Cuscuta exaltata</i>	tree dodder			G3	S3	Woodland	Terrestrial	N
<i>Dalea reverchonii</i>	Comanche Peak prairie-clover			G2	S2	Savanna/Open Woodland; Grassland	Terrestrial	Y

Scientific Name	Common Name	Status		Abundance Ranking		General Habitat Type(s) in Texas		Other Notes	Endemic in Texas
		Federal	State	Global	State	These are VERY broad habitat types as a starting place			
						State of the practice resources are listed in each taxa line for more detailed information			
<i>Echinacea atrorubens</i>	Topeka purple-coneflower			G3	S3	Savanna/Open Woodland	Terrestrial		N
<i>Festuca versuta</i>	Texas fescue			G3	S3	Woodland	Terrestrial		N
<i>Gaura triangulata</i>	prairie butterfly-weed			G3G4	S3	Grassland	Terrestrial		N
<i>Hexalectris nitida</i>	Glass Mountains coral-root			G3	S3	Woodland	Terrestrial		N
<i>Ipomoea shumardiana</i>	Shumard's morning glory			G2G3	S1	Savanna/Open Woodland	Terrestrial		N
<i>Liatris glandulosa</i>	glandular gay-feather			G3	S3	Savanna/Open Woodland	Terrestrial		Y
<i>Oenothera coryi</i>	Cory's Evening-primrose			G3	S3	Savanna/Open Woodland	Terrestrial		Y
<i>Pediomelum cyphocalyx</i>	turnip-root scurfpea			G3G4	S3S4	Grassland	Terrestrial		Y
<i>Pediomelum reverchonii</i>	Reverchon's curfpea			G3	S3	Grassland	Terrestrial		N
<i>Physaria engelmannii</i>	Engelmann's bladderpod			G3	S3	Savanna/Open Woodland	Terrestrial		Y
<i>Prunus minutiflora</i>	Texas almond			G3G4	S3S4	Savanna/Open Woodland	Terrestrial		N
<i>Schoenoplectus hallii</i>	Hall's baby bulrush			G2G3	S1	Freshwater Wetland (ponds)	Wetland		N
<i>Senecio quaylei</i>	Quayle's butterweed			G1Q	S1	Savanna/Open Woodland	Terrestrial		Y
<i>Styrax platanifolius</i> subsp. <i>platanifolius</i>	sycamore-leaf snowbell			G3T3	S3	Woodland	Terrestrial		Y
<i>Valerianella stenocarpa</i>	bigflower cornsalad			G3	S3	Savanna/Open Woodland	Terrestrial		Y
<i>Yucca necopina</i>	Glen Rose yucca			G1G2	S1S2	Savanna/Open Woodland	Terrestrial		Y

Last Update: 8/25/2020

TARRANT COUNTY

AMPHIBIANS

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*

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:	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: T	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

interior least tern *Sternula antillarum athalassos*

Sand beaches, flats, bays, inlets, lagoons, islands. Subspecies is listed only when inland (more than 50 miles from a coastline); nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony

Federal Status: LE	State Status: E	SGCN: Y
Endemic: N	Global Rank: G4T3Q	State Rank: S1B

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

TARRANT COUNTY

BIRDS

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

pipin 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

Rufa Red Knot *Calidris canutus rufa*

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: T	SGCN: Y
Endemic: N	Global Rank: G4T2	State Rank: S2N

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

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

TARRANT COUNTY

BIRDS

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

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

Comanche harvester ant

Pogonomyrmex comanche

Habitat description is not available at this time.

Federal Status:

State Status:

SGCN: Y

Endemic: Y

Global Rank: G2G3

State Rank: S2

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

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

TARRANT COUNTY

MAMMALS

black bear *Ursus americanus*

Generalist. Historically found throughout Texas. In Chisos, prefers higher elevations where pinyon-oaks predominate; also occasionally sighted in desert scrub of Trans-Pecos (Black Gap Wildlife Management Area) and Edwards Plateau in juniper-oak habitat. For ssp. *luteolus*, bottomland hardwoods, floodplain forests, upland hardwoods with mixed pine; marsh. Bottomland hardwoods and large tracts of inaccessible forested areas.

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

black-tailed prairie dog *Cynomys ludovicianus*

Dry, flat, short grasslands with low, relatively sparse vegetation, including areas overgrazed by cattle; live in large family groups

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

cave myotis bat *Myotis velifer*

Colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and even in abandoned Cliff Swallow (*Hirundo pyrrhonota*) nests; roosts in clusters of up to thousands of individuals; hibernates in limestone caves of Edwards Plateau and gypsum cave of Panhandle during winter; opportunistic insectivore.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S4

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: N
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

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: N
Endemic: N	Global Rank: G3G4	State Rank: S4

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

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

TARRANT COUNTY

MAMMALS

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*

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

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

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

TARRANT COUNTY

MAMMALS

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

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

woodland vole

Microtus pinetorum

Include grassy marshes, swamp edges, old-field/pine woodland ecotones, tallgrass fields; generally sandy soils.

Federal Status:

State Status:

SGCN: Y

Endemic: N

Global Rank: G5

State Rank: S3

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

Texas Heelsplitter

Potamilus amphichaenus

Occurs in small streams to large rivers in standing to slow-flowing water; most common in banks, backwaters and quiet pools; adapts to some reservoirs. Often found in soft substrates such as mud, silt or sand (Howells et al. 1996; Randklev et al. 2017a). [Mussels of Texas 2019]

Federal Status:

State Status: T

SGCN: Y

Endemic: N

Global Rank: G1G3

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.

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

TARRANT COUNTY

REPTILES

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

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

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

massasauga *Sistrurus tergeminus*

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: G3G4	State Rank: S3S4

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 garter snake *Thamnophis sirtalis annectens*

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: Y
Endemic: Y	Global Rank: G5T4	State Rank: S1

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

TARRANT COUNTY

REPTILES

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

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:	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

PLANTS

earleaf false foxglove *Agalinis auriculata*

Known in Texas from one late nineteenth century specimen record labeled -Benbrook-; in Oklahoma, degraded prairies, floodplains, fallow fields, and borders of upland sterile woods; in Arkansas, blackland prairie; Annual; Flowering August - October

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

Engelmann's bladderpod *Physaria engelmannii*

Grasslands and calcareous rock outcrops in a band along the eastern edge of the Edwards Plateau, ranging as far north as the Red River (Carr 2015).

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

Glen Rose yucca *Yucca necopina*

Grasslands on sandy soils and limestone outcrops; flowering April-June

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1G2	State Rank: S3

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

TARRANT COUNTY

PLANTS

Hall's prairie clover *Dalea hallii*

In grasslands on eroded limestone or chalk and in oak scrub on rocky hillsides; Perennial; Flowering May-Sept; Fruiting June-Sept

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

Osage Plains false foxglove *Agalinis densiflora*

Most records are from grasslands on shallow, gravelly, well drained, calcareous soils; Prairies, dry limestone soils; Annual; Flowering Aug-Oct

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

Reverchon's scurfpea *Pedimelum reverchonii*

Mostly in prairies on shallow rocky calcareous substrates and limestone outcrops; Perennial; Flowering Jun-Sept; Fruiting June-July

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

Shinner's sedge *Carex shimmersii*

Occurs in ditches and swales in prairie landscapes (Carr 2015).

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

Texas milk vetch *Astragalus reflexus*

Grasslands, prairies, and roadsides on calcareous and clay substrates; Annual; Flowering Feb-June; Fruiting April-June

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

Topeka purple-coneflower *Echinacea atrorubens*

Occurring mostly in tallgrass prairie of the southern Great Plains, in blackland prairies but also in a variety of other sites like limestone hillsides; Perennial; Flowering Jan-June; Fruiting Jan-May

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

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

WILDLIFE HABITAT APPRAISAL PROCEDURE (WHAP) SUMMARY
REPORT BENBROOK LAKE MASTER PLAN
TARRANT COUNTY, TEXAS



**US Army Corps
of Engineers®**
Fort Worth District

July 2020

This page intentionally left blank

Table of Contents

Introduction	1
Study Area	1
Methodology	1
Habitat.....	5
Results and Discussion.....	6
Recommendations	8
References.....	9
Benbrook Lake WHAP Summary Results Figures.....	10
Attachment A: Benbrook Lake WHAP Results Summary	22
Attachment B: Benbrook Lake WHAP Point Photographs.....	39

Introduction

Habitat assessments were conducted at Benbrook Lake on April 8-11, 2019 using Texas Parks and Wildlife Department's (TPWD) Wildlife Habitat Appraisal Procedure ([WHAP] TPWD 1995). WHAP survey point locations were based on points believed or known to have various habitat types and features based on aerial imagery from existing Geographical Information Systems (GIS) data as well as from local knowledge of the area. A total of 118 WHAP points were surveyed, all within U.S. Army Corps of Engineers (USACE) fee boundary (Figures 1A, 1B, and 1C).

The purpose of this report is to describe wildlife habitat quality within the USACE Benbrook Lake fee-owned property in Tarrant County, Texas. This report is being prepared by the USACE Regional Planning and Environmental Center to provide habitat quality information and inform land classifications as part of the Benbrook Lake Master Plan revision process.

Study Area

USACE fee-owned property at Benbrook Lake, approximately 8,745 acres, is located within the Fort Worth metroplex in north central Texas. More specifically, the lake sits primarily between the cities of Fort Worth and Benbrook, Texas within the Cross Timbers ecoregion.



Benbrook Lake lies on the Clear Fork of the Trinity River. The major tributaries to the Clear Fork are the South Fork, Bear Creek, Mustang Creek, Rock Creek and Squaw Creek. Downstream of the Benbrook Lake dam, Clear Fork meanders through numerous low water dams until its confluence with the West Fork of the Trinity River.

Methodology

An interagency team of TPWD and USACE biologists, foresters, and park rangers conducted the habitat surveys on April 8-11, 2019. TPWD's WHAP protocol was used to analyze and describe existing habitats.

The WHAP requires evaluating representative sites of each cover type present within an area of interest. For this project, a search area of 0.1 acre (circle with radius of 37.2 feet) was used at each WHAP site to compile a list of plant species occurring at each site and to complete the Biological Components Field Evaluation Form

(https://tpwd.texas.gov/publications/pwdpubs/media/pwd_rp_w7000_0145.pdf). Field data collected on the form at each WHAP site included the following components:

1. Site Potential
2. Temporal Development of Existing Successional Stage
3. Uniqueness and Relative Abundance
4. Vegetation Species Diversity
5. Vertical Vegetation Stratification
6. Additional Structural Diversity
7. Condition of Existing Vegetation

At each site, a 1/10th acre plot was evaluated and points were assigned to all applicable components based on field conditions. A habitat quality score, where values range from 0.0 (low quality) to 1.0 (high quality), was then calculated for each site by adding together all points and multiplying by 0.01. Habitat quality was then determined for all sites within the same habitat type. Photographs were taken at each site and are included as Attachment B.



The TPWD developed the WHAP to allow a qualitative, holistic evaluation of wildlife habitat for particular tracts of land statewide without imposing significant time requirements in regard to field work and compilation of data (TPWD 1995). The WHAP was not designed to evaluate habitat quality in relation to specific wildlife species.

The WHAP is based on the following assumptions:

1. Vegetation structure including species composition and physiognomy is itself sufficient to define the habitat suitability for wildlife;
2. A positive relationship exists between vegetation diversity and wildlife species diversity;
3. Vegetation composition and primary productivity directly influence population densities of wildlife species.

As designed, the WHAP is intended to be used for the following applications:

1. Evaluating impacts upon wildlife populations from specific development project alternatives.
2. Establishing baseline data prior to anticipated or proposed changes in habitat conditions for specific areas.
3. Comparing tracts of land that are candidates for land acquisition or mitigation.
4. Evaluating general habitat quality and wildlife management potential for tracts of land over large geographical areas, including wildlife planning units.



The WHAP protocol can be used to assess a wide range of habitats, however it was originally developed to assess and develop mitigation requirements for loss of bottomland hardwoods and other aquatic habitats. Scores can be scored higher for these habitats based on how the scoring is allotted to each WHAP habitat component. Upland forest and grassland habitat types cannot reach a score indicative of high quality habitat although they may exhibit high quality features. Subsequently, high quality upland habitat may not be identified or can be overlooked.

Grasslands, in particular, fall into this category. Consider the Site Potential component with a maximum score of 0.25 points, it allocates more points based on higher hydrologic connectivity. In order to receive the highest score for this component, the area must exhibit at least one of the following: at least periodically support predominately hydrophytic vegetation, is predominately undrained hydric soil and supports or is capable of supporting hydrophytic vegetation, and/or is saturated with water or covered by shallow water during 1-2 months during the growing season of each year. In a grassland setting, when conditions become conducive to hydrophytic plant growth, a successional shift from a grassland to herbaceous wetlands, swamps, or riparian forest is likely to occur. Therefore, grasslands would almost always be limited to a maximum score of 0.12 points (uplands with thick surface layer).

Similarly, grasslands would be limited to a maximum of 0.12 points for the Temporal Development of Existing Successional Stage component, whereas other forested habitats could receive the full 0.25 points.

High value grasslands may not have any woody vegetation, nor vegetation that is no more than 12 ft tall, and very little additional structural components. To account for this, areas categorized as grasslands have their Total Scores not reflect the Vegetation Species Diversity component, and makes the maximum score for Vertical Vegetation Stratification component as 4 and Additional Structural Diversity component as 1.



These components alone regularly exclude grassland habitat from receiving the maximum score of 1 on the WHAP point scale. In order to identify the maximum score each habitat type can receive, USACE environmental staff scored each criteria given ideal conditions for riparian/bottomland hardwood forest (BHF), upland forest (includes all non-riparian/BHF forests), grassland, swamp, and marsh habitats. The maximum values scores, shown in Table 1, were then used to normalize scores for habitats that are prevented from reaching the maximum WHAP score primarily due to arbitrary low scores in the two WHAP components described above. Normalizing habitat scores will identify high quality habitat that would otherwise not be detected.

Table 1. Maximum Total Score per Habitat Type

Cover Type	Component Number								Maximum Total Score
	1	2	3	4	5	6	7	7B	
Marsh	25	20	20	20	NA	5	10	NA	1.00
Riparian/BHF	25	20	20	15	5	5	5	5	1.00
Upland Forest	12	20	20	15	5	5	5	5	0.87
Grassland	12	12	20	0	4	1	5	5	0.59

Marsh, and riparian/BHF habitats can all achieve the maximum score, therefore, no normalization of scores were made for these habitat types. Upland forests and grasslands, however, can only reach within 0.13 and 0.41 points of the maximum WHAP score, even in ideal conditions.

To evaluate all habitat types on an even scoring basis, upland forest and grassland scores were normalized by dividing their original scores by the maximum possible score for their respective habitat types. For example, if a grassland site received an initial score of 0.42, it would be divided by the maximum total points a grassland site can receive, 0.59. The normalized total score used for further analysis for the grassland site would be 0.75.

This adjustment allows habitat type scores to be analyzed and compared to their corresponding habitat type maximum total score. Rather than, for instance, a grassland being evaluated on a bottomland hardwood scoring scale.

All WHAP scores analyzed and discussed from here forward reflect the normalized total scores. As mentioned above, marsh, and riparian/BHF habitats were not normalized as they can already achieve maximum scores. Grassland scores were normalized by dividing initial scores by 0.59, while all upland forest scores were normalized by dividing the initial score by 0.87.

Habitat

Using TPWD's Texas Ecological Mapping Systems

(<https://tpwd.texas.gov/landwater/land/programs/landscape-ecology/ems/>),

Benbrook Lake lies within the Cross Timbers ecoregion. The most common habitat types include Marsh, Riparian/BHF, Upland Forest, and Grassland (Elliot, 2014). Table 2 displays all habitats surveyed and the number of points surveyed within each respective habitat type.

Table 2. Survey Points per Habitat Type

Habitat Type	Points Surveyed
Marsh	1
Riparian/BHF	38
Upland Forest	20
Grassland	59
Total Points Surveyed	118



Elliot (2014) provided general habitat type descriptions and associated vegetation communities for the Ecological Systems Classification and Mapping Project in support of the Comprehensive Wildlife Conservation Strategy for the Texas Parks and Wildlife Department. These descriptions were meant to be broad and depict typical vegetative assemblages across vast areas as the observable vegetation communities can vary based on local conditions.

Historically, tallgrass prairies consisting of little bluestem, big bluestem, yellow Indiangrass, tall dropseed, eastern gamagrass and many forbs, such as asters, clovers, and black-eyed susan dominated the region. Before nearly all of the prairie was developed, bison and pronghorn, greater prairie chickens, and even ocelot utilized this area. Only an estimated 5,000 widely scattered acres in small tracts remain of the original 12 million acres of the region, or less than one-tenth of one percent of remaining prairie. Riparian hardwoods, primarily bur oak, Shumard oak, sugar hackberry, elm, ash, eastern cottonwood, and pecan, meander this prairie. The ecoregion receives the name from early settlers having to repeatedly cross through thick timbers that would slow down their travels and serve as a landmark (TPWD, 2019). The area is further characterized by numerous low flowing streams.

Figure 2 displays the distribution of habitat types within the USACE boundary at Benbrook Lake. For analysis purposes, habitat types were pooled into one of four categories: Marsh, Riparian/BHF, Upland Forest, and Grasslands.

Results and Discussion

The total habitat score for each point surveyed is a representation of multiple habitat attributes including vegetative diversity and structure, site soil potential, successional stage, and uniqueness of that habitat across the landscape. Data analysis highlights are discussed below, while detailed data for each point surveyed can be found in Attachment A: Benbrook Lake WHAP Summary Results of this report.

Grassland (N = 59) and riparian/BHF (N = 38) were the most abundant habitat types surveyed. Grassland scores ranged from 0.2 to 1 while riparian/BHF scores ranged from 0.22 to 0.88.

The average, maximum, and minimum total scores observed for each habitat type surveyed is shown in Table 3.

Table 3. Average, Maximum, and Minimum Total Scores per Habitat Type

Habitat Type	Average Total Score	Maximum Total Score	Minimum Total Score
Marsh	0.81	0.81	0.81
Riparian/BHF	0.65	0.88	0.22
Upland Forest	0.66	0.94	0.45
Grassland	0.73	1	0.2



Figures 3A, 3B, and 3C show the range of total scores for all points surveyed (N = 118) as well as the twelve additional points that were skipped due to inaccessibility or multiple points occurring in the same area. Skipped points show a total score of 0 in figures 3A, 3B, and 3C. Overall, grassland and upland forest habitats exhibited the highest average total score (0.73 and 0.66), marsh was excluded because there was only one point classified under this habitat condition. The difference between Upland Forest and Riparian/BHF is Average Total Score is 0.01. With such a close of a margin, these two habitats are equal in value. This could be attributed to the fact they scored on average very similar values for all the scoring components.

Beyond vegetative diversity, the three major metrics within the WHAP scoring criteria that allocate points are site potential, successional stage, and uniqueness and relative abundance. Table 4 shows these metrics' average score per habitat type.

Table 4. Average Site Potential, Successional Stage, and Uniqueness and Relative Abundance Scores per Habitat Type

Habitat Type	Average Site Potential	Average Successional Stage	Average Uniqueness and Relative Abundance
Marsh	25	20	20
Riparian/BHF	18.68	10.89	12.37
Upland Forest	11	10.7	11.75
Grassland	10.41	8.95	11.47

Site potential allocates more points based on soil substrates characteristics and hydrologic connectivity that can support hydrophytic habitats, such as marshes, swamps, and bottomland hardwood forests that are often considered to be higher quality, more diverse habitat. This allows areas to score higher even though a recent disturbance, such as fire or flood, may have removed most of the vegetation. Areas scoring high in site potential but low in other metrics can be targeted for management efforts as these areas' vegetation community response should be favorable, thus increasing habitat value.



Successional stage refers to the age of the vegetative community. Older, mature forests, as do climax prairies, score higher than younger pole stands or disturbed grasslands as they provide more diverse forage, cover, and niche habitats. These scores are expected to increase across the board except in areas around the lake that may not have the soil types to support hydrophytic vegetation and are flooded frequently enough to limit upland forest or grassland growth and development.

Uniqueness and Relative Abundance takes into consideration the rarity of a habitat or vegetative community and its abundance in the region. Ongoing urban expansion has significantly influenced the region's remaining habitat composition. Few large, contiguous patches of habitat remain within the DFW metroplex. Benbrook Lake and the surrounding terrestrial habitat represents one of these remaining patches that have become less abundant across the region. As urban

development continues, the remaining habitat at Benbrook Lake will likely increase in overall wildlife value and uniqueness. Figure 4 displays the areas with the maxed out Uniqueness and Relative Abundance criteria. Based on this figure, three areas were identified as having the most unique and rare habitats, Pecan Valley Park, South Holiday Park, and Mustang Park.

Riparian/BHF forests typically exhibit the highest average site potential, successional stage, and uniqueness and relative abundance among the habitat types surveyed. For this survey

Riparian/BHF forest didn't, and this might be because there is not a lot of old growth and mature timber and the site potential is typical for the region which leads to a lower uniqueness and relative abundance component score as well.

Overall, 60% of surveyed grassland points (Figure 3A, 3B, 3C) scored over 0.70 indicating medium to high value grassland habitat. As the surrounding area continues to be developed, these remaining native prairie habitats will become increasingly unique in the region.

In total, 6 points surveyed received scores over 0.90 indicating very high quality habitat (Figure 5). These areas primarily support grasslands habitats featuring grass species diversity including Little Bluestem, Ten Petal Anemone, and Purple Paintbrush. In addition, these 6 points all received the maximum scores for site potential and successional stage criteria which can also be seen in Figures 6 and 7.

In summary, combining the WHAP analytical analysis, continued urban development, and spatial distribution of higher scoring points, two areas were identified as having higher quality in relation to the remaining lands administered by USACE at Benbrook Lake. The two areas include land along the East Dutch Branch Creek and land along North Holiday Park Day Use Area. However when Figures 3A, 3B, and 3C WHAP Total Score are compared to Figure 6 WHAP Maxed Out Site Potential, the areas within Pecan Valley Park have the greatest potential to be improved upon.

Recommendations

Even with planned and unplanned disturbances, there are numerous areas of valuable wildlife habitat remaining on USACE fee-owned property at Benbrook Lake.

Overall, habitat management has proven effective in maintaining medium- to high-quality wildlife habitat on USACE lands at Benbrook Lake.

Based on the results of the WHAP survey efforts, areas to consider for Wildlife Management or Environmentally Sensitive Areas land classifications include those areas having the highest scores. The planning team for the Benbrook Lake Master Plan revision will take into account the WHAP scores when making land classification decisions.



References

Elliott, Lee F., David D. Diamond, C. Diane True, Clayton F. Blodgett, Dyan Pursell, Duane German, and Amie Treuer-Kuehn. 2014. Ecological Mapping Systems of Texas: Summary Report. Texas Parks & Wildlife Department, Austin, Texas.

Texas Parks and Wildlife Department (TPWD). 1995. Wildlife Habitat Appraisal Procedure (WHAP). Last revised January 12, 1995.

TPWD. 2019. Cross Timbers and Prairies Ecological Region. Retrieved from https://tpwd.texas.gov/landwater/land/habitats/cross_timbers/ecoregions/cross_timbers.phtml



Benbrook Lake WHAP Summary Results Figures

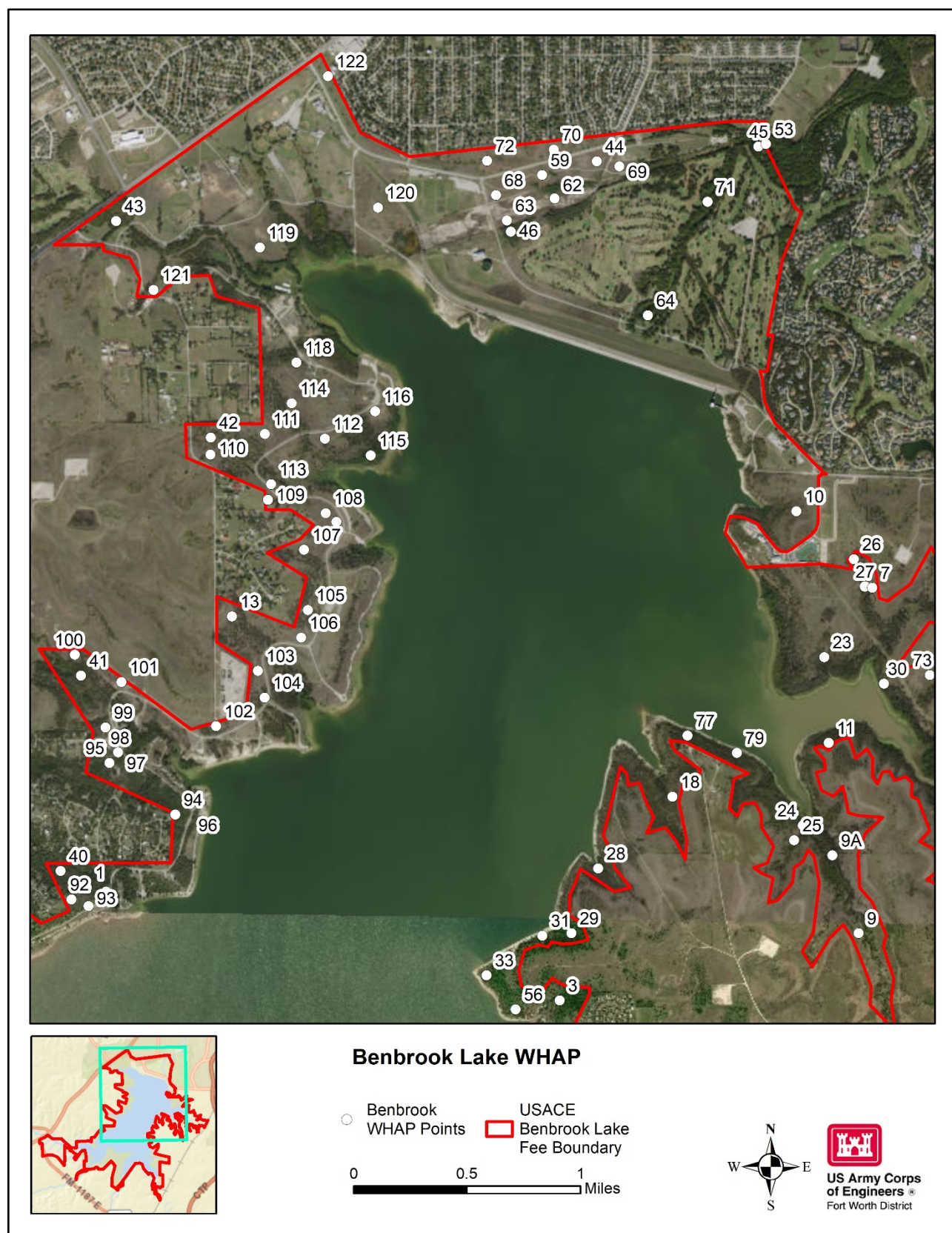


Figure 1A. Distribution of WHAP Points within the Fee-Owned Boundary at Benbrook Lake.



Figure 1B. Distribution of WHAP Points Within the Fee-Owned Boundary at Benbrook Lake.

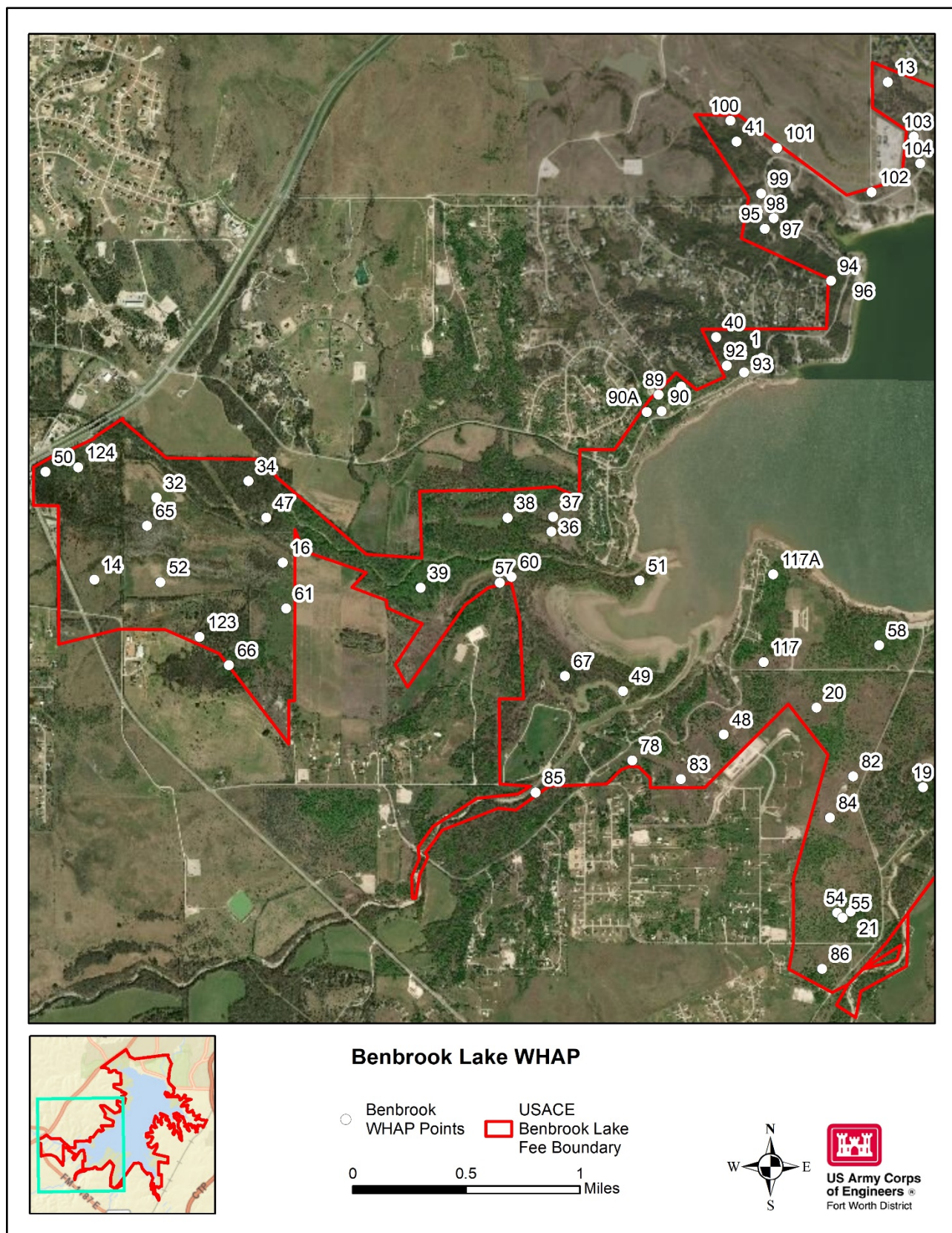
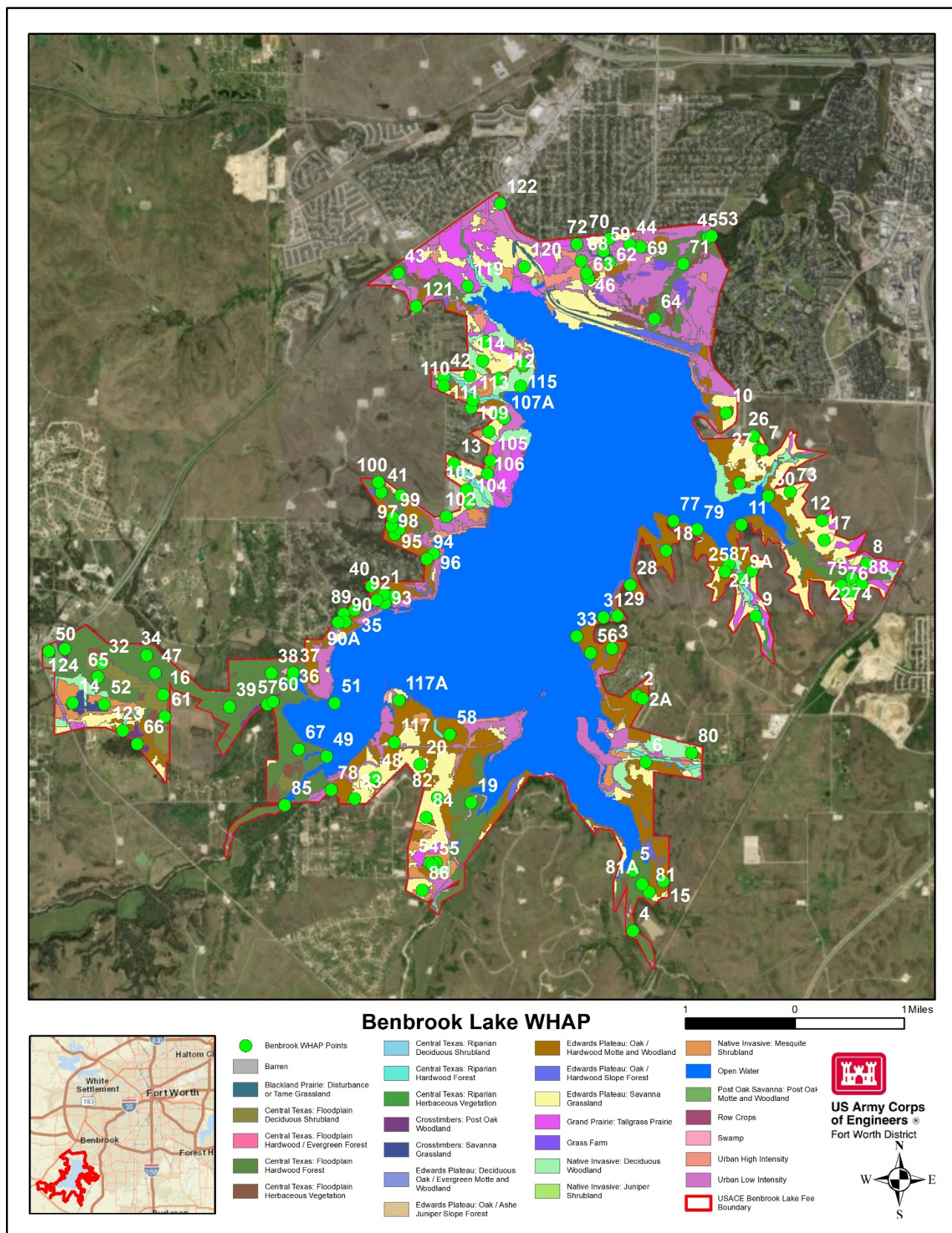
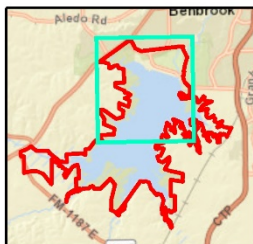


Figure 1C. Distribution of WHAP Points Within the Fee-Owned Boundary at Benbrook Lake.





Benbrook Lake WHAP

- USACE
- Benbrook Lake Fee Boundary
- Skipped
- < 0.35
- 0.36 - 0.50
- 0.51 - 0.65
- 0.66 - 0.80
- 0.81+

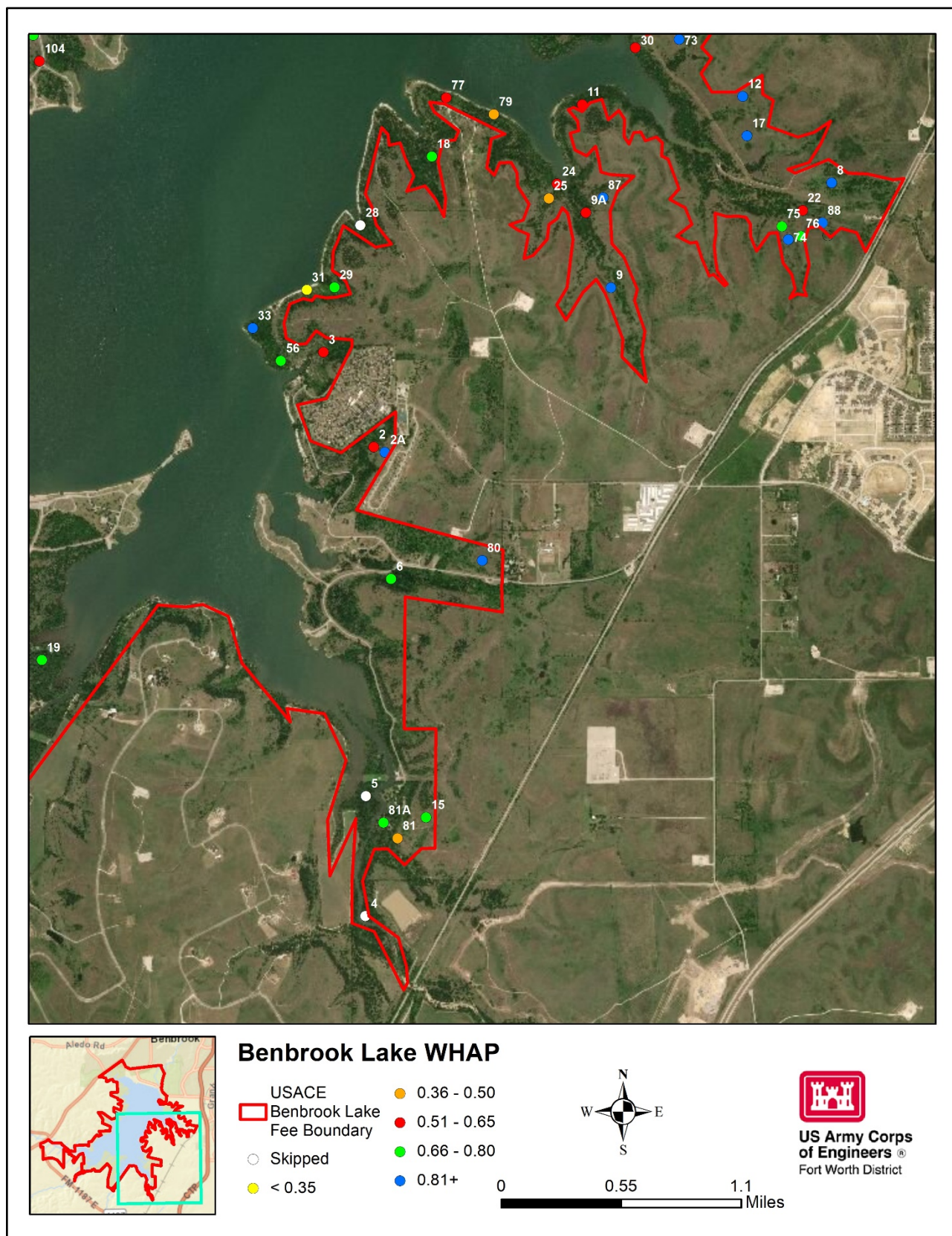


0 0.5 1 Miles



**US Army Corps
of Engineers**
Fort Worth District

Figure 3A. Total Score Range for All Points Surveyed



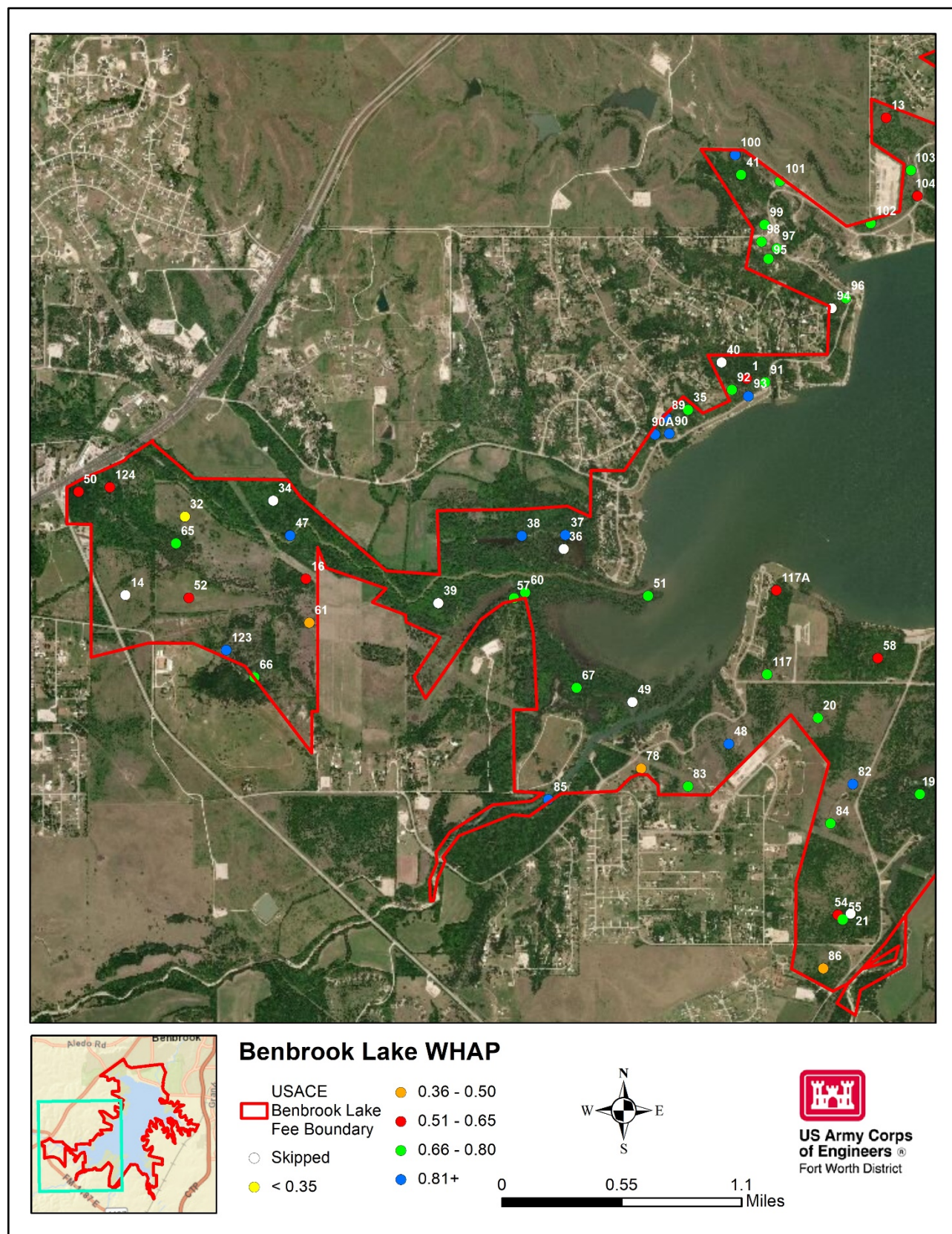
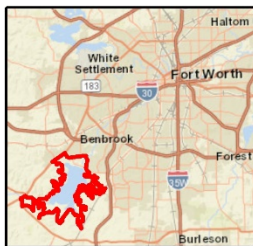
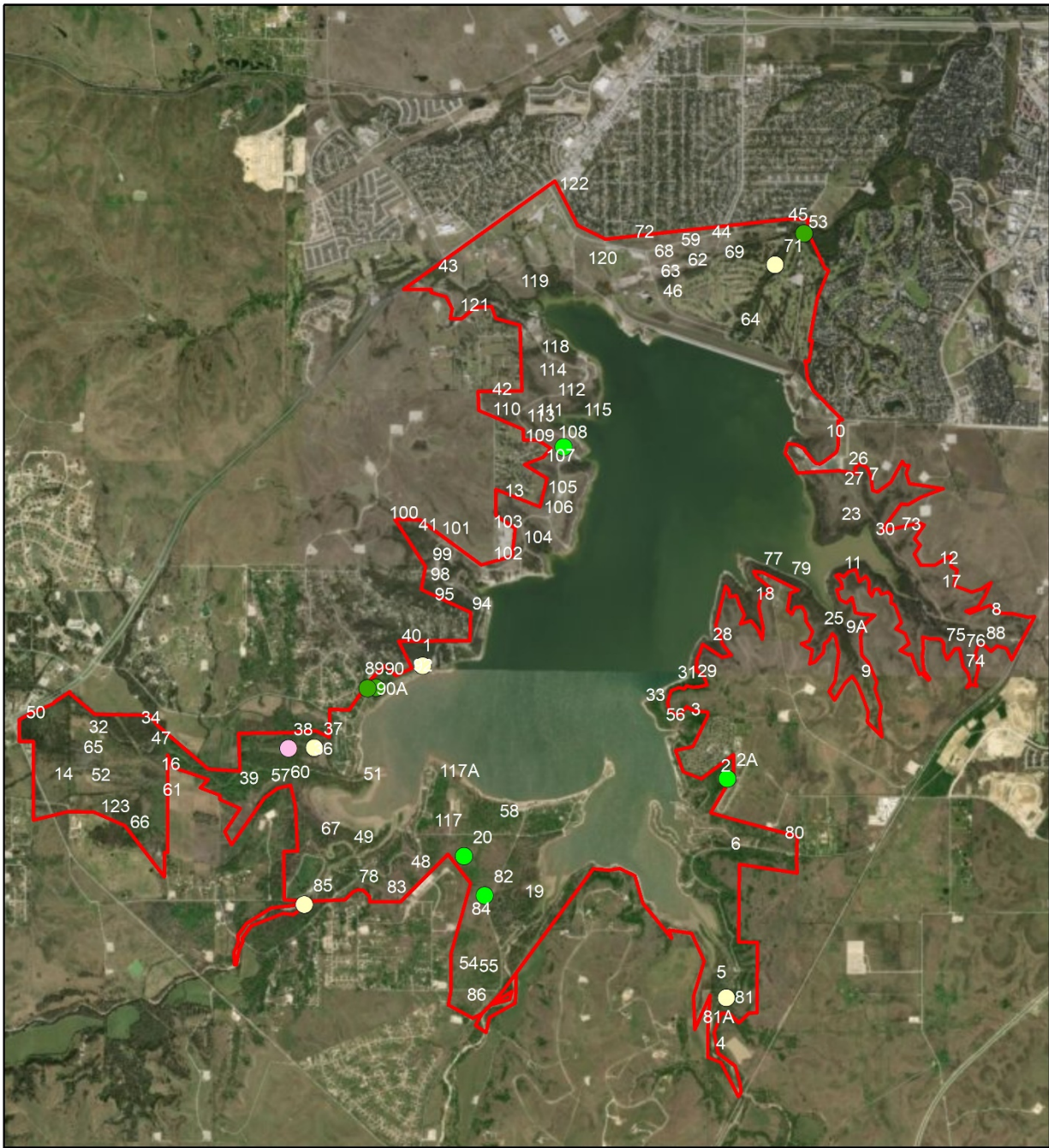


Figure 3C. Total Score Range for All Points Surveyed
 Pg-17



Benbrook Lake WHAP

All Sites with Maxed Out Uniqueness and Relative Abundance

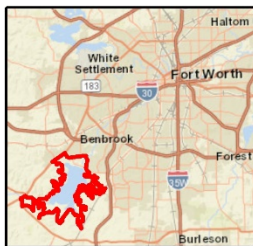
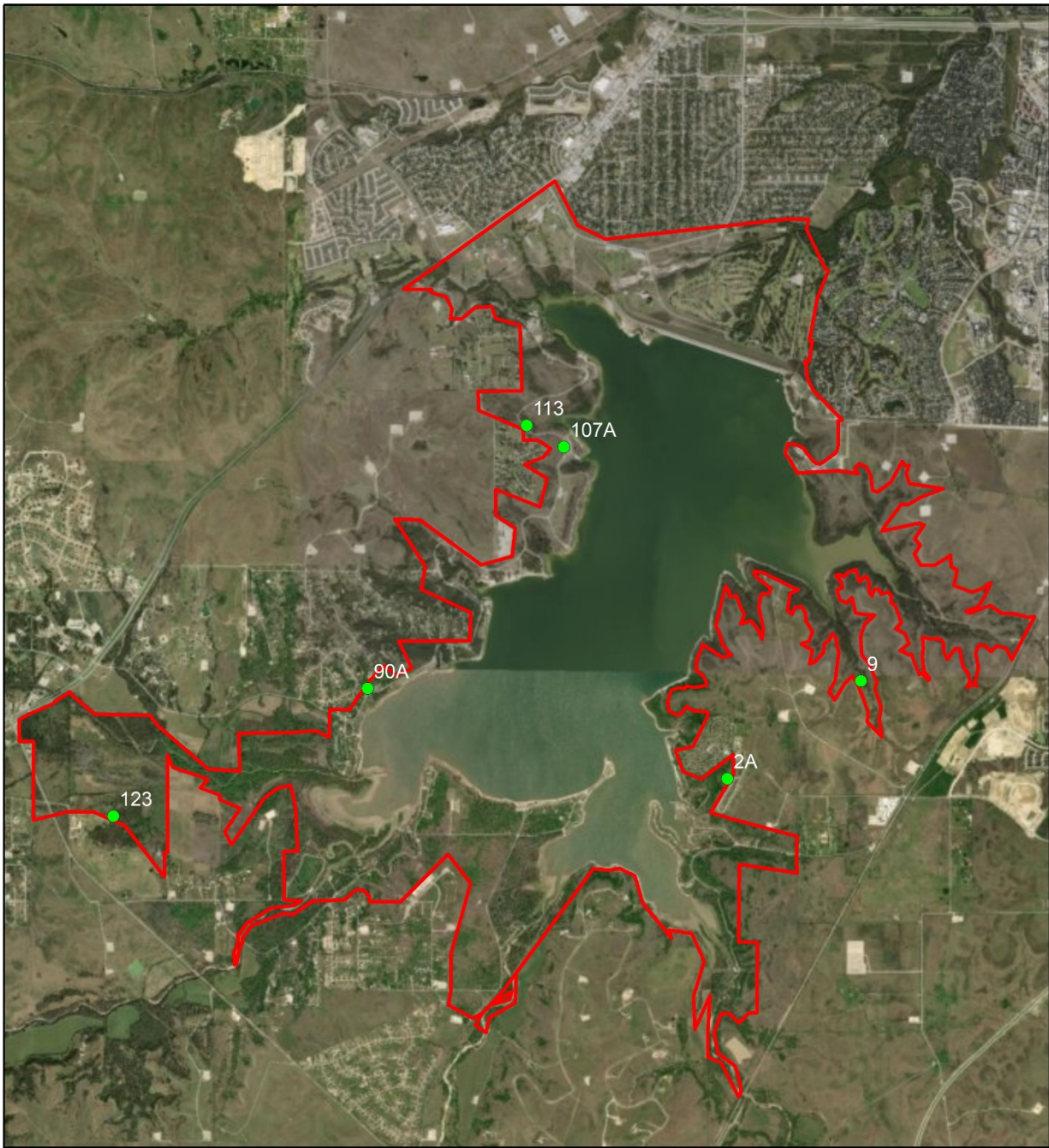
Habitat Type ● Marsh ● Upland Forest USACE
 ● Grassland ● Riparian/BHF Benbrook Lake Fee Boundary

0 1 2 Miles



US Army Corps of Engineers®
Fort Worth District

Figure 4. WHAP Point Sites with Maxed Out Uniqueness and Relative Abundance.



Benbrook Lake WHAP All Sites with Total Scores >0.90

- Benbrook WHAP Points
- USACE Benbrook Lake Fee Boundary

0 1 2 Miles



US Army Corps
of Engineers®
Fort Worth District

Figure 5. Survey Points with Total Scores >90.

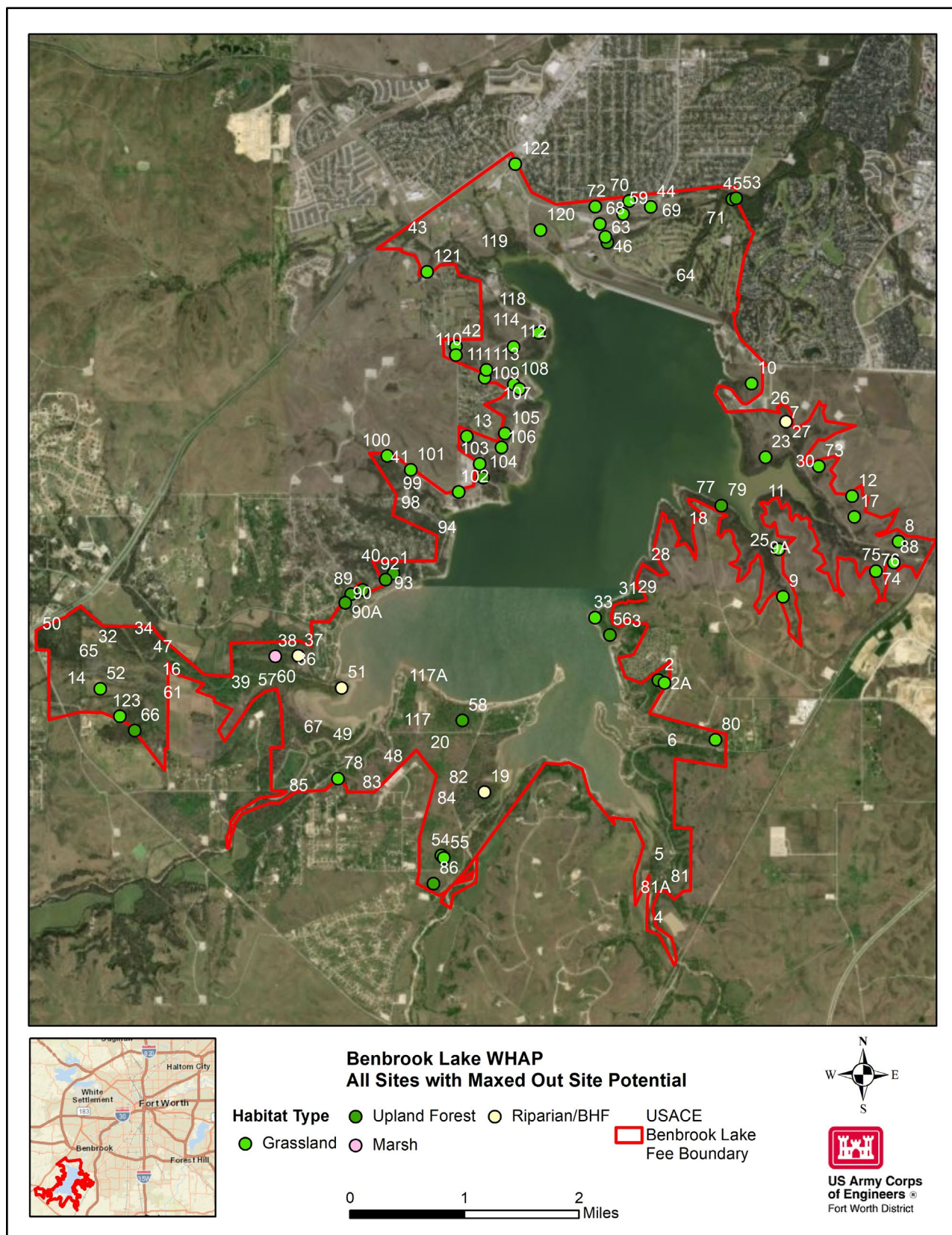
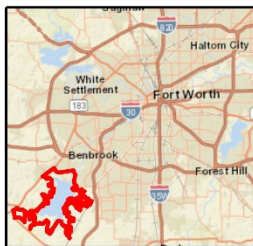
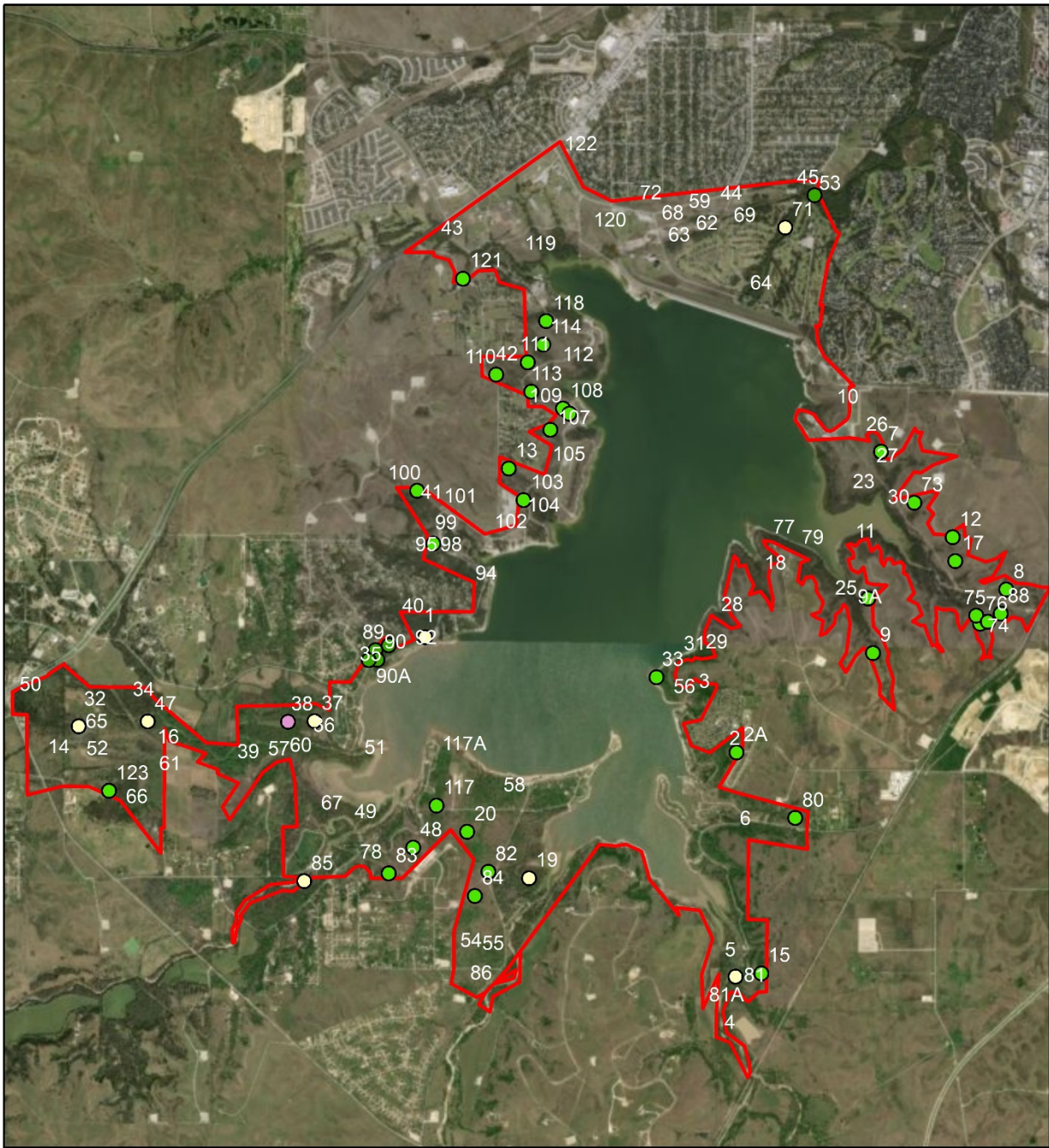


Figure 6. WHAP Point Sites with Maxed Out Site Potential



**Benbrook Lake WHAP
All Sites with Maxed Out Successional Stage**

Habitat Type ● Marsh ● Upland Forest USACE
● Grassland ● Riparian/BHF ■ Benbrook Lake Fee Boundary

0 1 2 Miles



**US Army Corps
of Engineers®**
Fort Worth District

Figure 7. WHAP Point Sites with Maxed Out Successional Stage

Attachment A: Benbrook Lake WHAP Results Summary

Point Number	Habitat Type	Final Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Notes	Trout Lily Present yes/No	Reverchon's Skurpea Present yes/no
1	Upland Forest	0.57	Glossy Privet, Elbow Bush, Gum Bumelia, Elbow Bush, Hackberry, Poison Ivy, Rusty Leaf Viburnum	NA	Red Oak	NA	Cedar Elm	Juniper spec.,	NA	Mexican Buckeye	Trout Lily, Hedge Parsley, Cedar Sedge, Bedstraw, Wood Sorrel	NA	Yes	No
2	Upland Forest	0.55	Hackberry, Greenbriar, unknown vine, Elbow Bush	NA	NA	NA	Cedar Elm, American Elm	Juniper spec.,	NA	NA	Rabbit Tobacco, Bedstraw, Wild Lettuce, Bastard Cabbage, Cutgrass	NA	No	No
2A	Grassland	0.98	NA	NA	NA	NA	NA	NA	NA	NA	Eryngo spec., Vetch spec, Cloth-of-gold, Purple Paintbrush, Texas Paintbrush, Wild Onion, Purple Paintbrush, Wild Onion, Chervil, Little Bluestem, Beardtongue spec., Corn Salad, Pennyroyal, Verbena spec., Ten Petal Anemone, Flax spec., Plantain spec., 1 unknown,	NA	No	No
3	Riparian/B HF	0.60	Virginia Creeper, Dew Berry, Poison Ivy, Greenbriar, Mulberry, Hackberry, Deciduous Holly, Japanese Honeysuckle, Privet spec.,	NA	NA	NA	Cedar Elm, Ash spec.,	NA	NA	NA	Cutgrass, Wild Lettuce, Vetch spec, Bedstraw, Fleabane, Moss, Vetch spec.,	NA	No	No
4	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	No	No
5	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	No	No
6	Riparian/B HF	0.72	Mexican Plum, Greenbriar, Poison Ivy, Gum Bumelia	NA	NA	NA	American Elm, Cedar Elm	NA	NA	Osage Orange, Buttonbush	Fleabane, Thistle, Corn Salad, Ragweed, Cloth-of-gold, Woodland Sorrel, Bedstraw, Ten Petal Anemone, Wild Lettuce, Chervil, Wild Onion, Venus Looking Glass, Vetch spec,	NA	No	No
7	Grassland	0.73	NA	NA	NA	NA	NA	NA	NA	Prickly Pear Cactus	Hedge Parsley, Blazing Star, Paintbrush, Engelmann's Daisy, Cloth of Gold, Bluebonnet, Seep Muhly, White Tridens, Corn Salad, Old Field Threawn, Bull Nettle, Mealy Cup Sage, Milkweed, Little Bluestem	NA	No	No
8	Grassland	0.88	Yaupon	NA	NA	NA	NA	NA	NA	Prickly Pear Cactus	Corn Salad, Cloth of Gold, Wild Garlic, Blue-eyed Star Grass, Plantain, Paintbrush, Green Thread, Side Oats Grama, Silver Bluestem, Little Bluestem, Meadowflax, Queen's Delight, Salvia sp., Wild Carrot, Stone Seed, Blazing Star	NA	No	No

Point Number	Habitat Type	Final Score	Berry/Drupe	Legume Pod	Acorn	Nut/Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Notes	Trout Lily Present yes/No	Reverchon's Skurfpea Present yes/no
9	Grassland	0.92	Gum Bumella, Hawthorn	Honey Locust	NA	NA	Cedar Elm	NA	NA	Prickly Pear	American Germander, Crow Poison, Artemisia, Bull Thistle, Little Bluestem, Prairie Verbena, Tenpetal Anemone, Basket Flower, Corn Salad, Carex spec, Cloth of Gold, Indian Blanket, Tick Seed, Indian Plantain	Coming out of riparian zone	No	No
9A	Riparian/B HF	0.61	Hackberry, Greenbriar, Poison Ivy	NA	NA	NA	American Elm	NA	NA	NA	Carex spec., Wild Rye, Corn Salad, Bedstraw, Wild Lettuce	Along creek	No	No
10	Grassland	0.69	Hackberry, Poison Ivy, Gum Bumella	NA	NA	NA	Cedar Elm	NA	NA	Jersey Tea, Prickly Pear Cactus	Engelmann's Daisy, Little Bluestem, Western Ragweed, Mexican Hat, Prairie Verbena, Wild Garlic, Cloth of Gold, Wild Carrot, Tenpetal Anemone, Bull Thistle, Johnsongrass, Bedstraw, Bluebonnet, Vetch spec,	NA	No	No
11	Upland Forest	0.56	Yaupon, Mexican Plum, Gum Bumella, Greenbriar, Spiny Hackberry	NA	NA	NA	Cedar Elm, Green Ash	NA	NA	Prickly Pear	Jersey Tea, Tick Seed, Wild Lettuce, Carex spec., Corn Salad, Tenpetal Anemone, White Rosinweed, Cloth of Gold, Silver Bluestem, Little Bluestem, Paintbrush, Purple Coneflower, Plantain, American Basketflower, Corn Salad, Salvia sp.	Very steep	No	No
12	Grassland	0.85	Gum Bumella, Yaupon, Trumpet Creeper	NA	NA	NA	NA	NA	NA	Prickly Pear Cactus	Bluebonnet, Cloth-of-gold, Ten Petal Anemone, Sideoats Grama, Fringed Pawnee, Scurf Pea, Roadside Gaura, Thistle, Engelmann's Daisy, Little Bluestem, Sedge Spec., Tickseed, Introduced bunchgrass	NA	No	No
13	Grassland	0.63	NA	NA	NA	NA	NA	NA	NA	Prickly Pear Cactus, Yucca	NA	NA	No	No
14	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	No	No
15	Grassland	0.73	NA	NA	NA	NA	NA	NA	NA	Prickly Pear Cactus, Missouri Foxtail Cactus	New Jersey Tea, Coreopsis, Chervil, Cloth-of-gold, Beardtongue, Thistle, Purple Paintbrush, Little Bluestem, Dropseed spec., Blue Star, Wild Onion, Storksbill, Bluebonnet, Reverchon's Skurfpea	can't read the note	No	Yes
16	Riparian/B HF	0.57	Mustang Grape, Hackberry	Honey Locust, Mesquite	NA	NA	Cedar Elm	NA	NA	Cottonwood	Speedwell, Johnsongrass, American Germander, Bee Balm, Geranium, Coreopsis, New Jersey Tea, Chervil, Purple Paintbrush, Thistle spec., Little Bluestem, Dropseed spec., Blue Star, Bluebonnet, Wild Onion, Storksbill, Scurfpea,	NA	No	No

Point Number	Habitat Type	Final Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Notes	Trout Lily Present yes/No	Reverchon's Skurpkea Present yes/no
17	Grassland	0.88	NA	NA	NA	NA	NA	NA	NA	Prickly Pear Cactus	Blazing Star, Prairie Verbena, Western Ragweed, Wild Garlic, Engelmann's Daisy, Cloth of Gold, Little Bluestem, Plantain, Milkweed, Blue-eyed Star Grass, Paintbrush, Old Field Threeweed, Gaura, Gayfeather, Big Bluestem, Stone Seed, Scribner's Panicum, Crow Poison, Tenpetal Anemone	NA	No	No
18	Riparian/B HF	0.73	Gum Bumelia, Greenbriar, Yaupon, Poison Ivy	NA	NA	NA	Cedar Elm, Green Ash	Ashe Juniper	NA	NA	Corn Salad, Bedstraw, Carex spec., Spike Rush, Inland Sea Oats, Canada Wild Rye, Wild Onion, Oxalis, American Germander, Giant Ragweed	NA	No	No
19	Riparian/B HF	0.76	Carolina Snailseed, Greenbriar, Poison Ivy, Hackberry, Mulberry	Honey Locust	NA	NA	Cedar Elm, American Elm, Box Elder	NA	American Sycamore	Cottonwood	NA	NA	No	No
20	Grassland	0.80	NA	NA	NA	NA	NA	NA	NA	NA	Mock Vervain, Roadside Gaura, Ten Petal Anemone, Chervil, Tickseed, Gayfeather, Corn Salad, Little Bluestem, Engelmann's Daisy, Rabbit	NA	No	No
21	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	No	No
22	Riparian/B HF	0.52	Gum Bumelia, Dewberry, Greenbriar, Mustang Grape, Western Soapberry, Poison Ivy, Hackberry	NA	NA	NA	Cedar Elm	NA	NA	Prickly Pear Cactus	Bedstraw, Ragweed, Hedge Parsley, Silver Wormwood, Oxalis, American Germander, Cranes Bill, Texas Bluegrass, Tenpetal Anemone, Giant Ragweed, Bull Thistle, Big Bluestem, Corn Salad, Vetch spec,	NA	No	No
23	Grassland	0.71	Yaupon, Roughleaf Dogwood, Dewberry, Hackberry	Honey Locust	NA	NA	Cedar Elm	NA	NA	Prickly Pear Cactus	Hedge Parsley, Wild Carrot, Little Bluestem, Bee Balm, Indiangrass, Corn Salad, Carex spec., Bedstraw, Gayfeather, Vetch spec,	Slightly riparian	No	No
24	Riparian/B HF	0.61	Poison Ivy, Yaupon, Hackberry, Greenbriar	Honey Locust	NA	NA	American Elm, Box Elder	NA	NA	Cottonwood	Speedwell, Wild Lettuce, Carex spec., Vetch spec,	Frequently Inundated	No	No
25	Riparian/B HF	0.47	Hackberry, Poison Ivy, Greenbriar, Yaupon, Dewberry	Honey Locust	NA	NA	Cedar Elm	NA	NA	NA	Bedstraw, Carex spec., Inland Sea Oats	NA	No	No
26	Grassland	0.61	Hackberry, Yaupon	NA	NA	NA	Cedar Elm	NA	NA	Prickly Pear Cactus	Crow Poison, Corn Salad, Hedge Parsley, Prairie Verbena, Queen's Delight, Bull Thistle, Bee Balm, Wild Bedstraw, Carex spec., Wild Onion, Corn Salad, Bull Nettle, Dandelion, Hedge	NA	No	No
27	Riparian/B HF	0.69	Hackberry, Chinese Privet, Poison Ivy, Mexican Plum, Gum	Honey Locust	NA	NA	Cedar Elm	Ashe Juniper	NA	Prickly Pear Cactus	NA	Seep nearby	No	No
28	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	No	No

Point Number	Habitat Type	Final Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Notes	Trout Lily Present yes/No	Reverchon's Skurfpea Present yes/no
29	Riparian/B HF	0.72	Virginia Creeper, Greenbriar, Hackberry	Honey Locust	NA	NA	Cedar Elm, Ash spec., Maple Spec.,	NA	NA	Osage Orange, Buttonbush	Engelmann's Daisy, Cucumber spec., Chervil, Wild Lettuce, Corn Salad, Ragweed, Cutgrass	Floodpool, flat drainage	No	No
30	Riparian/B HF	0.54	Poison Ivy, Yaupon, Gum Bumelia, Hackberry, Greenbriar	Honey Locust	NA	NA	Cedar Elm	NA	NA	NA	Hedge Parsley, Geranium, Carex spec.,	NA	No	No
31	Riparian/B HF	0.22	Greenbriar, Deciduous Holly, Elbow Bush	NA	NA	NA	Cedar Elm	Juniper spec.,	NA	Prickly Pear Cactus	Wood Sorrel, Jersey Tea, Chervil, Wild Onion, Dropseed spec., Cloth-of-gold, 2 unknowns, Little Bluestem, Foxglove,	Floodpool outcrop, transition zone.	No	No
32	Riparian/B HF	0.34	NA	Honey Locust	NA	NA	NA	NA	NA	NA	Ten Petal Anemone, Dakota Mock Vervain, Ragweed, Corn Salad, Geranium, Clover spec., Wild Carrot, Johnson Grass, Bermuda Grass, Germanier, Thistle, Engelmann's Daisy, Dallas Grass, Bedstraw, Sedge spec., Vetch spec.,	NA	No	No
33	Grassland	0.90	NA	NA	NA	NA	NA	NA	NA	Prickly Pear Cactus	Wild Onion, Rabbit Tobacco, Sedge spec., Bluebonnet, Dropseed spec., Carex spec., Chervil, Corn Salad, Thistle, Crow Poison, Ten Petal Anemone, 3 unknowns,	NA	No	No
34	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	No	No
35	Upland Forest	0.78	Possumhaw, Rusty Blackhaw, Greenbriar, Chinese Privet, Grape spec., Honeysuckle	Eastern Redbud, Eastern Redcedar	NA	Buckley Oak	Cedar Elm	NA	NA	Mexican Buckeye	Sedge spec., Inland Seaotia, Geranium, Avena spec., Carrot Spec., Bedstraw,	NA	No	No
36	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	No	No
37	Riparian/B HF	0.85	Poison Ivy, Mulberry, Greenbriar,	NA	NA	NA	Ash spec., Box Elder	NA	NA	Cottonwood,	Cutgrass	Skipped Heron Nest, Large Old Cottonwood Stand, ESA Potential	No	No
38	Marsh	0.81	NA	NA	NA	NA	Box Elder	NA	NA	Buttonbush, Black Willow	Duck Weed, Pond Weed	Surveyed from the bird blind	No	No
39	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	No	No
40	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	No	No
41	Riparian/B HF	0.69	Glossy Privet, Greenbriar, Hackberry, Mexican Plum, Elbow Bush, Roughleaf Dogwood	NA	NA	NA	Cedar Elm, Green Ash	NA	NA	Buttonbush, Mexican Buckeye, Mexican Buckeye	Corn Salad, Fleabane, Wild Onion, Cucumber Chickweed, Hedge Parsley, Wood Sorrel, Speedwell, Chervil, Carex spec., Wild Lettuce, Bedstraw, White Avena	Creek in transition	No	No

Point Number	Habitat Type	Final Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Notes	Trout Lily Present yes/No	Reverchon's Skurfpea Present yes/no
42	Grassland	0.69	Hackberry, Serviceberry, Chinese Privet, Greenbriar, Honey Suckle	Honey Locust, Mesquite	NA	NA	NA	Juniper spec., Eastern Red Cedar	NA	Prickly Pear Cactus, Osage Orange	Texas Star Flower, Ten Petal Anemone, Bedstraw, Little Bluestem, Thistle, Wild Pea, Cloth-of-gold, Prairie Parsley, Dandelion, Bluebonnet, Dakota Mock Vervain, Crow Poison	NA	No	No
43	Riparian/B HF	0.69	Hackberry, Chinaberry, Sumac, Poison Ivy, Virginia Creeper, Gum Bumelia, Greenbriar, Carolina Snailseed, Dewberry,	NA	NA	NA	Cedar Elm, Green Ash	NA	NA	NA	Parsley, Grama Spec., Bedstraw, Blue-eyed Grass, Wild Strawberry, 1 unknown species of grass, Thistle, Vetch spec	NA	No	No
44	Grassland	0.69	NA	NA	NA	NA	NA	NA	NA	Yucca	Wild Onion, Sunflower, Bluebonnet, Gayfeather, Verbena, Little Bluestem, Purple Paintbrush, Shortpod Mustard	NA	No	No
45	Upland Forest	0.89	Persimmon, Virginia Creeper, Greenbriar, Western Soapberry?, Privet spec., Rusty Blackhaw, Grape spec.,	Eve's Necklace	Bur Oak	NA	American Elm, Cedar Elm, Texas Ash	NA	NA	NA	Sedge spec., Nettle, 1 unknown	NA	No	No
46	Upland Forest	0.62	Roughleaf Dogwood, Poison Ivy, Greenbriar, Hackberry, Privet spec., 2 unknown	1 unknown	NA	NA	NA	Juniper spec	NA	NA	Bedstraw, Dandelion spec., 2 unknowns	NA	No	No
47	Riparian/B HF	0.81	Virginia Creeper, Hackberry, Mulberry	NA	Bur Oak	NA	Box Elder, American Elm	NA	NA	NA	Chasmanthium, Giant Ragweed, Wild Carrot, Speedwell, American Germander, Bedstraw, Hedge Parsley, Carex spec., Cocklebur, Cranes Bill, Corn Salad	Lots of bare soil, bottomland hardwood	No	No
48	Grassland	0.81	NA	NA	NA	NA	NA	NA	NA	Yucca	Seep Muhly, Buffalo grass, Gamma spec., Corn Salad, Texas Yellowstar, Dakota Mock Vervain, Plantain spec., Purple Paintbrush, Skullcap, Tickseed, Salvia	NA	No	No
49	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	No	No
50	Riparian/B HF	0.60	Greenbriar, Hackberry, Soapberry, Serviceberry, grape spec., Ivy spec., Virginia Creeper	Honey Locust	Bur Oak	NA	Cedar Elm	NA	NA	NA	Forget-me-not, Sedge spec., Bedstraw, Chervil, Inland Sea Oats, Brome spec., Avens spec., Clover spec., Morning Glory	NA	No	No
51	HF	0.74	NA	NA	NA	NA	Elder	NA	NA	Buttonbush	Junegrass, Pennywort	Willows	No	No
52	Grassland	0.58	Ground Plum	Mesquite	NA	NA	NA	NA	NA	NA	Johnsongrass, Tick Seed, Corn Salad, Ragwort, American Germander, Texas Winter Grass, Bedstraw, Vetch spec	Low quality, near easement	No	No

Point Number	Habitat Type	Final Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Notes	Trout Lily Present yes/no	Reverchon's Skurpea Present yes/no
53	Upland Forest	0.57	Nandina, Virginia Creeper, Carolina Snailseed, Mulberry, Hackberry, Grape spec., Privet spec., Greenbriar	Easter Redbud	Bur Oak	NA	Cedar Elm, Texas Ash	NA	NA	NA	Wild Garlic	NA	No	No
54	Upland Forest	0.52	Hackberry, Greenbriar	Honey Locust, Mesquite	NA	NA	Cedar Elm	NA	NA	Prickly Pear Cactus	Chervil, Bedstraw, Carex spec., Corn Salad, Ten Petal Anemone, Little Bluestem, 1 unknown	NA	No	No
55	Grassland	0.68	Hackberry, Gum Bumelia, Poison Ivy, Privet spec., Hackberry, Elbow Bush,	Mesquite	NA	NA	NA	NA	NA	Prickly Pear Cactus	Paintbrush, Sunflower Species, Bluebonnet, Verbena spec., Carex spec., Corn Salad, Indian Blanket, Rabbit Tobacco, Ten Petal Anemone, Switchgrass, Cloth-of-gold, Wood Sorrel,	NA	No	No
56	Upland Forest	0.71	Hackberry, Gum Bumelia, Poison Ivy, Privet spec., Hackberry, Elbow Bush,	NA	NA	NA	American Elm, Cedar Elm	Juniper spec.,	NA	NA	Wood Sorrel, Vetch spec., Chervil, 1 unknown, Carex spec., Cutgrass, Bedstraw	Floodpool	No	No
57	Riparian/B HF	0.72	Hackberry, Greenbriar	NA	NA	NA	Box Elder, Cedar Elm	NA	NA	Cottonwood	Speedwell, Wild Carrot, Carex spec., Dandelion, Inland Sea Oats, Fleabane, Scurf's Pea, Giant Ragweed, Oxalis spp., Bedstraw	NA	No	No
58	Upland Forest	0.60	Hackberry, Roughleaf Dogwood, Gum Bumelia, Poison Ivy, Greenbriar	Honey Locust	NA	NA	Cedar Elm	Eastern Redcedar	NA	Osage Orange, Prickly Pear Cactus	Corn Salad, Forget-me-not, Bedstraw, Sedge Spec., Chervil, Clover spec., Thistle, Germander, Field Madder, plantain spec., Geranium, Vetch spec	NA	No	No
59	Grassland	0.61	NA	NA	NA	NA	NA	NA	NA	Yucca	1 unknown flower, Yellow Aster, Little Bluestem, Paintbrush spec., Sage Grass?, Crow Poison, 7 unknowns	NA	No	No
60	Riparian/B HF	0.71	Hackberry, Greenbriar, Mustang Grape	NA	NA	NA	Box Elder, Cedar Elm	NA	NA	NA	Hedge Parsley, Inland Sea Oats, Wild Carrot, Bedstraw, Carex spec., Speedwell, Giant Ragweed, Giant Ragweed, American Germander	NA	No	No
61	Riparian/B HF	0.49	Mustang Grape	Honey Mesquite, Honey Locust	NA	NA	Cedar Elm, Green Ash	NA	NA	NA	Speedwell, Carex spec., Ragwort, Bee Balm, Geranium, Johnsongrass, Wild Lettuce	NA	No	No
62	Riparian/B HF	0.59	Peppervine, Gum Bumelia, Roughleaf Dogwood, Deciduous Holly?, Hackberry, Poison Ivy	NA	NA	NA	Ash spec., Cedar Elm	Juniper spec	NA	NA	Cutgrass, Ragweed spec., Wild Onion, Wild Garlic, Redseed Plantain, Sunflower, Inland Sea Oats, Ten Petal Anemone,	Beaver cut trees	No	No
63	Grassland	0.58	NA	NA	NA	NA	NA	NA	NA	Prickly Pear Cactus	1 unknown flower, Yellow Aster, Corn Salad, Bastard Cabbage, Little Bluestem, 2 Carex spec., 4 unknowns, Dropseed spec.,	NA	No	No

Point Number	Habitat Type	Final Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Notes	Trout Lily Present yes/No	Reverchon's Skurfpea Present yes/no
64	Riparian/B HF	0.76	Greenbriar, Sugarberry, Mustang Grape, Mulberry, Virginia Creeper, Gum Bumelia, Polson Ivy, Elderberry	NA	Bur Oak	NA	Box Elder, Green Ash, Cedar Elm, American Elm	NA	NA	Buttonbush	Carex spec., Bedstraw, Inland Sea Oats, Wildrye, Wild Carrot, Purpletop, Chasmanthium	NA	No	No
65	Riparian/B HF	0.66	Grape spec., Roughleaf Dogwood, Polson Ivy	Honey Locust	NA	NA	Green Ash	NA	NA	Cottonwood, Blackwillow	Inland Sea Oats, Goldenrod, Ragweed, Sedge Spec.	NA	No	No
66	Upland Forest	0.67	Gum Bumelia, Yaupon, Virginia Creeper, Polson Ivy, Greenbriar	Redbud, Honey Locust	Shumard Oak	NA	Cedar Elm	NA	NA	Prickly Pear Cactus	Corn Salad, Tickseed, Chasmanthium, Seep Muhly, Inland Sea Oats, Carex spec., Little Bluestem, Scribner's Panicum, Speedwell, Sporobolus, Bee Balm, Stoneseed, Crow Poison, Engelmann's Daisy, Bull Nettle, Blazing Star	Not really big enough to be considered just grassland. Mix of woodland.	No	No
67	Riparian/B HF	0.66	Greenbriar, Hackberry	NA	NA	NA	Box Elder, Cedar Elm	NA	NA	Cottonwood, Buttonbush	Geranium, Carex spec., Bedstraw	Not much ground cover-frequently inundated	No	No
68	Grassland	0.61	NA	NA	NA	NA	NA	NA	NA	Prickly Pear Cactus, Yucca	unknown flower, Yellow Aster, Ten Petal Anemone, Bluebonnet, 2 Carex spec., Little Bluestem, 5 unknowns, Crow Poison, Verbena, Paintbrush spec., Corn Salad	NA	No	No
69	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	No	No
70	Grassland	0.61	Polson Ivy	NA	NA	NA	NA	NA	NA	NA	Carex spec., Chervil, Goldenrod, Texas Prairie Parsley, Texas Bluegrass, Beaked Cornsalad, Frogfruit, Fleabane, Vetch spec, Crow, Poison, Snow on the Prairie, Showy Pink Primrose	NA	No	No
71	Riparian/B HF	0.78	Rusty Blackhaw, Cornelberry, Roughleaf Dogwood, Dewberry, Hackberry, Polson Ivy, Carolina Shalised, Grape Vine, Mulberry, Gum Bumelia	NA	Bur Oak, Shumard Oak	NA	Green Ash, American Elm	NA	American Sycamore	NA	Inland Sea Oats, Cut Grass, Lizard Tongue	NA	No	No

Point Number	Habitat Type	Final Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Notes	Trout Lily Present yes/No	Reverchon's Skurpea Present yes/no
72	Grassland	0.58	NA	NA	NA	NA	NA	NA	NA	Yucca	Bedstraw, Ground Cherry, Western Ragweed, Greenthread, Bushy Bluestem, Little Bluestem, Texas Bluegrass, Blue-eyed Grass, Skullcap, Texas Thistle, Engelmann's Daisy, Foxglove, Ten Petal Anemone, Snow On The Prairie	NA	No	No
73	Grassland	0.86	NA	NA	NA	NA	NA	NA	NA	Prickly Pear Cactus	Blazing Star, Paintbrush, Mealy Blue Sage, Cloth of Gold, Corn Salad, Silver Bluestem, Little Bluestem, Engelmann's Daisy, Blue-eyed Star Grass, Bull Nettle, Plantain, Wild Carrot	NA	No	No
74	Grassland	0.88	Dewberry	NA	NA	NA	Cedar Elm	NA	NA	Prickly Pear Cactus	Bull Thistle, Wild Carrot, Side Oats Grama, Four-nerve Daisy, Cranes Bill, Wild Lettuce, Crow Poison, Cloth of Gold, White Rosinweed, Paintbrush, Gaura, Corn Salad, Blazing Star, Prairie Verbena, Engelmann's Daisy, Meadowflax, Tenpetal Anemone, Little Bluestem, Blue-eyed Star Grass, Stone Seed, Allium, Tick Seed, Gayfeather, Sporobolus	NA	No	No
75	Grassland	0.80	NA	NA	NA	NA	NA	NA	NA	Prickly Pear Cactus, Jersey Tea	Paintbrush, Coneflower, Texas Sage, Engelmann's Daisy, Four-nerve Daisy, Little Bluestem, Big Bluestem, Seep Muhly, Blazing Star, White Rosinweed, Queen's Delight, Wild Onion, Threeween, Prairie Verbena, Blue-eyed Star Grass, Corn Salad, Crow Poison, Side Oats Grama, Bull Thistle	NA	No	No
76	Grassland	0.71	NA	NA	NA	NA	Cedar Elm	NA	NA	Prickly Pear Cactus, Jersey Tea	Four-nerve Daisy, Blazing Star, Little Bluestem, Sporobolus, Blue-eyed Star Grass, Threeween, Engelmann's Daisy, Corn Salad, False Indigo, Prairie Verbena, Indiangrass, Tenpetal Anemone, Bull Thistle, Wild Onion, Crow Poison, Meadowflax, Wild Hyacinth	NA	No	No

Point Number	Habitat Type	Final Score	Berry	Drupe	Legume Pod	Acorn	Nut	Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Notes	Trout Lily Present yes/No	Skurfpea Present yes/no
77	Riparian/B HF	0.61	Gum Bumella, Hack Berry, Yaupon, Poison Ivy, Greenbriar		Honey Mesquite	NA	NA	NA	Cedar Elm	NA	NA	Prickly Pear Cactus	Hedge Parsley, Corn Salad, American Germander, Bedstraw, Oxalis, Texas Star, Tenpetal Anemone, Thistle, Carex spec., Bee Balm, Geranium, Engelmann's Daisy, Indian Blanket, Wild Lettuce	NA	No	No
78	Grassland	0.44	NA		NA	NA	NA	NA	NA	NA	NA	NA	Four-nerve Daisy, Engelmann's Daisy, Corn Salad, Mimosa, Roadside Gaura, Ten Petal Anemone, Drummond's Onion, Skullcap, Purple Paintbrush, Plantain spec., Bermuda Grass, unknown wintergrass, Woollywhite, unknown Daisy	NA	No	No
79	Upland Forest	0.45	Japanese Privet, Gum Bumella, Greenbriar		NA	NA	NA	NA	Cedar Elm, Green	NA	NA	NA	Bedstraw, Hedge Parsley, Carex Spec.,	With exotic, m	No	No
80	Grassland	0.90	NA		NA	NA	NA	NA	NA	NA	NA	Prickly Pear Cactus	Dropseed spec., Little Bluestem, Ten Petal Anemone, Cloth-of-gold, Wild Onion, Texas Paintbrush, Blue Star, Plantain spec., Roadside Gaura, Eryngo spec., Engelmann's Daisy, Crow Poison, Storksbill	NA	No	No
81	Riparian/B HF	0.49	Greenbriar, Dewberry, Roughleaf Dogwood, Gum Bumella, Elbow Bush, Privet spec., Grapevine spec.,		NA	Post Oak, Burr Oak, White Oak?	Hickory/ Pecan ?		Cedar Elm, American Elm	NA	NA	NA	Cutgrass, Corn Salad, False Wild Indigo, Ten Petal Anemone,	NA	No	No
81A	Riparian/B HF	0.75	NA		NA	Burr Oak	NA		Cedar Elm	NA	NA	NA	Chervil, Carex spec.,	Large Burr Oaks	No	No
82	Grassland	0.88	NA		NA	NA	NA	NA	NA	NA	NA	Prickly Pear Cactus	Corn Salad, Bluebonnet, Little Bluestem, Drummond's Onion, Four-nerve Daisy, Tridens Grass Spec., Tickseed, Texas Paintbrush, Germander, Purple Paintbrush, Texas Paintbrush, Storksbill, Buffalograss, Dakota Mock Vervain, Vetch spec,	NA	No	No
83	Grassland	0.73	NA		NA	NA	NA	NA	NA	NA	NA	Yucca, Prickly Pear Cactus	Little Bluestem, Indian Grass, Blue-eyed Grass, Drummond's Onion, Crow Poison, Blue Star, Four-nerve Daisy, Sedge spec., Lily spec., Gayfeather, Engelmann's Daisy, Hairy Sedge, Plantain Spec.	NA	No	No

Point Number	Habitat Type	Final Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Notes	Trout Lily Present yes/No	Reverchon's Skurfpea Present yes/no
											Corn Salad, Engelmann's Daisy, Texas Paintbrush, Blue-eyed Grass, False Dandelion, Cloth-of-gold, Four-nerve Daisy, Dakota Mock Vervain, Sedge spec., plantain spec, Texas Yellowstar, Wild Carrot, Seep Muhly, Little Bluestem, Tickseed			
84	Grassland	0.71	NA	NA	NA	NA	NA	NA	NA	Prickly Pear Cactus		NA	No	No
85	Riparian/B HF	0.88	Greenbriar, Mustang Grape, Virginia Creeper, Gum Bumelia	NA	Shumard Oak, Bur Oak	Pecan	Box Elder, Cedar Elm, American Elm,	NA	NA	Cottonwood	Giant Ragweed, Honeysuckle, Wild Onion, Inland Sea Oats, Bedstraw	NA	No	No
86	Upland Forest	0.49	Hackberry, Greenbriar, Gum Bumelia, Western Soapberry, Poison Ivy	NA	NA	NA	Cedar Elm	NA	NA	Prickly Pear Cactus	Hedge Parsley, American Germander, Corn Salad, Carex spec., Oxalis spp., bull nettle, Bedstraw, Wild Lettuce, Ten-petal Anemone, Purple Top, Vetch spec,	NA	No	No
87	Grassland	0.90	Hawthorn, Hackberry	NA	NA	NA	NA	NA	NA	Prickly Pear Cactus	Vetch Spec., Cloth-of-gold, Big Bluestem, Little Bluestem, Silver Bluestem, Tickseed, Scurfpea, Indian Blanket, Paintbrush spec., Silver Wormwood, Prairie Verbena, Seep Muhly, White Rosinweed, Panicum spec., Engelmann's Daisy, Snakeweed, Coneflower	NA	No	No
88	Grassland	0.90	Gum Bumelia,	NA	NA	NA	Cedar Elm	NA	NA	NA	New Jersey Tea, Blue Star, Four-nerve Daisy, Little Bluestem, Big Bluestem, Sporobolus spec., Seep Muhly, Antelope Horn, Tickseed, Corn Salad, Aster spec., Wild Lettuce, Indian Blanket, Engelmann's Daisy, Stone Seed, Sldoats Grama	NA	No	No
89	Upland Forest	0.85	Rusty Blackhaw, Poison Ivy, Greenbriar, Gum Bumelia, Soapberry	Eastern Redbud, Eve's Necklace, Eastern Redcedar	NA	Bigelow Oak	Cedar Elm	NA	NA	Yucca, Mexican Buckeye	Unknown grass, Sedge spec, Carrot spec., Inland Sea Oats, Fawn Lilly	NA	No	No
90	Upland Forest	0.83	Honeysuckle, Skunkbush, Poison Ivy, Roughleaf Dogwood, Stretchberry, Greenbriar, Hackberry	Eastern Redbud, Ashe Juniper,	Buckley Oak	NA	NA	NA	NA	Yucca, Mexican Buckeye	Four-nerve Daisy, Mimosa, Scurf Pea, Grama spec., Little Bluestem, Purple Paintbrush, Geranium, Gayfeather	NA	No	No

Point Number	Habitat Type	Final Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Notes	Trout Lily Present yes/No	Reverchon's Skurfpea Present yes/no
90A	Upland Forest	0.94	Mexican Plum, Greenbriar, Glossy Privet, Chinese Privet, Virginia Creeper, Roughleaf Dogwood, Carolina Buckthorn, Rusty Blackhaw, Hackberry	Texas Redbud, Eve's Necklace	NA	Texas Walnut, Buckley Oak, Pecan	Cedar Elm, Winged Elm	NA	NA	Yucca, Prickly Pear Cactus, Mexican Buckeye, unknown grass	Chervil, Engelmann's Daisy, Sedge spec., Aster spec., Clover spec., Corn Salad, Inland Sea Oats, Aven spec., Geranium	NA	No	No
91	Riparian/B HF	0.80	Rusty Blackhaw, Hackberry, Gum Bumelia, Possumhaw Holly, Virginia Creeper, Mustang Grape, Greenbriar, Nandina, Elbow Bush, Japanese Privet	NA	Red Oak	NA	Cedar Elm	NA	NA	Yucca, Mexican Buckeye,	Wood Sorrel, Cedar Sedge, Cutgrass, Hedge Parsley, Wild Lettuce, Wild Onion, Bedstraw, White Arens	Off the equestrian trail	No	No
92	Upland Forest	0.76	Deciduous Holly, Western Soapberry, Virginia Creeper, Hackberry, Poison Ivy, Chinaberry, Mustang Grape, Privet spec., Gum Bumelia, Rusty Leaf Viburnum	Eastern Redbud, Eve's Necklace,	Red Oak	NA	Green Ash, Cedar Elm	Juniper spec.,	NA	NA	Boneset, Hedge Parsley, Bedstraw, Forget-me-not, Wildrye, Chervil, White Arens, Henbit	NA	No	No
93	Riparian/B HF	0.86	Virginia Creeper, Greenbriar, Possumhaw Holly, Hackberry, Glassy Privet	NA	NA	NA	Cedar Elm	Juniper spec	NA	Cottonwood	Cutgrass, Wood Sedge, Wild Lettuce, Hedge Parsley, Speedwell, Cucumber Weed, Sedge spec., Buttercup, Chervil	Large Elm and Sycamore	No	No
94	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	Skipped	No	No
95	Riparian/B HF	0.78	Glossy Privet, Virginia Creeper, Poison Ivy, Honey Suckle, Greenbriar, Roughleaf Dogwood, Possumhaw Holly, Privet spec., Hackberry, Rusty Blackhaw	Eastern Redbud, Eve's Necklace	Red Oak, Bur Oak	NA	Green Ash, Cedar Elm	Juniper spec.,	NA	NA	Purpletop, Wood Sorrel, Bedstraw, 2 Sedge spec., Juncus spec., Engleman's Sedge, Hairy Vetch, Curleydock	NA	No	No
96	Upland Forest	0.67	Poison Ivy, Rusty Blackhaw, Gum Bumelia, Elbow Bush, Fragrant Sumac, 1 unknown, Honey Suckle,	Eastern Redbud	Red Oak	NA	NA	Juniper spec.	NA	Grooved Nipple Cactus, Yucca, Prickly Pear Cactus, Mexican Buckeye,	New Jersey Tea, Trout Lily, Carex spec., Blue Star, Coreopsis, Sourpea	NA	Yes	No
97	Upland Forest	0.67	White Honeysuckle, Elbow Bush, Poison Ivy, Japanese Honeysuckle, Rusty Blackhaw, New Jersey Tea, Dwarf Leaf Plantain	Eastern Redbud,	Red Oak	NA	NA	Juniper spec.	NA	Yucca, Mexican Buckeye,	Trout Lily, Carex spec., Linear-leaf Sourpea, Fox Glove, Little Bluestem, Blue-eyed Grass, Sedge spec., Chervil, Corn Salad, Seep Muhly, Dwarf Plantain,	NA	Yes	No

Point Number	Habitat Type	Final Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Notes	Trout Lily Present yes/No	Reverchon's Skurfpea Present yes/no
98	Grassland	0.73	Elbow Bush, Aromatic Sumac, Chickasaw Plum, New Jersey Tea,	NA	NA	NA	NA	Juniper spec	NA	Yucca	Little Bluestem, Tall Grama, Chervil, Corn Salad, Penny Royal, Compass Plant, Rabbit Tobacco, Fringed Bluestem, Buckwheat, Barbara's Buttons, Seep Muhly, Drummond's Skulcap, Bluebonnet, Big Fruit Primrose, White-milk Wort, Blue-eyed Grass,	NA	No	No
99	Grassland	0.68	Mexican Plum, Aromatic Sumac	NA	NA	NA	Cedar Elm	Juniper spec.	NA	Prickly Pear Cactus	Artemisia spec., Bedstraw, Dropseed spec., Purple Paintbrush, Indian Grass, Engelmann's Daisy, Fringed Phacelia, Wild Onion, Blue-eyed Grass, Ten Petal Anemone, Snow on the Prairie Sundrops, Meadow Flax, American Basket-flower, Beebalm, Verbena Spec., Wood Vetch	Invaded prairie, potential restoration	No	No
100	Grassland	0.90	Gum Bumelia, Elbow Bush, Aromatic Sumac	NA	NA	NA	NA	Juniper spec.	NA	Yucca, Prickly Pear Cactus, Mexican Buckeye	Bedstraw, Compass Plant, Storksbill, Engelmann's Sage, Carex spec. Arundo Donax, Pennyroyal, Wild Onion, Chervil, Blue Star, 1 unknown, Reverchon's Scurfpea, Rabbit Tobacco	NA	No	Yes
101	Grassland	0.73	Aromatic Sumac	NA	NA	NA	NA	NA	NA	Yucca, Prickly Pear Cactus	Prairie Dropseed, Greenthread spec., Indian Blanket, Storksbill, Texas Buckwheat, Four-nerve Daisy, Ten Petal Anemone, Prairie Verbena, Purple Paintbrush, Drummond's Onion, Bracted Spurge, Phyllanthus, Dwarf Plantain, Threeawn, Blue Star, Sun Drops, Rabbit Tobacco, Corn Salad, Chervil, Sage Spec., Engelmann's Daisy,	High Quality, ESA, SGN,	No	No
102	Grassland	0.68	Skunkbush, Prairie Leaf, Gum Bumelia, Hackberry	Mesquite	NA	NA	NA	NA	NA	Yucca, Prickly Pear Cactus	Bluebonnet, Purple Paintbrush, Cloth-of-gold, Drummond's Onion, Ten Petal Anemone, Four-nerve Daisy, Flax, Thistle, Sideoats Grama, Johnson Grass, Roadside Gaura, Dakota Mock Vervain, Storksbill, Plantain spec, Engelmann's Daisy,	NA	No	No

Point Number	Habitat Type	Final Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Notes	Trout Lily Present yes/no	Reverchon's Skurfpea Present yes/no
103	Grassland	0.78	Toothache Tree, Poison Ivy, Roughleaf Dogwood	NA	NA	NA	American Elm	NA	NA	NA	Prairie Parsley, Ragweed, Vetch spec., Thistle, Germander, Queen's Delight, Geranium, 2 Sedge spec., Little Bluestem, Ten Petal Anemone, Bluebonnet, Euphorbia, Reticulated-seeded Spurge, Eastern Gamagrass	NA	No	No
104	Upland Forest	0.55	Poison Ivy, Gum Bumelia, Glossy Privet, Roughleaf Dogwood, Hackberry, Greenbriar, Serviceberry, plum	Honey Locust	NA	NA	NA	NA	NA	Prickly Pear Cactus	Ten Petal Anemone, Carrot spec., Scurf Pea, unknown grass, Avena spec., Clover spec., Germander, Prairie Parsley, Vetch spec	NA	No	No
105	Grassland	0.69	Hackberry, Elbow Bush, Poison Ivy, Glossy Privet, Roughleaf Dogwood, Greenbriar, Stretchberry, Gum Bumelia	NA	NA	NA	Cedar Elm	Juniper spec.	NA	Prickly Pear Cactus	Common Spikerush, 2 Sedge spec., Queen's Delight, Germander, Texas Wintergrass, Cloth-of-gold, Crow Poison, Forget-me-not, Indian Grass, Little quaking-grass, Dakota Mock Vervain, Ragweed, Cranesbill, Seep Muhly, Thistle, Vetch spec	NA	No	No
106	Grassland	0.69	Hackberry, Gum Bumelia, Roughleaf Dogwood, Poison Ivy, Serviceberry	NA	NA	NA	NA	Juniper spec.	NA	Yucca, Prickly Pear Cactus	Great Plains Ragwort, Bluebonnet, Ten Petal Anemone, Texas Wintergrass, Chervil, Sedge spec., Clover spec., unknown grass, Vetch spec	NA	No	No
107	Grassland	0.76	NA	NA	NA	NA	NA	NA	NA	Prickly Pear Cactus, Yucca	Storksbill, Drummond's Onion, Engelmann's Daisy, Four-nerve Daisy, Woollywhite, Hairy Grama, Ten Petal Anemone, Texas Paintbrush, Purple Paintbrush, Cloth-of-gold, Bastard Cabbage, unknown grama, threeawn, Little Bluestem, Sideoats Grama	NA	No	No
107A	Grassland	1.00	Toothache Tree	NA	NA	NA	NA	NA	NA	Yucca	Little Bluestem, Wild Lettuce, Ten Petal Anemone, Salvia Spec., Sedge Spec., Big Bluestem, Seep Muhly, Blue Eyed Star Grass, Thistle, Corn Salad, Engelmann's Daisy, Carrot Spec., Sedge Spec., Vetch spec	NA	No	No

Point Number	Habitat Type	Final Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Notes	Trout Lily Present yes/No	Reverchon's Skurfpea Present yes/no
108	Grassland	0.88	NA	NA	NA	NA	NA	NA	NA	Yucca	Little Bluestem, Seep Muhly, Dakota Mock Vervain, Blue Star, Crow Poison, Gayfeather, Salvia spec., unknown grass, Engelmann's Daisy, Four-nerve Daisy, Nettle, Corn Salad, Chervil, Coreopsis spec., Compass Plant	NA	No	No
109	Grassland	0.68	Dewberry, Hackberry	Mesquite, Honey Locust	NA	NA	NA	NA	NA	Buttonbush	Switchgrass, Eryngo spec., Plantain Spec., Speedwell, Drummond's Onion, Crow Poison, Cloth-of-gold, Corn Salad, Wild Lettuce, Engelmann's Daisy, Vetch spec	NA	No	No
110	Grassland	0.85	Skunkbush, Gum Bumelia	NA	NA	NA	NA	NA	NA	Yucca, Prickly Pear Cactus,	Sideoats Grama, Engelmann's Daisy, Four-nerve Daisy, Cloth-of-gold, Dakota Mock Vervain, Drummond's Onion, Seep Muhly, Flax, Bluebonnet, Crow Poison, Corn Salad, Partridge PEa, Thistle Gayfeather, Purple Paintbrush	NA	No	No
111	Grassland	0.71	NA	NA	NA	NA	NA	NA	NA	Yucca,	Little Bluestem, Hairy Grama, Four-nerve Daisy, Drummond's Onion, Tickseed, Blue-eyed Grass, unknown clump grass, Ten Petal Anemone, Engelmann's Daisy, Storksbill,	NA	No	No
112	Grassland	0.78	NA	Mesquite	NA	NA	Cedar Elm	NA	NA	Prickly Pear Cactus	Blue Star, Gayfeather, Sideoats Grama, Little Bluestem, Drummond's Onion, Cloth-of-gold, Corn Salad, Thistle, Wild Lettuce, Ten Petal Anemone, Tickseed,	No Invasives	No	No
113	Grassland	0.92	Skunkbush,	NA	NA	NA	Prickly Ash	Ashe Juniper	NA	Yucca	Blue-eyed Grass, Corn Salad, Threeawn, Four-nerve Daisy, Bastard Cabbage, Cloth-of-gold, Ten Petal Anemone, Ceanothus spec., Panicum Grass, Drummond's Onion, unknown fall grass, Tickseed, Little Bluestem, Hairy Grama, Engelmann's Daisy	NA	No	No
114	Grassland	0.71	NA	NA	NA	NA	NA	NA	NA	Prickly Pear Cactus, Yucca	Blue Star, Drummond's Onion, Cloth-of-gold, Storksbill, Hairy Grama, Purple Paintbrush, Yarrow, Ten Petal Anemone, Corn Salad, Threeawn, Plantain spec., Tickseed, Thistle, Buffalo Grass	NA	No	No

Point Number	Habitat Type	Final Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Notes	Trout Lily Present yes/No	Reverchon's Skurpea Present yes/no
115	Riparian/B HF	0.52	Hackberry	Honey Locust	NA	NA	Cedar Elm	NA	NA	NA	2 types of grasses, Crow Poison, Miner Lettuce, Sedge spec., Dollar Weed, 1 unknown, Speedwell, Cranesbill, Geranium, Germander	Floodpool, large cottonwoods	No	No
116	Grassland	0.58	Gum Bumella, Skunk Bush,	False Indigo,	NA	NA	NA	NA	NA	NA	Switchgrass, King Ranch Bluestem, Rosinweed spec., Fringed Puccoon, Ten Petal Anemone, Vervain spec., Blue-eyed Grass, Daisy spec., Little Bluestem, Bushy Ligustrum, Corn Salad, Engelmann's Daisy, Beggarslice, Sideoats Grama	NA	No	No
117	Grassland	0.69	Hackberry	Honey Locust	NA	NA	Cedar Elm	NA	NA	Prickly Pear Cactus	Little Bluestem, Skullcap, Corn Salad, Cloth-of-gold, Engelmann's Daisy, Dakota Mock Vervain, Germander, Chervil, Dallis Grass, Geranium, Plantain Spec., Thistle, Tickseed, Vetch	NA	No	No
117A	Riparian/B HF	0.58	Hackberry, Carolina Snailseed,	Honey Locust	NA	Oak spec.,	Cedar Elm	NA	NA	NA	Chervil, Clover, Sedge Spec., Forget-me-not, Germander, Inland Sea Oats, Geranium, Bedstraw, 2 Clover Spec., Fleabane, Corn Salad, Vetch spec	NA	No	No
118	Grassland	0.73	Skunk Bush, Serviceberry, Gum Bumella, Toothache Tree	NA	NA	NA	Cedar Elm	Ashe Juniper	NA	Yucca	Blue Star, Crow Poison, Onion spec., Blue-eyed Grass, Daisy spec., Compass Plant, Corn Salad, Standing Cypress, Texas Grama, Little Bluestem,	Has good prairie species	No	No
119	Grassland	0.20	NA	NA	NA	NA	NA	NA	NA	NA	Purple Paintbrush, Bluebonnet, Texas Paintbrush, Roadside Gaura, Cloth-of-gold, Storksbl, Standing Cypress, Grama spec.,	NA	No	No
120	Grassland	0.46	Hackberry	NA	NA	NA	NA	NA	NA	Prickly Pear Cactus	Bushy Bluestem, Vervain spec., Sunflower, Johnson Grass, Corn Salad, Parsley, Thistle, Aster Spec., Cypress Spurge, Vetch spec	NA	No	No
121	Grassland	0.73	Sumac spec., Greenbriar, Western White Honeysuckle, Stretchberry	Mesquite	NA	NA	Cedar Elm	Ashe Juniper, Eastern Redcedar	NA	Prickly Pear Cactus	Burr Clover, Vetch spec., Thistle, Engelmann's Daisy, Dakota Mock Vervain, Carrot Spec., Wild Parsley, King Ranch Bluestem, Ten Petal Anemone, Ceanothus spec.	NA	No	No

Point Number	Habitat Type	Final Score	Berry Drupe	Legume Pod	Acorn	Nut Nutlike	Samara	Cone	Achene	All Others	Herbaceous Species	Notes	Trout Lily Present yes/No	Reverchon's Skurfpea Present yes/no
122	Grassland	0.37	NA	NA	NA	NA	NA	NA	NA	NA	Bluebonnet, Bastard Cabbage, Engelmann's Daisy, Roadside Gaura, Crow Poison, Wild Parsley, Introduced Brome, Field Madder, Cloth-of-gold, Introduced Thistle, Moth Vervain, Vetch spec	NA	No	No
123	Grassland	0.92	Western Soapberry, Yaupon, Mustang Grape, Gum Bumelia, Virginia Creeper, Hackberry, Greenbriar	Honey Locust	Live Oak, Shumard Oak	NA	Cedar Elm	Ashe Juniper	NA	Prickly Pear Cactus	Bedstraw, Corn Salad, Wild Carrot, Geranium, Hedge Parsley, Wild Lettuce, Plantain, Germander, Wild Rye, Oxalis spp., Purple Top	Good understory	No	No
124	Riparian/B HF	0.62	Mistletoe, Grape spec., Hackberry, Greenbriar, Poison Ivy, Gum Bumelia,	Honey Locust	Red Oak, Live Oak Pecan		Winged Elm, Cedar Elm	NA	NA	unknown, Prickly Pear Cactus	Ten Petal Anemone, Chervil, Avens spec., Plantain spec., 2 grasses, Thistle, Mullein spec., Sunflower, Clover spec., Queen's Delight, Corn Salad, Bedstraw, Vervain Spec., Johnson Grass, Vetch spec	NA	No	No

Attachment B: Benbrook Lake WHAP Point Photographs

Benbrook Lake #: 1

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 2

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 2A

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 3

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 6

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 7

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 8

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 9

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 9A

Facing North



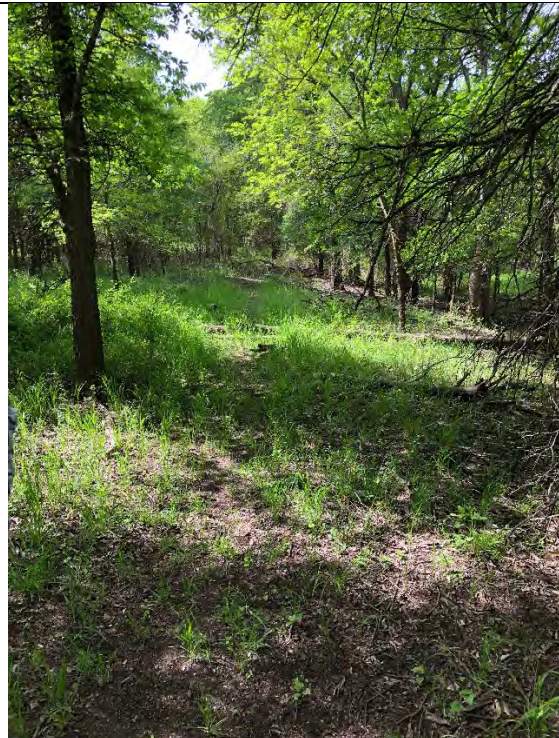
Facing East



Facing West



Facing South



Benbrook Lake #: 10

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 11

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 12

Facing North



Facing East



Facing West

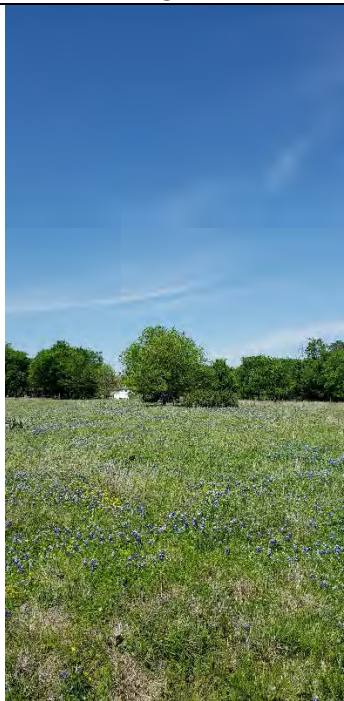


Facing South



Benbrook Lake #: 13

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 15

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 16

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 17

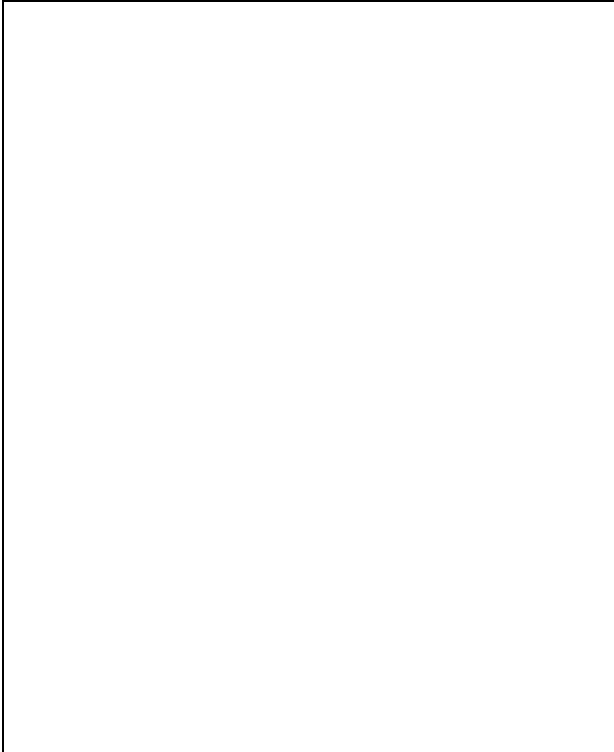
Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 18

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 19

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 20			
Facing North		Facing East	
			
Facing West		Facing South	
			

Benbrook Lake #: 22

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 23

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 24

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 25

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 26

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 27

Facing North



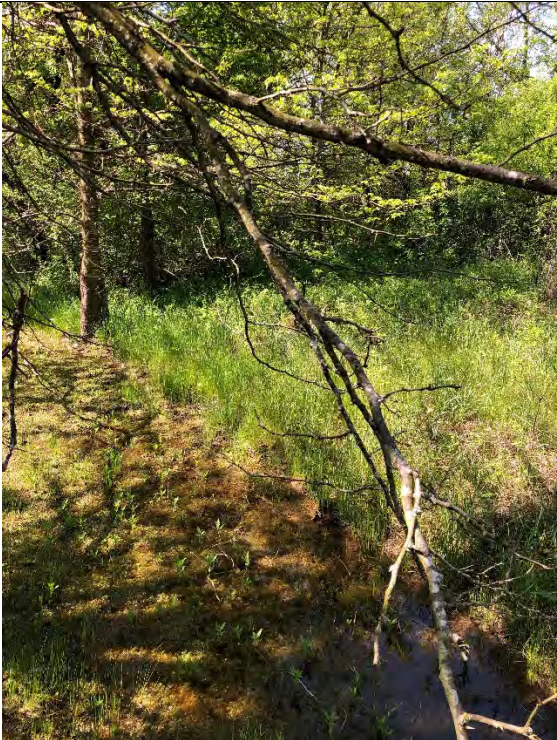
Facing East



Facing West



Facing South



Benbrook Lake #: 29

Facing North



Facing East



Facing West

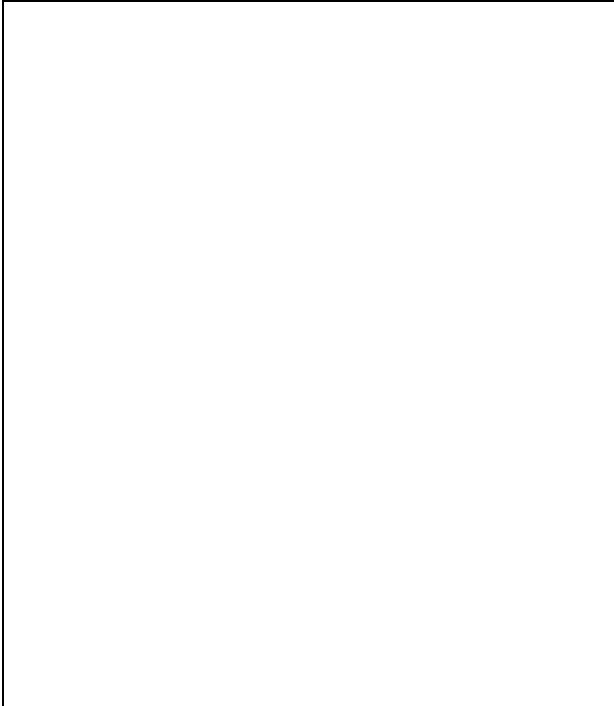


Facing South



Benbrook Lake #: 30

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 31

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 32

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 33

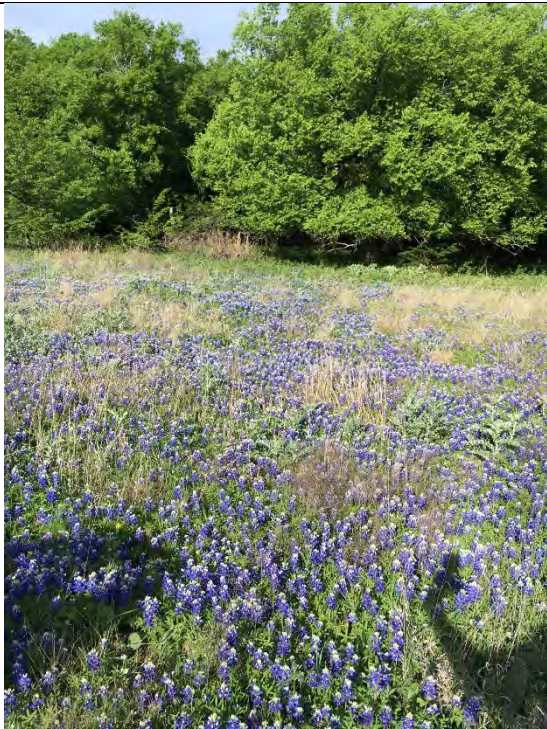
Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 35

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 37

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 38

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 41

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 42

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 43

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 44

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 45

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 46

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 47

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 48	
Facing North	Facing East
	
Facing West	Facing South
	

Benbrook Lake #: 50	
Facing North	Facing East
	
Facing West	Facing South
	

Benbrook Lake #: 51

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 52

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 53

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 54

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:55

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:57

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:58

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:59

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:60

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:61

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:62

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:63

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:64

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:65

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:66

Facing North



Facing East




Facing West



Facing South



Benbrook Lake #:67	
	Only Picture
	

Benbrook Lake #:68

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:70

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:71

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:72

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:73

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:74

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:75

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:76

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:77

Facing North



Facing East







Facing West



Facing South



Benbrook Lake #:78			
Facing North		Facing East	
			
Facing West		Facing South	
			

Benbrook Lake #:79

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:80

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:81

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:81A

Facing North



Facing East







Facing West




Facing South



Benbrook Lake #:82	
Facing North	Facing East
	
Facing West	Facing South
	

Benbrook Lake #:83			
Facing North		Facing East	
			
Facing West		Facing South	
			

Benbrook Lake #:84			
Facing North		Facing East	
			
Facing West		Facing South	
			

Benbrook Lake #:85

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:86

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:87

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:88

Facing North



Facing East



Facing West



Facing South

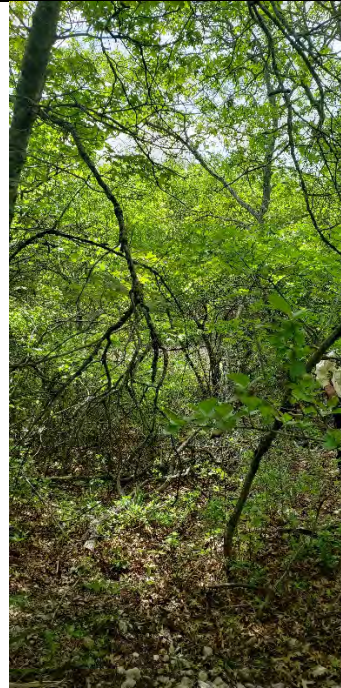


Benbrook Lake #:89

Facing North



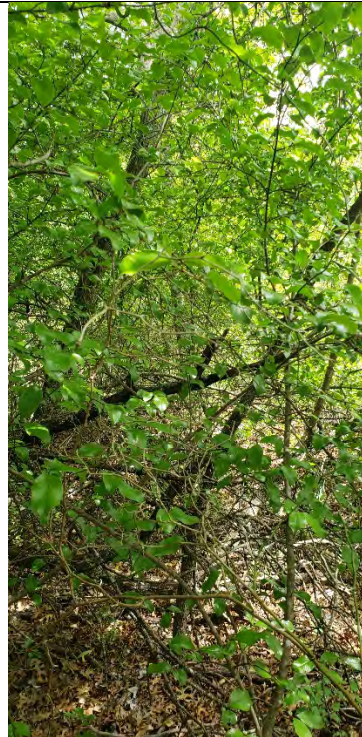
Facing East






Facing West



Facing South



Benbrook Lake #:90	
Facing North	Facing East
	
Facing West	Facing South
	

Benbrook Lake #:90A	
Facing North	Facing East
	
Facing West	Facing South
	

Benbrook Lake #:91

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:92

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:93

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:95

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:96

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:97

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:98

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:99

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:100

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #:101

Facing North



Facing East




Facing West



Facing South



Benbrook Lake #:102	
Facing North	Facing East
	
Facing West	Facing South
	

Benbrook Lake #: 103	
Facing North	Facing East
	
Facing West	Facing South
	

Benbrook Lake #: 104

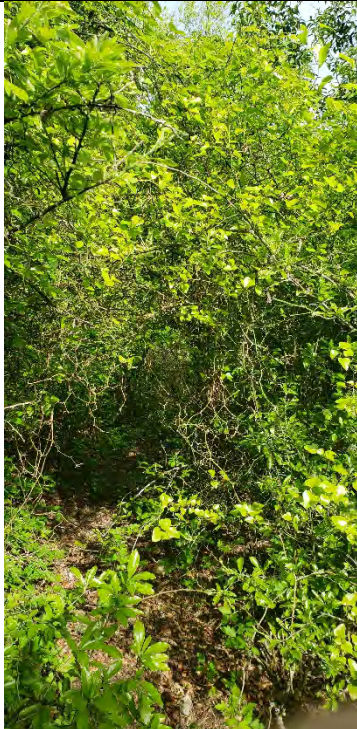
Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 105	
Facing North	Facing East
	
Facing West	Facing South
	

Benbrook Lake #: 106

Facing North



Facing East





Facing West



Facing South






Benbrook Lake #: 107	
Facing North	Facing East
	
Facing West	Facing South
	

Benbrook Lake #: 107A	
Facing North	Facing East
	
Facing West	Facing South
	

Benbrook Lake #: 108			
Facing North		Facing East	
			
Facing West		Facing South	
			

Benbrook Lake #: 109			
Facing North		Facing East	
			
Facing West		Facing South	
			

Benbrook Lake #: 110	
Facing North	Facing East
	
Facing West	Facing South
	

Benbrook Lake #: 111	
Facing North	Facing East
	
Facing West	Facing South
	





Benbrook Lake #: 112	
Facing North	Facing East
 A vertical photograph showing a field of tall, dry, brownish grass in the foreground. In the background, there is a line of green trees under a clear blue sky.	 A vertical photograph showing a field of tall, dry, brownish grass in the foreground. In the background, there is a line of green trees under a clear blue sky.
Facing West	Facing South
 A vertical photograph showing a field of tall, dry, brownish grass in the foreground. In the background, there is a line of green trees under a clear blue sky.	 A vertical photograph showing a field of tall, dry, brownish grass in the foreground. In the background, there is a line of green trees under a clear blue sky.

Benbrook Lake #: 113	
Facing North	Facing East
	
Facing West	Facing South
	

Benbrook Lake #: 114	
Facing North	Facing East
	
Facing West	Facing South
	

Benbrook Lake #: 115	
Facing North	Facing East
	
Facing West	Facing South
	

Benbrook Lake #: 116	
Facing North	Facing East
	
Facing West	Facing South
	

Benbrook Lake #: 117	
Facing North	Facing East
	
Facing West	Facing South
	




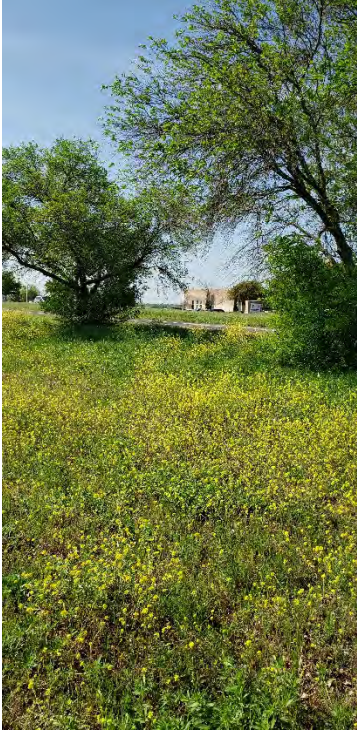
Benbrook Lake #: 117A	
Facing North	Facing East
	
Facing West	Facing South
	

Benbrook Lake #: 118	
Facing North	Facing East
	
Facing West	Facing South
	

Benbrook Lake #: 119	
Facing North	Facing East
	
Facing West	Facing South
	

Benbrook Lake #: 120	
Facing North	Facing East
 A photograph taken facing North. The foreground is filled with tall, dry, brownish grass and some green weeds. In the middle ground, there is a large, leafy green tree. The background shows a clear blue sky with a few wispy clouds.	 A photograph taken facing East. The foreground is filled with tall, dry, brownish grass and some green weeds. In the middle ground, there is a small, leafy green tree. The background shows a clear blue sky with a few wispy clouds.
Facing West	Facing South
 A photograph taken facing West. The foreground is filled with tall, dry, brownish grass and some green weeds. In the middle ground, there is a small, leafy green tree. The background shows a clear blue sky with a few wispy clouds.	 A photograph taken facing South. The foreground is filled with tall, dry, brownish grass and some green weeds. In the middle ground, there is a small, leafy green tree. The background shows a clear blue sky with a few wispy clouds.

Benbrook Lake #: 121			
Facing North		Facing East	
			
Facing West		Facing South	
			

Benbrook Lake #: 122	
Facing North	Facing East
	
Facing West	Facing South
	

Benbrook Lake #: 123

Facing North



Facing East



Facing West



Facing South



Benbrook Lake #: 124	
Facing North	Facing East
	
Facing West	Facing South
	

**PRAIRIE SURVEY SUMMARY REPORT FOR BENBROOK LAKE
TARRANT COUNTY, TEXAS**



July 2020



**US Army Corps
of Engineers®**
Fort Worth District

This page intentionally left blank

Table of Contents

Introduction.....	1
Study Area.....	1
Methodology.....	1
Line-point alternative (LIA) Procedures	1
Results and Discussion	2
Summary	4
Recommendations	4
References	5
Appendix A: List of Possible Scoring Index Correlation Map and Figures.....	6
Attachment A: Benbrook Lake Prairie Results Summary	12
Attachment B: Benbrook Lake Prairie Point Photographs	13



Introduction

Prairie assessments were conducted within U.S. Army Corps of Engineers' (USACE) fee-owned property at Benbrook Lake on October 7-11, 2019, using a modification of the United States Department of Agriculture (USDA) Line-point intercept alternative (LIA) (Herrick et al. 2005). This surveying effort ended with the culmination of 17 separate points of data being collected. Prairie survey point locations were selected based on data obtained from the Wildlife Habitat Appraisal Procedure (WHAP) survey conducted at Benbrook Lake in April 2019 as well as conferred with representatives from the Natural Resources Conservation Service (NRCS) that best represent the prairies that may be in the greatest conservation need.

The purpose of this report is to describe prairie quality within the USACE Benbrook Lake fee-owned property in Tarrant County, Texas. This report is being prepared by the USACE Regional Planning and Environmental Center (RPEC) to provide prairie quality information and for long-term land management decisions and as well for the 2020 Benbrook Lake Master Plan Revision.

Study Area

USACE fee owned property at Benbrook Lake, approximately 8,745 acres, is located within the Fort Worth metroplex in north central Texas. More specifically, the lake sits primarily between the cities of Fort Worth and Benbrook, Texas within the Cross Timbers ecoregion. Benbrook Lake lies on the Clear Fork of the Trinity River. The major tributaries to the Clear Fork are the South Fork, Bear Creek, Mustang Creek, Rock Creek and Squaw Creek. Downstream of the Benbrook Lake dam, the Clear Fork meanders through numerous low water dams until its confluence with the West Fork of the Trinity River.



Methodology

An interagency team of NRCS and USACE natural resources specialists, biologists, and volunteers conducted the prairie surveys on October 7-11, 2019. A modification of USDA Line-point alternative (LIA) was used to analyze and describe the prairie conditions by using a similarity scoring index.

The similarity scoring index is based on the maximum number of species of plants that the 17 survey sites have in common with each other, which is 31 (9 sites). This number is then divided into each individual transect area survey site total species diversity number, which then gives the similarity score for that site.

Line-point alternative (LIA) Procedures

The modified LIA requires evaluating species density and diversity present within an area of interest. For this project, a search area of 30ft from the 150 ft transect tape was surveyed to compile a list of plant species occurring at each site (transect area) and to complete the Benbrook Point Drop Form. Field data collected on the Point Drop Form at each site included collecting the following component data:

1. Distance from the 0ft mark?

2. What is the pen touching at this layer?
3. And pending on what is being touched, it can further ask what kind of soil, and what kind of plant? Then after answering what kind of plant, it will ask what specific species is present.
4. How tall is this layer?

The transect tape was laid out to capture the greatest degree of difference in topography, if the area was on relatively flat land then the transect tape was laid to sample the greatest degree in species diversity.



Field data collected on the Transect Area Form at each site included the following components:

1. GPS coordinates
2. North, East, South, and West photos
3. Layout of the transect tape on a map
4. What kind of topography does the transect lie on starting at the 0ft mark?
5. ID all the plants within 30ft of the 150ft transect, these are grouped into 5 different plant groups.

Results and Discussion

From the analysis done for Figures 1-5, it was determined that the sites had:

- an average score of 0.83
- leaf litter the prominent cover for the base layer
- most points have 4 layers
- average height of the vegetation is 24.5 inches
- forbs constitute the greatest number of species

Because the scoring index is based on diversity, the points surveyed constitute some of the highest scoring prairies for Benbrook Lake, and there only 17 sites were surveyed, no correlation could be determined that would cause an increase and decrease in the similarity score as seen in Appendix A.

Figure 1. Similarity Score		
Average	Minimum	Maximum
0.83	0.55	1

Figure 2. First Layer Cover Type Composition	
Cover Type	Percentage
Exposed Soil	15%
Leaf Litter	56%
Plants (Alive)	28%
Rock (Broken	1%

Figure 3. Count of Drop Points With Various Number of Layers	
Layer	Count
1 layer	22
2 layers	24
3 layers	47
4 layers	51
5 layers	29
6 layers	8
7 layers	6
8 layers	1



Figure 4. Layer Height (in.)			
	Average	Minimum	Maximum
1st layer	13.6	1	38
2nd layer	15.1	1	40
3rd layer	18.8	8	40
4th layer	24.5	7	50
5th layer	29.6	17	96
6th layer	27	18	33
7th layer	27.5	21	36
8th layer	20	20	20

Figure 5. Transect Area Species Diversity			
	Average	Minimum	Maximum
Grass	9.3	6	13
Cactus & Yucca Species Count	1.4	0	3
Forb Species Count	29	21	39
Shrub And Vine Species Count	1.1	0	4
Tree Species Count	3.3	1	6

Summary

In summary, using the modification of USDA Line-point alternative (LIA) analyses, survey teams were able to sample the predetermined selected points throughout USACE Benbrook Lake fee-owned project lands. This resulted in an overall prairie evaluation that has revealed that the various specific characteristics of individual pocket prairies at Benbrook Lake.

Recommendations

Even with planned and unplanned disturbances, there are numerous areas of valuable prairie habitat remaining within Benbrook Lake project lands.

Based on the results of the prairie survey efforts, USACE now has better prairie quality information. This information will promote better long-term land management decisions and as well assist in planning for the Benbrook Lake Master Plan Revision.

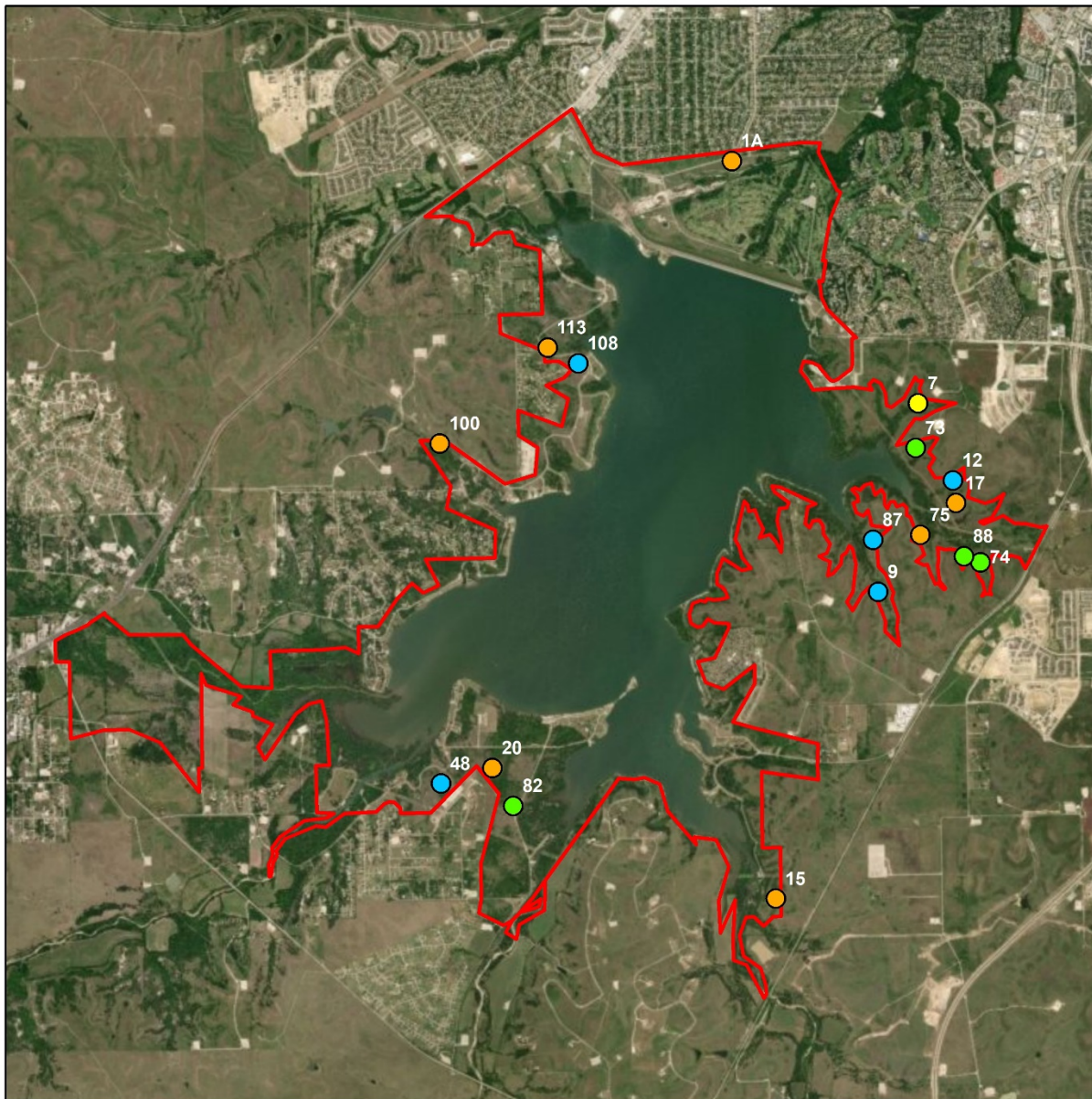


References

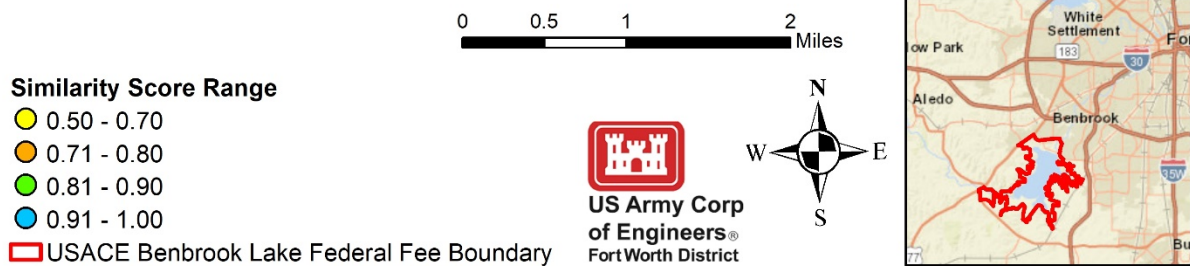
Herrick, Jeffrey E., Justin W. Van Zee, Kris M. Havstad, Laura M. Burkett, and Walter G. Whitford. 2005. "Monitoring Manual." In *Monitoring Manual for Grassland, Shrubland, and Savanna Ecosystems*, 2nd ed, 1: Core Me:1–200. Tucson, AZ: The University of Arizona Press



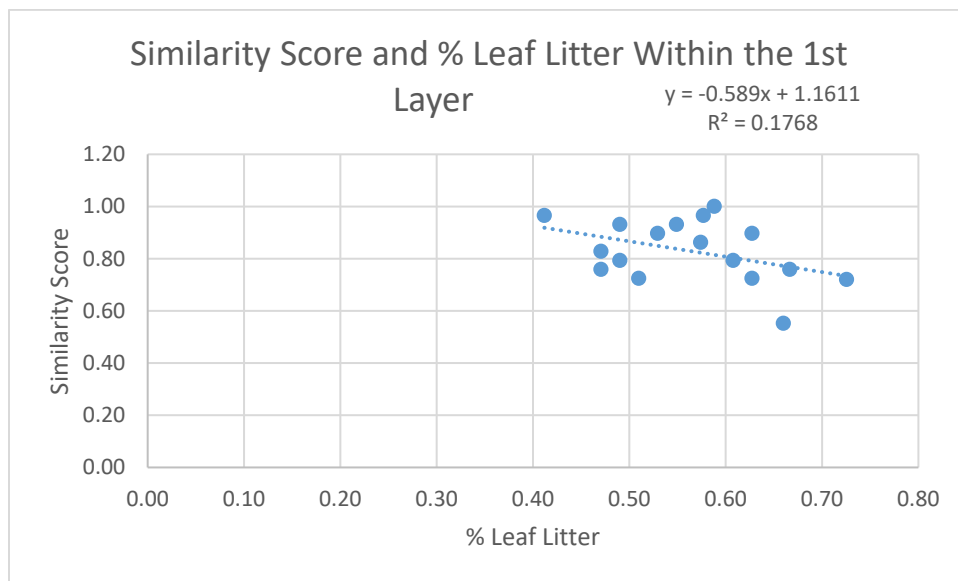
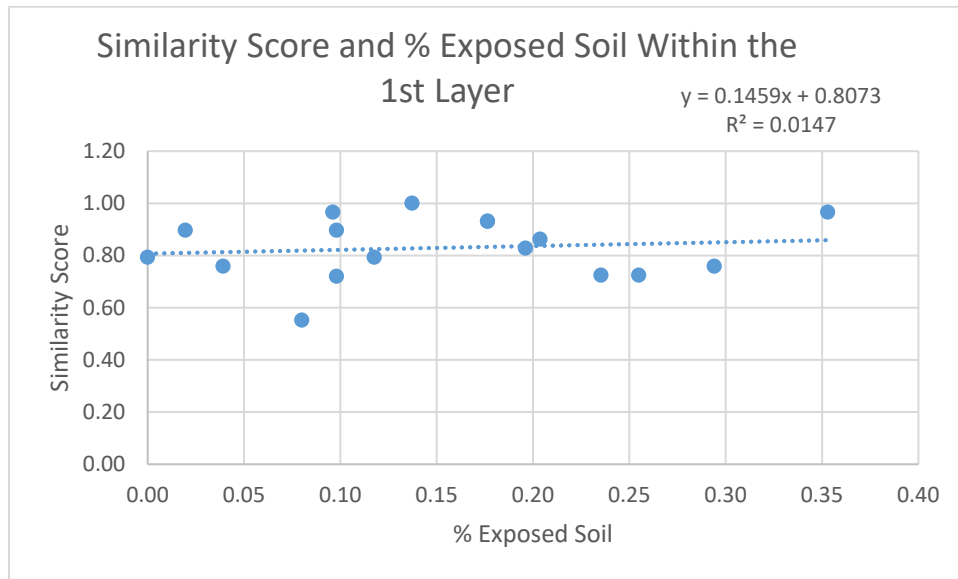
Appendix A: List of Possible Scoring Index Correlation Map and Figures.

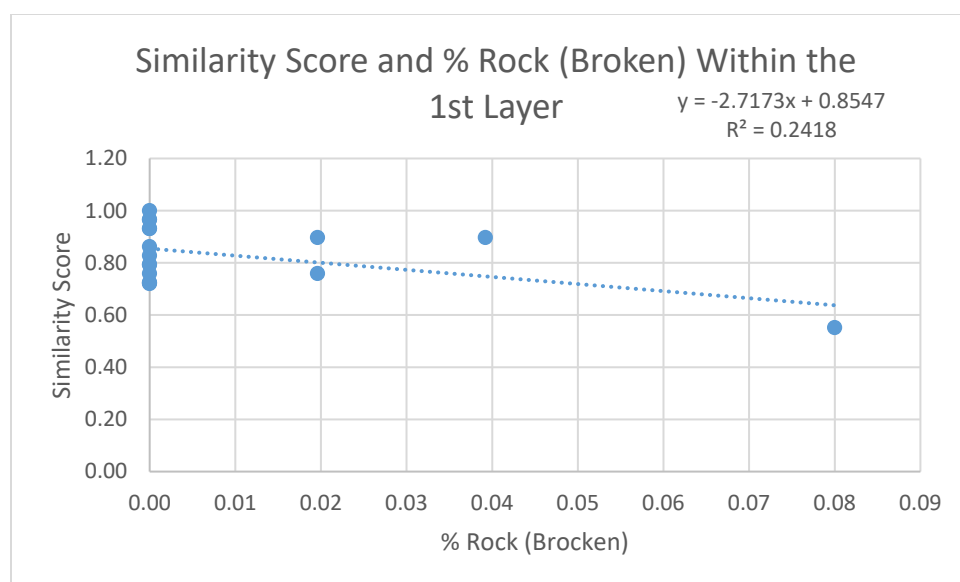
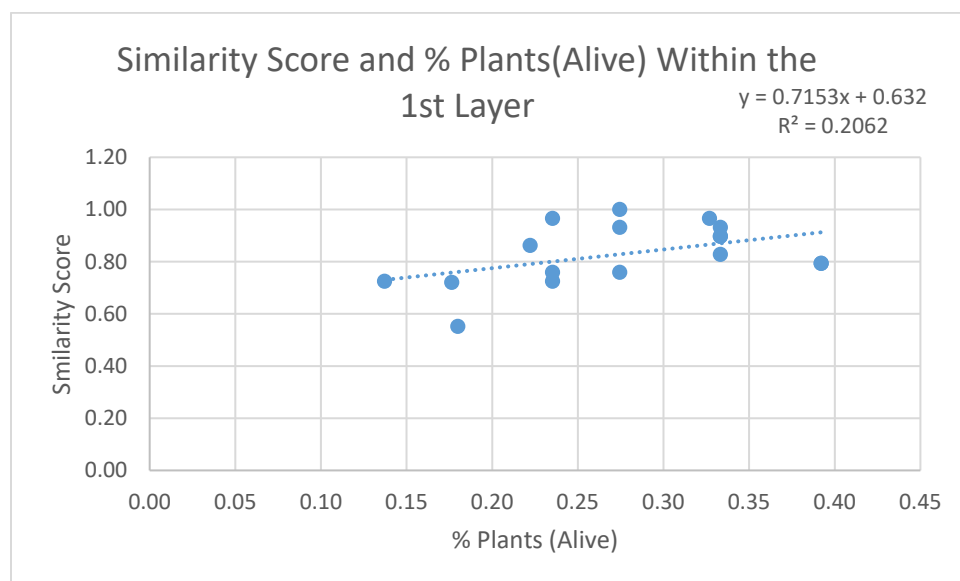


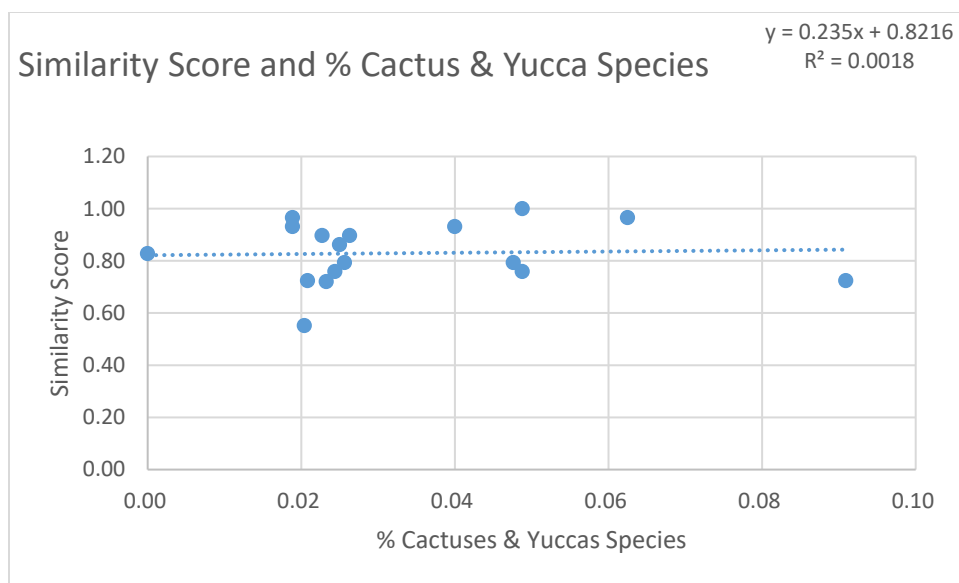
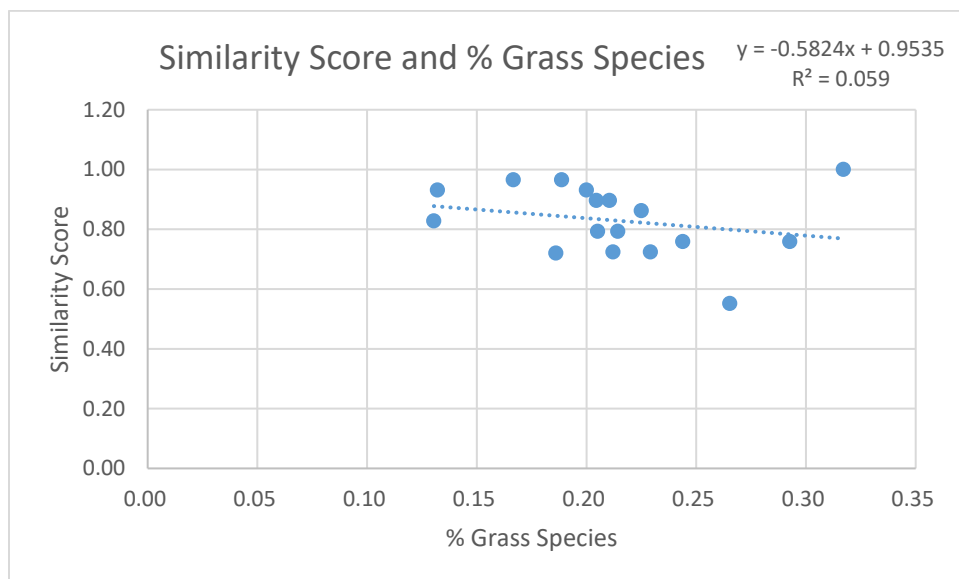
USACE Benbrook Lake Prairie Plant Similarity Score Range

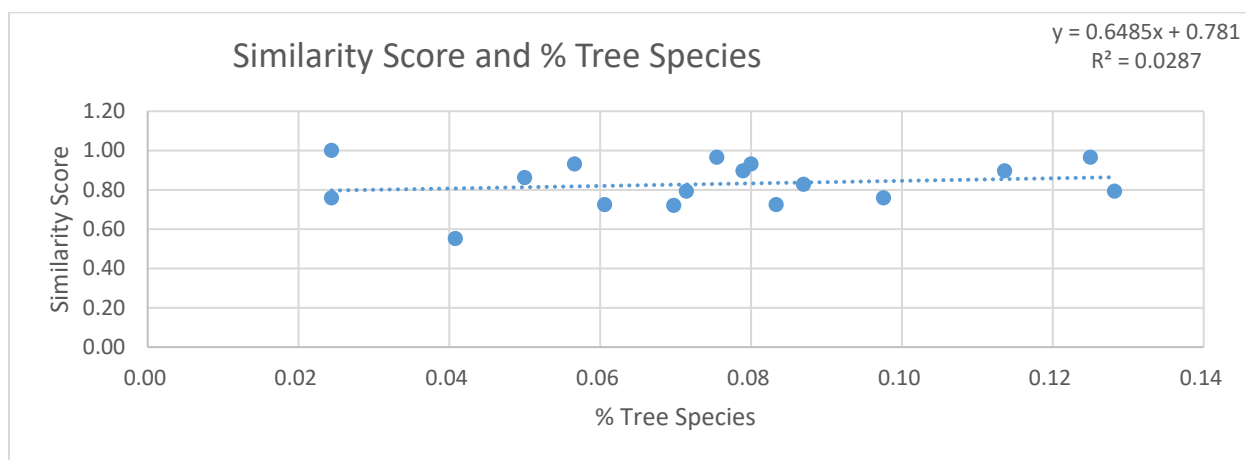
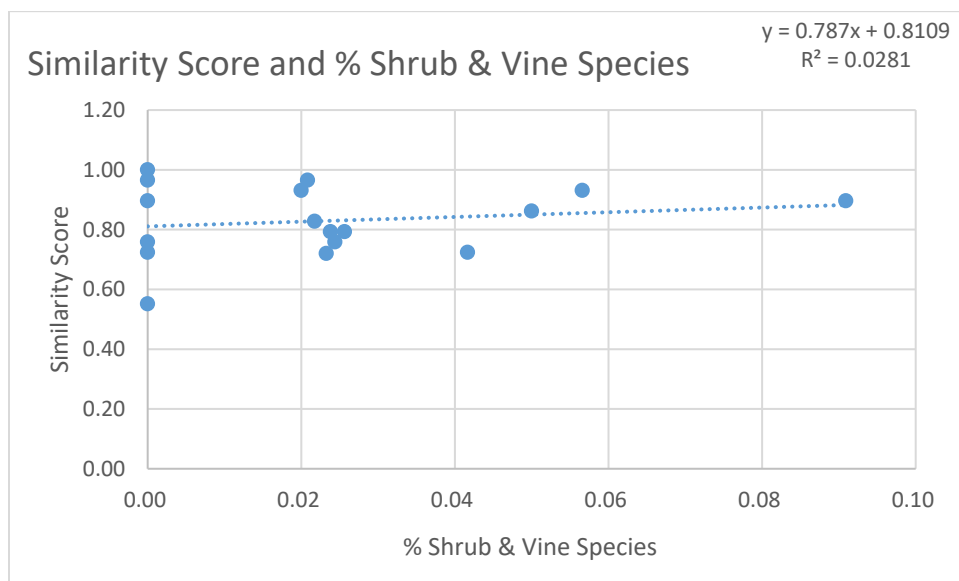
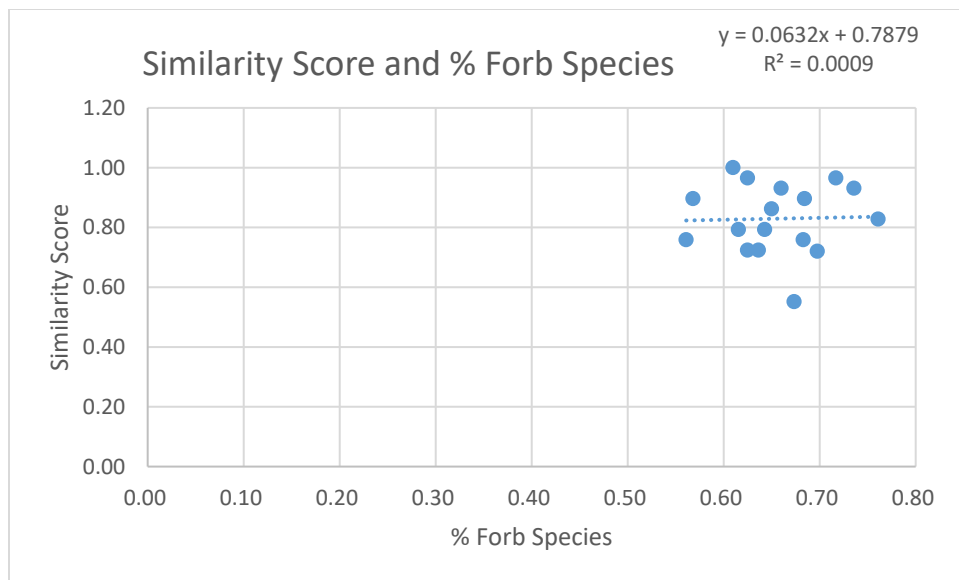


To determine if there is direct correlation between the similarity scores (independent variable) and various percent (%) of each given variable (dependent variable) occurrence, the slope of the fit line ($y=$) was plotted. A steeper slope represents a more direct correlation, while a flatter slope less of a correlation. A degree of influence (R^2) was determined to be able to rank each variable/correlation for comparison. The higher the number the more of a correlation between the given variable and the similarity score.









Attachment A: Benbrook Lake Prairie Results Summary

[illegible]

Pt #	Distance from the mark	1st lyr cover type	Soil Type?	Plant type	Grass Spec.	Forbs spec	lyr hgt (in.) if last lyr	2nd lyr cover type	Plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	3rd lyr cover type	Plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	4th lyr plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	5th lyr plant type	Forbs spec	lyr hgt (in.) if last lyr	Similarity Index Score
75		0 leaf litter						plants (aliv grass		Dropseeds/Cordgrass/Cord			Grass plants (aliv forb					grass				Japanese Brome	tree		96
75		3 plants (alive)		grass	Canada Wildrye																				
75		6 plants (alive)		grass	Little Bluestem																				
75		9 leaf litter																							
75		12 plants (alive)		grass	Dropseeds/Cordgrass/Cord Grass																				
75		15 leaf litter						plants (aliv grass		Little Bluestem			plants (aliv grass		Canada Widrye			grass		Dropseeds/Cordgrass,		17			
75		18 plants (alive)		grass	Little Bluestem																				
75		21 plants (alive)		grass	Canada Wildrye																				
75		24 leaf litter																							
75		27 exposed sc clay loam																							
75		30 leaf litter						plants (aliv grass			Japanese Brome		plants (aliv forb				Wild Carro	22							
75		33 leaf litter																							
75		36 leaf litter																							
75		39 plants (alive)		grass	Indiangrass																				
75		42 leaf litter																							
75		45 plants (alive)		grass	Little Bluestem			plants (aliv forb			Wild Carro	30													
75		48 leaf litter																							
75		51 leaf litter																							
75		54 plants (alive)		grass	Little Bluestem																				
75		57 exposed sc clay loam																							
75		60 exposed sc clay loam						plants (aliv grass			Japanese Brome		plants (aliv forb				Indian Blanket/Blanke forb			Plantains		forb	Wild Carrots	17	
75		63 exposed sc clay loam																							
75		66 leaf litter																							
75		69 leaf litter																							
75		72 leaf litter																							
75		75 plants (alive)		forb		unknown forb		plants (aliv grass		Dropseeds/Cordgrass/Cord Grass plants (aliv forb							Leavenwor	17							
75		78 leaf litter																							
75		81 plants (alive)		forb		Croton, Hotwort, Skunkweed, etc.																			
75		84 exposed sc clay loam																							
75		87 exposed sc clay loam																							
75		90 plants (alive)		grass	Sideoats Grama			plants (aliv forb			Wild Carro	18													
75		93 exposed sc clay loam																							
75		96 leaf litter																							
75		99 leaf litter																							
75		102 leaf litter																							
75		105 exposed sc clay loam					1																		
75		108 leaf litter																							
75		111 leaf litter																							
75		114 exposed sc clay loam																							
75		117 exposed sc clay loam																							
75		120 exposed sc clay loam						plants (aliv grass		Dropseeds/Cordgrass/Cord Grass plants (aliv forb							Gaura/Gua	11							
75		123 plants (alive)		cactuses & yuccas																					
75		126 exposed sc clay loam																							
75		129 leaf litter																							
75		132 exposed sc clay loam																							
75		135 exposed sc clay loam						plants (aliv forb			Gaura/Guara/Primros		plants (aliv grass				Japanese Brome	forb		Gaura/Gua		14			
75		138 leaf litter																							
75		141 leaf litter																							
75		144 exposed sc clay loam																							
75		147 leaf litter																							
75		150 leaf litter						plants (aliv forb			Gaura/Gua	6													
Total Score																								0.76	

Pt #	Distance from the Oft mark	1st lyr cover type	Soil Type?	Plant type	Grass Spec.	Forbs spec	Shrubs/ vines spec	2nd lyr cover type	Plant type	Grass spec	Forbs spec	Shrubs/ vines spec	3rd lyr cover type	Plant type	Grass spec	Forbs spec	Shrubs/ vines spec	lyr hgt (in.) if last lyr	4th lyr plant type	Grass spec	Forbs spec	Shrubs/ vines spec	lyr hgt (in.) if last lyr	5th lyr plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	Similarity Index Score	
74		0 leaf litter						plants (aliv forb			Indian Blanket/Blanke		plants (aliv grass				Japanese Brome	11											
74		3 exposed sc clay loam																											
74		6 exposed sc clay loam																											
74		9 exposed sc clay loam																											
74		12 plants (alive)		forb		Gaura/Guara/Primrose/Sundrops/Pinkladies/False Gauras																							
74		15 leaf litter						plants (aliv grass		Dropseeds/Cordgrass/Cord Grass			plants (aliv forb				Wild Carrots		forb			Indian Blanket/Blanke		11					
74		18 leaf litter																											
74		21 leaf litter																											
74		24 exposed sc clay loam																											
74		27 leaf litter																											
74		30 plants (alive)		grass		Dropseeds/Cordgrass/Cord Grass		plants (aliv forb			Wild Carrots		plants (aliv forb				Gaura/Guara/Primros	12											
74		33 leaf litter																											
74		36 plants (alive)		grass		Dropseeds/Cordgrass/Cord Grass																							
74		39 leaf litter																											
74		42 plants (aliv		grass		Sideoats Grama																							
74		45 plants (aliv		grass		Sideoats Grama		plants (aliv grass			Japanese Brome		plants (aliv forb				Wild Carrots	17											
74		48 exposed sc clay loam																											
74		51 leaf litter																											
74		54 leaf litter																											
74		57 plants (alive)				Dropseeds/Cordgrass/Cord Grass																							
74		60 exposed sc clay loam						plants (aliv forb			Trailing Ratany/Prairie		plants (aliv forb				Broomweed		grass		Sideoats Grama			forb		Wild Carro	17		
74		63 exposed sc clay loam																											
74		66 leaf litter																											
74		69 leaf litter																											
74		72 plants (alive)		grass		Dropseeds/Cordgrass/Cord Grass																							
74		75 plants (alive)		grass		Dropseeds/Cordgrass/Cord Grass		plants (aliv forb				Broomwee	plants (aliv forb				Gaura/Guara/Primros	17											
74		78 leaf litter																											
74		81 exposed sc clay loam																											
74		84 exposed sc clay loam																											
74		87 leaf litter																											
74		90 leaf litter						plants (aliv forb			unknown forb		plants (aliv grass		Little Bluestem														
74		93 leaf litter																											
74		96 plants (alive)		grass		Little Bluestem																							
74		99 plants (alive)		grass		Sideoats Grama																							
74		102 plants (alive)		grass		Sideoats Grama																							
74		105 plants (alive)		forb		unknown forb		plants (aliv grass		Dropseeds/Cordgrass/Cord Grass		plants (aliv forb					Wild Carrots	15											
74		108 leaf litter																											
74		111 plants (alive)		grass		Sideoats Grama																							
74		114 plants (alive)		grass		Dropseeds/Cordgrass/Cord Grass																							
74		117 plants (alive)		forb		unknown forb																							
74		120 leaf litter						plants (aliv grass		Little Bluestem			plants (aliv forb				Wild Carrots		forb			Cuman Ragweed/Western Ragwe	grass	Little Bluestem		31			
74		123 plants (alive)		grass		Little Bluestem																							
74		126 leaf litter																											
74		129 plants (alive)		grass		Little Bluestem																							
74		132 leaf litter																											
74		135 leaf litter						plants (aliv grass		Little Bluestem			plants (aliv forb				Broomweed		forb			Gaura/Guara/Primros		22					
74		138 exposed sc clay loam																											
74		141 leaf litter																											
74		144 leaf litter																											
74		147 leaf litter																											
74		150 leaf litter						plants (aliv forb			Plantains		plants (aliv forb				Wild Carrots	16											
Total Score		0.83																											

Pt #	Distance from the 0ft mark	1st lyr cover type	Soil Type?	Plant type	Grass Spec.	lyr hgt (in.) if last lyr	2nd lyr cover type	Plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	3rd lyr cover type	Plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	4th lyr plant type	Grass spec	Forbs spec	Tree spec	lyr hgt (in.) if last lyr	5th lyr plant type	Forbs spec	Shrubs/vine s spec	lyr hgt (in.) if last lyr	Similarity Index Score
108	0	leaf litter					plants (aliv grass		Dropseeds/Cordgrass/Cord			Grass plants (aliv forb			Leavenworth	Eryngo	tree			Hercules C	42					
108	3	leaf litter																								
108	6	exposed sc clay loam																								
108	9	leaf litter																								
108	12	exposed sc clay loam																								
108	15	exposed sc clay loam					plants (aliv forb			Aster Spec		15														
108	18	exposed sc clay loam																								
108	21	exposed sc clay loam																								
108	24	leaf litter																								
108	27	plants (alive)		grass	Purple Threeawn																					
108	30	exposed sc clay loam					plants (aliv forb			Aster Spec		15														
108	33	exposed sc clay loam																								
108	36	plants (alive)		grass	Purple Threeawn																					
108	39	exposed sc clay loam																								
108	42	leaf litter																								
108	45	leaf litter					plants (aliv forb			unknown forb		plants (aliv forb			Gaura/Guara/Primros	grass		Fall Witchgrass				forb		Broomweed		18
108	48	plants (alive)		grass	Seep Muhly																					
108	51	leaf litter																								
108	54	leaf litter																								
108	57	plants (alive)		grass	Seep Muhly																					
108	60	plants (alive)		grass	Seep Muhl	20																				
108	63	plants (alive)		grass	Seep Muhly																					
108	66	plants (alive)		grass	Seep Muhly																					
108	69	plants (alive)		grass	Seep Muhly																					
108	72	leaf litter																								
108	75	leaf litter					plants (aliv grass		Seep Muhly			plants (aliv grass		Scribner Panicum			forb			Wild Carrots		forb		Cuman Ragweed/Western		21
108	78	leaf litter																								
108	81	leaf litter																								
108	84	plants (alive)		grass	Seep Muhly																					
108	87	plants (alive)		grass	Seep Muhly																					
108	90	leaf litter					plants (aliv grass		Seep Muhly			plants (aliv forb			Wild Carrots		grass		Little Bluestem			11				
108	93	plants (alive)		grass	Seep Muhly																					
108	96	plants (alive)		grass	Seep Muhly																					
108	99	leaf litter																								
108	102	plants (alive)		grass	Little Bluestem																					
108	105	leaf litter					plants (aliv grass		Seep Muhly			plants (aliv forb			Japenese B		21									
108	108	leaf litter																								
108	111	plants (alive)		grass	Seep Muhly																					
108	114	leaf litter																								
108	117	plants (alive)		grass	Seep Muhly																					
108	120	plants (alive)		grass	Seep Muhl	14																				
108	123	leaf litter																								
108	126	plants (alive)		grass	Seep Muhly																					
108	129	leaf litter																								
108	132	leaf litter																								
108	135	leaf litter					plants (aliv grass		Seep Muhly			plants (aliv forb			Dotted Ga		15									
108	138	leaf litter																								
108	141	leaf litter																								
108	144	exposed sc clay loam																								
108	147	leaf litter																								
108	150	leaf litter					plants (aliv	cactuses & yuccas				plants (aliv grass		Seep Muhly			12	forb			Wild Carrots		12			
Total Score																									0.93	

Pt #	Distance from the 0ft mark	1st lyr cover type	Soil Type?	Plant type	Grass Spec.	Forbs spec	2nd lyr cover type	Plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	3rd lyr cover type	Plant type	Grass spec	Forbs spec	Shrubs/ vines spec	lyr hgt (in.) if last lyr	4th lyr plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	5th lyr plant type	Forbs spec	lyr hgt (in.) if last lyr	Similarity Index Score	
88	0	rock (broken)					plants (aliv grass		Little Bluestem			plants (aliv grass			Dropseeds/Cordgrass/Cord Grass		13									
88	3	rock (broken)																								
88	6	exposed sc clay loam																								
88	9	exposed sc clay loam																								
88	12	leaf litter																								
88	15	exposed sc clay loam					plants (aliv forb		Barbara's Buttons			plants (aliv grass		Little Bluestem			13									
88	18	exposed sc clay loam																								
88	21	leaf litter																								
88	24	leaf litter																								
88	27	plants (alive)		forb			Gaura/Guara/Primrose/Sundrops/Pinkladies/False Gauras																			
88	30	leaf litter					plants (aliv grass		Dropseeds/Cordgrass/Cord Grass			plants (aliv grass		Little Bluestem				forb		Texas Prairie Parsley		forb	Dotted Ga		23	
88	33	exposed sc clay loam																								
88	36	plants (alive)		forb			Plantains																			
88	39	leaf litter																								
88	42	plants (alive)		grass		Little Bluestem																				
88	45	plants (alive)		grass		Little Bluestem	plants (aliv forb			Gaura/Gua	18															
88	48	leaf litter																								
88	51	leaf litter																								
88	54	plants (alive)		grass		Little Bluestem																				
88	57	leaf litter																								
88	60	plants (alive)		grass		Little Bluestem	plants (aliv grass		Scribner Panicum			plants (aliv forb			White Heath Aster			grass	Little Bluestem			30				
88	63	leaf litter																								
88	66	plants (alive)		forb																						
88	69	plants (alive)		forb			Cuman Ragweed/Western Ragweed																			
88	72	leaf litter																								
88	75	leaf litter					plants (aliv grass		Little Bluestem			plants (aliv shrub/vine				Brambles/Dewberry/s grass			Canada Wildrye			forb	American I		28	
88	78	plants (alive)		grass		Little Bluestem																				
88	81	leaf litter																								
88	84	leaf litter																								
88	87	plants (alive)		grass		Little Bluestem																				
88	90	plants (alive)		grass		Little Bluestem	plants (aliv grass		Dropseeds/Cordgrass/Cord Grass			plants (aliv shrub/vine				Wild Mercury		grass	Scribner Panicum			forb	American I		36	
88	93	leaf litter																								
88	96	leaf litter																								
88	99	leaf litter																								
88	102	plants (alive)		grass		Big Bluestem																				
88	105	leaf litter					plants (aliv grass		Little Bluestem		10															
88	108	plants (alive)		grass		Little Bluestem																				
88	111	leaf litter																								
88	114	leaf litter																								
88	117	plants (alive)		grass		Little Bluestem																				
88	120	leaf litter					plants (aliv grass		Little Bluestem			plants	forb			Gaura/Guara/Primrose/Sundrop		grass	Scribner Panicum			12				
88	123	leaf litter																								
88	126	plants (alive)		grass		Little Bluestem																				
88	129	plants (alive)		grass		Little Bluestem																				
88	132	leaf litter																								
88	135	leaf litter					plants (aliv grass		Dropseeds/Cordgrass/Cord Grass			plants (aliv forb				unknown forb		grass	Little Bluestem			15				
88	138	leaf litter																								
88	141	leaf litter																								
88	144	leaf litter																								
88	147	plants (alive)		grass		Little Bluestem																				
88	150	leaf litter					plants (aliv grass		Dropseeds/Cordgrass/Cord Grass			plants (aliv forb				Wild Carrots			forb			White Heath Aster		forb	American I	30
Total Score		0.9																								

[illegible]

Pt #	Distance from the 0ft mark	1st lyr cover type	Soil Type?	Plant type	Grass Spec.	Forbs spec	lyr hgt (in.) if last lyr	2nd lyr cover type	Plant type	Grass spec	Forbs spec	3rd lyr cover type	Plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	4th lyr plant type	Grass spec	Forbs spec	Shrubs/vines spec	lyr hgt (in.) if last lyr	5th lyr plant type	Grass spec	lyr hgt (in.) if last lyr	Similarity Index Score
17		0 leaf litter					1																		
17		3 leaf litter																							
17		6 plants (alive)		grass	Scribner Panicum																				
17		9 leaf litter																							
17		12 leaf litter																							
17		15 plants (alive)		grass	Little Bluestem		36																		
17		18 leaf litter																							
17		21 exposed sc loam																							
17		24 leaf litter																							
17		27 leaf litter																							
17		30 plants (alive)		grass	Sideoats Grama			plants (aliv forb			Wild Carro	plants (aliv forb			Asteraceae Spec.	25									
17		33 leaf litter																							
17		36 plants (alive)		forb		DottedGayfeather/BlazingStar																			
17		39 leaf litter																							
17		42 exposed sc loam																							
17		45 plants (alive)		grass	Little Bluestem			plants (aliv forb			Blue Star/E	plants (aliv grass		Little Bluestem			plants (aliv forb			Broomwee		31 forb			
17		48 leaf litter																							
17		51 leaf litter																							
17		54 leaf litter																							
17		57 plants (alive)		grass	Little Bluestem																				
17		60 exposed sc loam						plants (aliv grass		Little Bluestem		plants (aliv forb					forb			Cuman Ragweed/Wes		40			
17		63 leaf litter																							
17		66 leaf litter																							
17		69 leaf litter																							
17		72 exposed sc loam																							
17		75 leaf litter						plants (aliv grass		Sideoats Grama		plants (aliv grass		Scribner Panicum			forb			Cuman Ragweed/Western Ragwe	grass		Little Blues	32	
17		78 leaf litter																							
17		81 leaf litter																							
17		84 leaf litter																							
17		87 exposed sc loam																							
17		90 leaf litter						plants (aliv grass		Little Bluestem		plants (aliv forb			Blue Sage/Salvia		grass		Little Bluestem			38			
17		93 plants (alive)		grass	Little Bluestem																				
17		96 leaf litter																							
17		99 leaf litter																							
17		102 exposed soil																							
17		105 leaf litter						plants (aliv grass		Little Bluestem		plants (aliv forb			Cuman Ragweed/West	23									
17		108 exposed sc loam																							
17		111 exposed sc loam																							
17		114 leaf litter																							
17		117 leaf litter																							
17		120 leaf litter						plants (aliv forb			Asteraceae	plants (aliv grass			Trailing Ratany/Prairie	27									
17		123 leaf litter																							
17		126 leaf litter																							
17		129 leaf litter																							
17		132 leaf litter																							
17		135 leaf litter						plants (aliv forb			Cuman Rag	plants (aliv grass			Japanese Brome	28									
17		138 exposed sc loam																							
17		141 exposed sc loam																							
17		144 exposed sc loam																							
17		147 exposed sc loam																							
17		150 leaf litter						plants (aliv grass		Indiangrass		plants (aliv forb			Cuman Ragweed/West	40									
Total Score																									0.72

Pt #	Distance from the mark	1st lyr cover type	Soil Type?	Plant type	Grass Spec.	Forbs spec	lyr hgt (in.) if last lyr	2nd lyr cover type	Plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	3rd lyr cover type	Plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	4th lyr plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	5th lyr plant type	Forbs spec	Shrubs/vines spec	lyr hgt (in.) if last lyr	Similarity Index Score
9		0 exposed sc clay loam						leaf litter					1													
9		3 leaf litter																								
9		6 exposed sc clay loam																								
9		9 leaf litter																								
9		12 exposed sc clay loam																								
9		15 exposed sc clay loam						plants (aliv grass		Little Bluestem			plants (aliv forb				Gaura/Guara/Primros	grass			Japanese B		17			
9		18 leaf litter																								
9		21 leaf litter																								
9		24 plants (alive)		grass		Big Bluestem																				
9		27 leaf litter																								
9		30 plants (alive)		grass		Canada Wildrye		plants (aliv forb			Noseburn		plants (aliv forb				Amasonia	10								
9		33 leaf litter																								
9		36 leaf litter																								
9		39 leaf litter																								
9		42 plants (alive)		grass		Little Bluestem																				
9		45 plants (alive)		grass		Dropseeds/Cordgrass/	8																			
9		48 plants (alive)		grass		Big Bluestem																				
9		51 leaf litter																								
9		54 leaf litter																								
9		57 leaf litter																								
9		60 plants (alive)		grass		Little Bluestem		plants (aliv forb			Indian Blanket/Blanke		plants (aliv forb				Wild Carrots	grass		Little Bluestem		26				
9		63 leaf litter																								
9		66 exposed sc clay loam																								
9		69 exposed sc clay loam																								
9		72 exposed sc clay loam																								
9		75 exposed sc clay loam						plants (aliv grass		Dropseeds/Cordgrass/Cord Grass			plants (aliv forb				Wild Carrots	forb		GreenThre		16				
9		78 exposed sc clay loam																								
9		81 exposed sc clay loam																								
9		84 exposed sc clay loam																								
9		87 exposed sc clay loam																								
9		90 exposed sc clay loam						plants (aliv grass		Purple Threeawn			plants (aliv forb				GreenThread/Greenth	grasss		Dropseeds/Cordgrass/Cord Grass	forb		Gaura/Guara/Primros		18	
9		93 exposed sc clay loam																								
9		96 exposed sc clay loam																								
9		99 plants (alive)		grass		Dropseeds/Cordgrass/Cord Grass																				
9		102 leaf litter																								
9		105 plants (alive)		grass		Dropseeds/Cordgrass/Cord Grass		plants (aliv grass		Scribner Panicum		9														
9		108 exposed sc clay loam																								
9		111 exposed sc clay loam																								
9		114 plants (alive)		grass		Sideoats Grama																				
9		117 leaf litter																								
9		120 plants (alive)		forb		Nuttall's Sensitive-Briar		plants (aliv forb			Blue Sage/Salvia		plants (aliv forb				GreenThread/Greenth	forbs			Noseburn		forb		Broomwee	20
9		123 leaf litter																								
9		126 leaf litter																								
9		129 leaf litter																								
9		132 leaf litter																								
9		135 exposed sc clay loam						plants (aliv forb			Hedeoma spec.		plants (aliv forb				American E	20								
9		138 leaf litter																								
9		141 plants (alive)		grass		Canada Wildrye																				
9		144 leaf litter																								
9		147 leaf litter																								
9		150 plants (alive)		grass		Dropseeds/Cordgrass/Cord Grass		plants (aliv grass		Canada Wildrye			plants (aliv grass				Dropseeds/Cordgrass/Cord Grass	grass			Little Bluestem		22			
Total Score																									0.97	

[illegible]

Pt #	Distance from the Oft mark	1st lyr cover type	Soil Type?	Plant type	Grass Spec.	Cactuse s & yuccas spec	Forbs spec	Tree spec	2nd lyr cover type	Plant type	Grass spec	Forbs spec	3rd lyr cover type	Plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	4th lyr plant type	Forbs spec	lyr hgt (in.) if last lyr	5th lyr plant type	Forbs spec	lyr hgt (in.) if last lyr	6th lyr plant type	Forbs spec	7th lyr plant type	Forbs spec	lyr hgt (in.) if last lyr	Similarity Index Score		
15		0 plants (alive)		forb			American Basketflow		plants (ali\ grass		Sideoats Grama		plants (ali\ forb				Croton, Hotwort, Sku	forb	DottedGay		27										
15		3 leaf litter																													
15		6 plants (alive)		grass		Little Bluestem																									
15		9 exposed sr clay loam																													
15		12 plants (alive)		grass		Little Bluestem																									
15		15 leaf litter							plants (ali\ grass		Little Bluestem		plants (ali\ forb				GreenThread/Greent	forb	DottedGayfeather/Bl	forb			Indian Blai		18						
15		18 exposed sr clay loam																													
15		21 exposed sr clay loam																													
15		24 plants (alive)		grass		Dropseeds/Cordgrass/Cord Grass																									
15		27 plants (alive)		grass		Little Bluestem																									
15		30 leaf litter							plants (ali\ grass		Dropseeds/Cordgrass		plants (ali\ forb				Croton, Hotwort, Sku	forb	Trailing Ratany/Prairi	forb			Japanese Brome		shrub/vine		forb	American Basketflo		24	
15		33 leaf litter																													
15		36 leaf litter																													
15		39 exposed sr clay loam																													
15		42 plants (alive)		grass																											
15		45 leaf litter							plants (ali\ grass		Dropseeds/Cordgrass		plants (ali\ grass		Little Bluestem			15													
15		48 plants (alive)		grass		Dropseeds/Cordgrass/Cord Grass																									
15		51 exposed sr clay loam																													
15		54 leaf litter																													
15		57 leaf litter																													
15		60 leaf litter							plants (ali\ forb				GreenThre		plants (ali\ grass		Seep Muhly		forb	Gaura/Guz		30									
15		63 plants (alive)		grass		Seep Muhly																									
15		66 leaf litter																													
15		69 leaf litter																													
15		72 leaf litter																													
15		75 plants (alive)		grass		Little Bluestem			plants (ali\ forb				Croton, Hc		plants (ali\ forb		American Basketflow	forb	Wild Carrc		22										
15		78 exposed sr clay loam																													
15		81 leaf litter																													
15		84 exposed sr clay loam																													
15		87 plants (alive)		grass		Little Bluestem																									
15		90 leaf litter							plants (ali\ grass		Seep Muhly		plants (ali\ forb				Blue Sage/Salvia		forb	New Jersey Tea/Inlan	forb			Wild Carrots		forb	Indian Blai	forb	Blue Star/Bluestar		31
15		93 leaf litter																													
15		96 exposed sr clay loam																													
15		99 exposed sr clay loam																													
15		102 exposed sr clay loam																													
15		105 leaf litter							plants (ali\ forb				New Jerse		plants (ali\ forb		GreenThread/Greent	forb	Indian Blai		23										
15		108 plants (ali\ cactuses & yuccas				Prickly Pear Cactuses																									
15		111 leaf litter																													
15		114 leaf litter																													
15		117 leaf litter																													
15		120 leaf litter							plants (ali\ forb				unknown f		plants (ali\ cactuses & yuccas		Prickly Pear Cactuses	forb	Croton, Hotwort, Sku	forb			GreenThread/Greent	forb	Wild Carro	forb	Indian Blanket/Blan		21		
15		123 leaf litter																													
15		126 leaf litter																													
15		129 exposed sr clay loam																													
15		132 leaf litter																													
15		135 exposed sr clay loam							plants (ali\ forb				GreenThre		plants (ali\ forb		Croton, Hotwort, Sku	forb					18								
15		138 exposed sr clay loam																													
15		141 leaf litter																													
15		144 leaf litter																													
15		147 plants (alive)					unknown forb																								
15		150 leaf litter							plants (ali\ grass		Seep Muhly		plants (ali\ forb				Croton, Hotwort, Sku	forb	GreenThread/Greent	forb			Indian Blai		18						
Total Score																0.72															

[illegible]

Pt #	Distance from the 0ft mark	1st lyr cover type	Soil Type?	Plant type	Grass Spec.	Forbs spec	Tree spec	lyr hgt (in.) if last lyr	2nd lyr cover type	Plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	3rd lyr cover type	Plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	4th lyr plant type	Grass spec	#REF!	Forbs spec	lyr hgt (in.) if last lyr	5th lyr plant type	Grass spec	lyr hgt (in.) if last lyr	Similarity Index Score
100		0 rock (broken)							plants (aliv grass		Little Bluestem			plants (aliv grass		Scribner Panicum				grass	Little Bluestem			29			
100		3 leaf litter																									
100		6 leaf litter																									
100		9 plants (alive)		forb		Dotted Gayfeather/Blazing Star																					
100		12 plants (alive)		grass	Little Bluestem																						
100		15 leaf litter							plants (aliv grass		Little Bluestem			plants (aliv forb			Broomweed		grass	Little Bluestem				33			
100		18 leaf litter																									
100		21 plants (alive)		tree		Western Soapberry																					
100		24 leaf litter																									
100		27 leaf litter																									
100		30 leaf litter							plants (aliv forb			Dotted Gayfeather/Bl		plants (aliv grass		Big Bluestem			24								
100		33 plants (alive)		grass	Indiangrass																						
100		36 plants (alive)		grass	Indiangrass																						
100		39 leaf litter																									
100		42 plants (alive)		grass	Indiangrass																						
100		45 exposed sc clay loam							plants (aliv grass		Little Bluestem			plants (aliv forb			Mexican Sagewort/WI grass		Little Bluestem					50			
100		48 leaf litter																									
100		51 leaf litter																									
100		54 leaf litter																									
100		57 leaf litter																									
100		60 leaf litter							plants (aliv forb			Tickseed/Coreopsis		plants (aliv forb			unknown f		11								
100		63 leaf litter																									
100		66 leaf litter																									
100		69 leaf litter																									
100		72 leaf litter																									
100		75 leaf litter							plants (aliv grass		unknown grass																
100		78 plants (alive)		forb		Leavenworth Eryngo																					
100		81 plants (alive)		grass	Little Bluestem																						
100		84 leaf litter																									
100		87 leaf litter																									
100		90 leaf litter							plants (aliv grass		unknown grass			plants (aliv grass		Little Bluestem			31								
100		93 leaf litter																									
100		96 exposed sc clay loam																									
100		99 leaf litter																									
100		102 leaf litter																									
100		105 leaf litter							plants (aliv grass		Little Bluestem			36													
100		108 leaf litter																									
100		111 plants (alive)		grass	Little Bluestem																						
100		114 leaf litter																									
100		117 plants (alive)		forb		Leavenworth Eryngo																					
100		120 leaf litter							plants (aliv grass		Little Bluestem			plants (aliv forb			Broomweed		grass	Little Bluestem				40			
100		123 leaf litter																									
100		126 plants (alive)		grass	Sideoats Grama																						
100		129 leaf litter																									
100		132 plants (alive)		grass	Little Bluestem																						
100		135 leaf litter							plants (aliv forb			Plantains		plants (aliv grass		unknown grass			forb				Broomweed	grass	Little Blues	36	
100		138 leaf litter																									
100		141 plants (alive)		grass	Sideoats Grama																						
100		144 leaf litter																									
100		147 leaf litter																									
100		150 plants (alive)		grass	Little Bluestem				1																		
Total Score																									0.76		

Pt #	Distance from the mark	0ft	1st lyr cover type	Soil Type?	Plant type	Grass Spec.	lyr hgt (in.) if last lyr	2nd lyr cover type	Plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	3rd lyr cover type	Plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	4th lyr plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	5th lyr plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	6th lyr plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	Similarity Index Score
48			0 leaf litter							Little Bluestem			plants (aliv grass		Dropseed/Cordgrass/Cord Grass			grass	Indiangrass				grass	Little Bluestem		40				
48			3 leaf litter																											
48			6 leaf litter																											
48			9 leaf litter																											
48			12 leaf litter																											
48			15 plants (alive)		grass	Dropseed/Cordgrass/Cord Grass		plants (aliv forb			Pennyroyal		plants (aliv forb				Wild Carrots	grass	Little Bluestem			34								
48			18 plants (alive)		grass	Dropseed/Cordgrass/Cord Grass																								
48			21 leaf litter																											
48			24 leaf litter																											
48			27 exposed sc clay loam																											
48			30 leaf litter					plants (aliv grass		Dropseed/Cordgrass/Cord Grass			plants (aliv grass		Little Bluestem			forb			Croton spp.		forb		Queen's Delight/Texas: forb		Green Thread/Gr		18	
48			33 leaf litter																											
48			36 exposed sc clay loam																											
48			39 leaf litter																											
48			42 exposed sc clay loam																											
48			45 leaf litter					plants (aliv grass		Dropseed/Cordgrass/Cord Grass			plants (aliv forb				Wild Carrots	forb			Gaura/Guara/Primros	grass	Slim Tridens		28					
48			48 leaf litter																											
48			51 leaf litter																											
48			54 plants (alive)		grass	Dropseed/Cordgrass/Cord Grass																								
48			57 exposed sc clay loam																											
48			60 leaf litter					plants (aliv grass		Dropseed/Cordgrass/Cord Grass			plants (aliv forb				unknown	forb			Wild Carrots		forb		Green Thread/Greent	grass	Japanese Brome		22	
48			63 leaf litter																											
48			66 leaf litter																											
48			69 leaf litter																											
48			72 plants (alive)		grass	Seep Muhly																								
48			75 leaf litter					plants (aliv grass		Little Bluestem		25																		
48			78 exposed sc clay loam																											
48			81 plants (alive)		grass	Dropseed/Cordgrass/Cord Grass																								
48			84 leaf litter																											
48			87 plants (alive)		grass	Seep Muhly																								
48			90 plants (alive)		grass	Little Bluestem		plants (aliv forb			Broomweed		plants (aliv grass				Japanese Brome	forb			Wild Carro		19							
48			93 leaf litter																											
48			96 leaf litter																											
48			99 plants (alive)		grass	See Muhly																								
48			102 leaf litter																											
48			105 leaf litter					plants (aliv grass		Little Bluestem			plants (aliv forb				Queen's Delight/Texas: forb				Wild Carrots		grass	Little Bluestem		34				
48			108 leaf litter																											
48			111 leaf litter																											
48			114 leaf litter																											
48			117 leaf litter																											
48			120 leaf litter					plants (aliv grass		Dropseed/Cordgrass/Cord Grass			plants (aliv forb				unknown forb	forb			Wild Carro		12							
48			123 leaf litter																											
48			126 exposed sc clay loam																											
48			129 plants (alive)		grass	Dropseed/Cordgrass/Cord Grass																								
48			132 plants (alive)		grass	Little Bluestem																								
48			135 plants (alive)		grass	Little Bluestem		plants (aliv grass		Dropseed/Cordgrass/Cord Grass			plants (aliv forb				Broomwee	18												
48			138 exposed sc clay loam																											
48			141 plants (alive)		grass	Dropseed/Cordgrass/Cord Grass																								
48			144 leaf litter																											
48			147 plants (alive)		grass	Indiangrass																								
48			150 plants (alive)		grass	Little Blues	35																							
Total Score																														

[illegible]

Pt #	Distance from the 0ft mark	1st lyr cover type	Soil Type?	Plant type	Grass Spec.	2nd lyr cover type	Plant type	Grass spec	Forbs spec	3rd lyr cover type	Plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	4th lyr plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	5th lyr plant type	Grass spec	Forbs spec	lyr hgt (in.) if last lyr	6th lyr plant type	Forbs spec	7th lyr plant type	Grass spec	lyr hgt (in.) if last lyr	Similarity Index Score
82		0 plants (alive)		grass	Little Blues	plants (aliv	grass	Dropseeds/Cordgrass,		plants (aliv	forbs		Noseburn		forb		Queen's D	20										
82		3 plants (alive)		grass	Little Bluestem																							
82		6 plants (alive)		grass	Little Bluestem																							
82		9 plants (alive)		grass	Dropseeds/Cordgrass/Cord Grass																							
82		12 leaf litter																										
82		15 leaf litter				plants (aliv	grass	Dropsee/Cordgrass/C		plants (aliv	forbs		GreenThread/Greentl		grass	Little Bluestem			28									
82		18 leaf litter																										
82		21 plants (alive)		grass	Little Bluestem																							
82		24 plants (alive)		grass	Dropseeds/Cordgrass/Cord Grass																							
82		27 leaf litter																										
82		30 leaf litter				plants (aliv	grass	Dropseeds/Cordgrass,		plants (alive)			Queen'sDelight/Texas		grass	Little Bluestem			36									
82		33 plants (alive)		grass	Dropseeds/Cordgrass/Cord Grass																							
82		36 exposed sc clay loam																										
82		39 leaf litter																										
82		42 leaf litter																										
82		45 leaf litter				plants (aliv	forb		Palafoxia		plants (aliv	forbs		unknown forb		forb		Dotted Gayfeather/Bl		grass	Little Bluestem			40				
82		48 leaf litter																										
82		51 leaf litter																										
82		54 leaf litter																										
82		57 leaf litter																										
82		60 plants (alive)		grass	Dropseed/	plants (aliv	forb		Wild Carro		plants (aliv	forbs		Cuman Ragweed/Wes		grass	Little Bluestem		42									
82		63 plants (alive)		grass	Little Bluestem																							
82		66 plants (alive)		grass	Dropseed/Cordgrass/Cord Grass																							
82		69 leaf litter																										
82		72 leaf litter																										
82		75 leaf litter				plants (aliv	grass	Purple Threeawn		plants (aliv	forbs		Blue Sage/Salvia		forb		American Basketflow		€ forb		Wild Carrots		forb	Leavenwor	grass	Little Blues		24
82		78 plants (alive)		forb	Buckwheat/Buck Wheat																							
82		81 leaf litter																										
82		84 plants (alive)		grass	Little Bluestem																							
82		87 leaf litter																										
82		90 leaf litter				plants (aliv	grass	Dropseeds/Cordgrass,		plants (aliv	grass		Japanese Brome		forb		Wild Carro		15									
82		93 leaf litter																										
82		96 rock (broken)																										
82		99 leaf litter																										
82		102 leaf litter																										
82		105 plants (alive)		grass	Sideoats G	plants (aliv	grass		Japanese E		plants (aliv	forb																
82		108 leaf litter													forb		Wild Carrots		grass	Purple Threeawn			21					
82		111 leaf litter																										
82		114 plants (alive)		grass	Dropseed/Cordgrass/Cord Grass																							
82		117 leaf litter																										
82		120 leaf litter				plants (aliv	grass	Purple Threeawn		plants (aliv	forb		Wild Carrots		forb		Indian Blar						20					
82		123 leaf litter																										
82		126 leaf litter																										
82		129 leaf litter																										
82		132 leaf litter																										
82		135 plants (alive)		grass	Purple Thr	plants (aliv	forb		unknown f		plants (aliv	forb		Queen's Delight/Texa		forb		Wild Carrots		grass	Little Bluestem		38					
82		138 leaf litter																										
82		141 leaf litter																										
82		144 leaf litter																										
82		147 plants (alive)		grass	Dropseed/Cordgrass/Cord Grass																							
82		150 plants (alive)		grass	Little Blues	plants (aliv	grass	Dropseed/Cordgrass/i		plants (aliv	forb		Wild Carro		26													
Total Score																											0.9	

[illegible]

[illegible]

Pt #	Trans Topo	Spec of Grass	# of grass spec	Spec of cactuses & yuccas?	# of Cactuses & yuccas spec	Spec of forbs	# of forb spec	Spec of shrubs & vines	# of shrub & vine spec	Spec of trees	# of Tree spec
9	no entry	Little Bluestem, Canada Wildrye, Dropseeds/Cordgrass/Cord Grass, Scribner Panicum, Sideoats Grama, Carex/Sedge, Indiangrass, Japanese Brome	8	Missouri Foxtail Cactus, Prickly Pear Cactuses, Yucca species	3	Leavenworth Eryngo, Wild Carrots, nettle species, Gaura/Guara/Primrose/Sundrops/Pinkladies/False Gauras, Texas Prairie Parsley, White Heath Aster, Saw-Leaf Daisy, Plantains, Dotted Gayfeather/Blazing Star, Queen's Delight/Texas Stillingia, Croton spp., Noseburn, Hedeoma spec., Purple Paintbrush, Blue Star/Bluestar, Green Thread/Greenthread, Buckweat/Buck Wheat, Nuttall's Sensitive--Briar/Catclaw Briar, Blue Sage/Salvia, Engelmann's Daisy, Cuman Ragweed/Western Ragweed, Snakeherb, Knotweed, American Basketflower, White Rosinweed/Compass Plant/Rosin Weed, New Jersey Tea/Inland Ceanothus, Indian Blanket/Blanketflowers, Nightshades/Horsenettle, Drummond's Scullcap/Wright's Scullcap/Other Scull Caps, Broomweed	30	Roses	1	Hackberry/Sugarberry, Gum Bumelia/Gumbumelia/Bully, Honey Locust/Honeylocust, Hercules Club/Pricklyash/Toothache Tree, Elm/Cedar Elm/American Elm/Winged Elm, Plums	6
15	goes downhill	Little Bluestem, Dropseeds/Cordgrass/Cord Grass, Sideoats Grama, Scribner Panicum, Seep Muhly, Slim Tridens, Purple Threeawn	7	Missouri Foxtail Cactus, Prickly Pear Cactuses, Yucca species	3	Purple Coneflowers, Cuman Ragweed/Western Ragweed, 2 species of Gaura/Guara/Primrose/Sundrops/Pinkladies/False Gauras, Blue-eyed Grass, Green Thread/Greenthread, Standing cypress, Wild Carrots, Obi-won Canobia, Buckwheat/Buck Wheat, New Jersey Tea/Inland Ceanothus, Thistles, Milkweeds/Milk Weeds/Antelope Horns/Antelopehorns, Dotted Gayfeather/Blazing Star, Star Milkvine, Indian Blanket/Blanketflowers, Blue Star/Bluestar, American Basketflower, Queen's Delight/Texas Stillingia, Drummond's Scullcap/Wright's Scullcap/Other Scull Caps, Plantains	21	none	0	Gum Bumelia/Gumbumelia/Bully, Elm/Cedar Elm/American Elm/Winged Elm	2

Pt #	Trans Topo	Spec of Grass	# of grass spec	Spec of cactuses & yuccas?	# of Cactuses & yuccas spec	Spec of forbs	# of forb spec	Spec of shrubs & vines	# of shrub & vine spec	Spec of trees	# of Tree spec
20	on flat surface	Big Bluestem, Little Bluestem, Silver Beardgrass/Silver Beard Grass/Silver Bluestem, Dropseeds/Cordgrass/Cord Grass, Sideoats Grama, Scribner Panicum, Purple Threeawn, King Ranch Bluestem/Yellow bluestem/KRB, Japanese Brome	9	Prickly Pear Cactuses, Yucca species	2	Thistles, Spurges/Sandmat/Sand Mat/Snow-on-the-Prairie/Mountain, Small Palafox, Groundcherries, Dotted Gayfeather/Blazing Star, Plantains, Agalinis spec., White Heath Aster, Bee Balms, Nuttall's Sensitive-Briar/Catclaw Briar, Texas Bull Nettle/Bullnettlles, Milkweeds/Milk Weeds/Antelope Horns/Antelopehorns, American Basketflower, Noseburn, Gaura/Guara/Primrose/Sundrops/Pinkladies/Fa lse Gauras, Wild Carrots, (Croton, Hotwort, Skunkweed, etc.), Frogfruits/Frog Fruits, Indian Blanket/Blanketflowers, Hedeoma spec., Blue-eyed Grass, Cuman Ragweed/Western Ragweed, Gray Goldaster/Hoary False Goldaster, Rabbit Tobaccos/Evax, Barbara's Buttons, GreenThread/Greenthread, Texas Bindweed, Blue Star/Bluestar	27	Honeysuckles	1	Honey Mesquite, Gum Bumelia/Gumbumelia/Bully, Hercules Club/Pricklyash/Toothache Tree	3
48	goes uphill and plateaus out	Indiangrass, Big Bluestem, Little Bluestem, Scribner Panicum, Canada Wildrye, Dropseeds/Cordgrass/Cord Grass, Sideoats Grama, Seep Muhly, Hairy Grama, Carex/Sedge, Purple Threeawn, Slim Tridens, Japanese Brome	13	Prickly Pear Cactuses, 2 Yucca species	2	Texas Skeleton Plant, (Croton, Hotwort, Skunkweed, etc.), Trailing Ratany/Prairie Bur, Texas Bull Nettle/Bullnettlles, Green Thread/Greenthread, Buckwheat/Buck Wheat, Leavenworth Eryngo, Indian Blanket/Blanketflowers, Cuman Ragweed/Western Ragweed, American Basketflower, unknown forb, Nuttall's Sensitive-Briar/Catclaw Briar, Hedeoma spec., Sumpweed/Sump Weed/Annual Marsh Elder, White Heath Aster, Bee Balms, Gaura/Guara/Primrose/Sundrops/Pinkladies/Fa lse Gauras, Blue Star/Bluestar, Purple Paintbrush, Dotted Gayfeather/Blazing Star, Drummond's Scullcap/Wright's Scullcap/Other Scull Caps, Queen's Delight/Texas Stillingia, Plantains, Noseburn, Blue-eyed Grass, Barbara's Buttons	25	none	0	Elm/Cedar Elm/American Elm/Winged Elm	1

Pt #	Trans Topo	Spec of Grass	# of grass spec	Spec of cactuses & yuccas?	# of Cactuses & yuccas spec	Spec of forbs	# of forb spec	Spec of shrubs & vines	# of shrub & vine spec	Spec of trees	# of Tree spec
82	on flat surface	Little Bluestem, Big Bluestem, Sideoats Grama, Dropseeds/Cordgrass/Cord Grass, Hairy Grama, Silver Beardgrass/Silver Beard Grass/Silver Bluestem, Purple Threeawn, Japanese Brome	8	Prickly Pear Cactuses	1	Twinleaf senna, Symphyotrichum spec., Indian Blanket/Blanketflowers, Plantains, Texas Skeleton Plant, Drummond's Scullcap/Wright's Scullcap/Other Scull Caps, Buckwheat/Buck Wheat, Thistles, Blue-eyed Grass, Nuttall's Sensitive-Briar/Catclaw Briar, Broomweed, Leavenworth Eryngo, Palafoxia spec., Blue Sage/Salvia, Queen's Delight/Texas Stillingia, Cuman Ragweed/Western Ragweed, Obi-won Canobia, Wild Carrots, Hedeoma spec., GreenThread/Greenthread, Blue Star/Bluestar, Noseburn, Bee Balms, (Croton, Hotwort, Skunkweed, etc.), Purple Paintbrush, Dotted Gayfeather/Blazing Star	26	none	0	Honey Mesquite, Hackberry/Sugarberry, Elm/Cedar Elm/American Elm/Winged Elm	3
108	goes downhill	Seep Muhly, Purple Threeawn, Dropseeds/Cordgrass/Cord Grass, Hairy Grama, Fall Witchgrass, Silver Beardgrass/Silver Beard Grass/Silver Bluestem, Little Bluestem, Indiangrass, Scribner Panicum, Japanese Brome	10	Prickly Pear Cactuses, Yucca species	2	Green Thread/Greenthread, Twinleaf Senna, American Basketflower, Other Salvias, Triodanis spec., Queen's Delight/Texas Stillingia, Rabbit Tobaccos/Evax, Dotted Gayfeather/Blazing Star, (Croton, Hotwort, Skunkweed, etc.), Barbara's Buttons, Gaura/Guara/Primrose/Sundrops/Pinkladies/Fa lse Gauras, Leavenworth Eryngo, Wild Carrots, Nuttall's Sensitive-Briar/Catclaw Briar, Grasskiller, Perityle spec., Noseburn, Plantains, Bee Balms, Leavenworth Eryngo, Nuttall's Sensitive-Briar/Catclaw Briar, Grasskiller, Peristyle spec., Noseburn, Plantains, Cuman Ragweed/Western Ragweed, Thistles, Indian Blanket/Blanketflowers, Blue Star/Bluestar, Texas Bindweed, Gaura/Guara/Primrose/Sundrops/Pinkladies/Fa lse Gauras, Illinois Tickclover/Tick-trefoil, unknown forb spec	33	Greenbriers/Greenbriars/Sawbrie rs	1	Hercules Club/Pricklyash/Toothache Tree, Elbowbush/Elbow Bush/Stretchberry, Hackberry/Sugarberry, Fragrant Sumac/Skunkbush	4
113	on flat surface	Indiangrass, Big Bluestem, Little Bluestem, Sideoats Grama, Seep Muhly, Johnsongrass/Johnson Grass, Carex/Sedge, Japanese Brome	8	Yucca species	1	American Basketflower, Late Boneset/Dogfennel, Prairie Upright Coneflower/Mexican Hat, Leavenworth Eryngo, White Heath Aster, Milkweeds/Milk Weeds/Antelope Horns/Antelopehorns, Bee Balms, Plantains, Hedeoma spec., Gaura/Guara/Primrose/Sundrops/Pinkladies/Fa lse Gauras, Cuman Ragweed/Western Ragweed, Noseburn, 2 species of Nightshades/Horsenettle, Wild Carrots, Canada Wildrye, Goldenrods, Dotted Gayfeather/Blazing Star, Maximilian Sunflower, Texas Prairie Parsley, Drummond's Scullcap/Wright's Scullcap/Other Scull Caps, Blue Sage/Salvia, Queen's Delight/Texas Stillingia	24	Fragrant Sumac/Skunkbush	1	2 species of Hackberry/Sugarberry, Hercules Club/Pricklyash/Toothache Tree, Elm/Cedar Elm/American Elm/Winged Elm	5

Pt #	Trans Topo	Spec of Grass	# of grass spec	Spec of cactuses & yuccas?	# of Cactuses & yuccas spec	Spec of forbs	# of forb spec	Spec of shrubs & vines	# of shrub & vine spec	Spec of trees	# of Tree spec
74	on flat surface	Big Bluestem, Little Bluestem, Sideoats Grama, Seep Muhly, Purple Threawn, Switchgrass	6	none	0	(Croton, Hotwort, Skunkweed, etc.), Texas Prairie Parsley, Agalinis spec., Blue Sage/Salvia, Wild Carrots, Leavenworth Eryngo, Hedeoma spec., 2 species of Gaura/Guara/Primrose/Sundrops/Pinkladies/False Gauras, Indian Blanket/Blanketflowers, Bee Balms, unknown forb, Scribner Panicum, Virginia Wildrye, Sideoats Grama, Blue Star/Bluestar, Green Thread/Greenthread, Cuman Ragweed/Western Ragweed, Noseburn, Yellow Puff/Neptunia, Cobaea Penstemon/Beardtongue, White Heath Aster, Nuttall's Sensitive-Briar/Catclaw Briar, Plantains, 2 species of White Rosinweed/Compass Plant/Rosin Weed, Spurges/Sandmat/Sand Mat/Snow-on-the-Prairie/Mountain, Trailing Ratany/Prairie Bur, Queen's Delight/Texas Stillingia, Sumpweed/Sump Weed/Annual Marsh Elder, American Basketflower, Snakeherb, New Jersey Tea/Inland Ceanothus	35	Roses	1	Hackberry/Sugarberry, Honey Mesquite, Hercules Club/Pricklyash/Toothache Tree, Gum Bumelia/Gumbumelia/Bully	4
88	goes downhill	Scribner Panicum, Canada Wildrye, Sideoats Grama, Purple Threawn, Little Bluestem, Dropseeds/Cordgrass/Cord Grass, Big Bluestem, Indiangrass, Seep Muhly	9	Yucca species	1	Barbara's Buttons, Hedeoma spec., Nightshades/Horsenettle, Dotted Gayfeather/Blazing Star, Nuttall's Sensitive-Briar/Catclaw Briar, New Jersey Tea/Inland Ceanothus, American Basketflower, (Croton, Hotwort, Skunkweed, etc.), Leavenworth Eryngo, Texas Prairie Parsley, 3 species of Gaura/Guara/Primrose/Sundrops/Pinkladies/False Gauras, Thistles, Indian Blanket/Blanketflowers, Noseburn, Plantains, Queen's Delight/Texas Stillingia, Agalinis spec., Trailing Ratany/Prairie Bur, Spurges/Sandmat/Sand Mat/Snow-on-the-Prairie/Mountain, Blue Star/Bluestar, Goldenrods, Common Mare's-tail	25	Elbowbush/Elbow Bush/Stretchberry, Poison Ivy, Brambles/Dewberry/Southern Dew Berry, Roses	4	Elm/Cedar Elm/American Elm/Winged Elm, Plums, Ashe juniper, Hackberry/Sugarberry, Hercules Club/Pricklyash/Toothache Tree	5

Pt #	Trans Topo	Spec of Grass	# of grass spec	Spec of cactuses & yuccas?	# of Cactuses & yuccas spec	Spec of forbs	# of forb spec	Spec of shrubs & vines	# of shrub & vine spec	Spec of trees	# of Tree spec
75	goes downhill	Scribner Panicum, Canada Wildrye, Sideoats Grama, Purple Threeawn, Little Bluestem, Indiangrass, Texas wintergrass/Winter Grass, Switchgrass, Phalaris spec., Silver Beardgrass/Silver Beard Grass/Silver Bluestem,	10	Prickly Pear Cactuses	1	Leavenworth Eryngo, Tickseed/Coreopsis, 2 species of Gaura/Guara/Primrose/Sundrops/Pinkladies/Fa lse Gauras, Wild Carrots, White Rosinweed/Compass Plant/Rosin Weed, New Jersey Tea/Inland Ceanothus, Tall Wild Mercury, Nuttall's Sensitive-Briar/Catclaw Briar, Blue Sage/Salvia, Dotted Gayfeather/Blazing Star, Indian Blanket/Blanketflowers, Purple Paintbrush, Cuman Ragweed/Western Ragweed, Saw-leaf Daisy, Spurges/Sandmat/Sand Mat/Snow-on-the- Prairie/Mountain, (Croton, Hotwort, Skunkweed, etc.), Broomweed, Other Salvias, White Heath Aster, Trailing Ratany/Prairie Bur, Thistles, Queen's Delight/Texas Stillingia, Snakeherb, Cobaea Penstemon/Beardtongue, Blue Star/Bluestar, Buckwheat/Buck Wheat	28	Roses	1	Elm/Cedar Elm/American Elm/Winged Elm	1
1A	no entry	Little Bluestem, Sideoats Grama, Big Bluestem, King Ranch Bluestem/Yellow bluestem/KRB, Purple Threeawn, Dropseeds/Cordgrass/Cord Grass, Texas wintergrass/Winter Grass, Japanese Brome	8	Yucca species	1	Scurf Pea/Scurfpea, Wild Carrots, Buckwheat/Buck Wheat, Bee Balms, Thistles, Blue Sage/Salvia, Asteraceae spec., Nuttall's Sensitive-Briar/Catclaw Briar, Blue Star/Bluestar, Dotted Gayfeather/Blazing Star, False Boneset, Sideoats Grama, Purple Paintbrush, Agalinis spec,Sagewort/Sagebrush/Wormwood/Sage Brush, Texas Skeleton Plant, Trailing Ratany/Prairie Bur, Little Mercury, Green Thread/Greenthread, Cobaea Penstemon/Beardtongue, Cuman Ragweed/Western Ragweed, Queen's Delight/Texas Stillingia, 2 species of Gaura/Guara/Primrose/Sundrops/Pinkladies/Fa lse Gauras, Sida spec., Other Salvias, Other Sunflowers including common sunflower/Sun Flowers, Scribner Panicum, American Basketflower	30	Elbowbush/Elbow Bush/Stretchberry	1	Gum Bumelia/Gumbumelia/Bully, Honey Mesquite, Hackberry/Sugarberry	3

Pt #	Trans Topo	Spec of Grass	# of grass spec	Spec of cactuses & yuccas?	# of Cactuses & yuccas spec	Spec of forbs	# of forb spec	Spec of shrubs & vines	# of shrub & vine spec	Spec of trees	# of Tree spec
17	goes uphill	Sideoats Grama, Little Bluestem, Scribner Panicum, Indiangrass, Canada Wildrye, Carex/Sedge, Silver Beardgrass/Silver Beard Grass/Silver Bluestem, Seep Muhly, Texas wintergrass/Winter Grass, Big Bluestem, Western Wheatgrass	11	Prickly Pear Cactuses	1	Buckwheat/Buck Wheat, Groundcherries, 2 species of Spurges/Sandmat/Sand Mat/Snow-on-the-Prairie/Mountain, American Basketflower, Dropseeds/Cordgrass/Cord Grass, Purple Paintbrush, Broomweed, Blue Star/Bluestar, Maximilian Sunflower, Dotted Gayfeather/Blazing Star, Cuman Ragweed/Western Ragweed, Indian Blanket/Blanketflowers, White Heath Aster, Nuttall's Sensitive-Briar/Catclaw Briar, Bee Balms, Low Wild Mercury, Tall Wild-mercury, Engelmann's Daisy, Aglinis spec., Germanders, (Croton, Hotwort, Skunkweed, etc.), Late Boneset/Dogfennel, Plantains, Milkweeds/Milk Weeds/Antelope Horns/Antelopehorns, Hedeoma spec., Mock Vervains/Mock Verbenas, Compassplant/Compass Plant, unknown forb	30	Greenbriers/Greenbriars/Sawbriers, Brambles/Dewberry/Southern Dew Berry	2	Gum Bumelia/Gumbumelia/Bully, Elm/Cedar Elm/American Elm/Winged Elm, Hercules Club/Pricklyash/Toothache Tree, Honey Mesquite	4
87	goes downhill	Little Bluestem, Dropseeds/Cordgrass/Cord Grass, Sideoats Grama, Scribner Panicum, Seep Muhly, Carex/Sedge, Japanese Brome	7	Prickly Pear Cactuses	1	Leavenworth Eryngo, 2 species of Gaura/Guara/Primrose/Sundrops/Pinkladies/False Gauras, White Rosinweed/Compass Plant/Rosin Weed, Prairie Upright Coneflower/Mexican Hat, Indian Blanket/Blanketflowers, Drummond's Scullcap/Wright's Scullcap/Other Scull Caps, Queen's Delight/Texas Stillingia, Rabbit Tobaccos/Evax, Plantains, Nettle spec., Agalinis spec., Noseburn, Broomweed, 2 species of Blue Star/Bluestar, Leafy Mistletoe, Blue Sage/Salvia, (Croton, Hotwort, Skunkweed, etc.), Engelmann's Daisy, Cuman Ragweed/Western Ragweed, Obi-won Conobia, Dropseeds/Cordgrass/Cord Grass, Trailing Ratany/Prairie Bur, Nightshades/Horsenettle, Green Thread/Greenthread, New Jersey Tea/Inland Ceanothus, Carex/Sedge, Nuttall's Sensitive-Briar/Catclaw Briar, Snakeherb, Wild Carrots, Hedeoma spec., Twinleaf Senna, Bee Balms, American Basketflower, Purple Paintbrush, Buckwheat/Buck Wheat,	39	Elbowbush/Elbow Bush/Stretchberry, Fragrant Sumac/Skunkbush, Greenbriers/Greenbriars/Sawbriers	3	Elm/Cedar Elm/American Elm/Winged Elm, Cedar/Juniper, Hercules Club/Pricklyash/Toothache Tree	3

Pt #	Trans Topo	Spec of Grass	# of grass spec	Spec of cactuses & yuccas?	# of Cactuses & yuccas spec	Spec of forbs	# of forb spec	Spec of shrubs & vines	# of shrub & vine spec	Spec of trees	# of Tree spec
12	on flat surface	Little Bluestem, Big Bluestem, 2 species of Sideoats Grama, Dropseeds/Cordgrass/Cord Grass, Purple Threeawn, Texas wintergrass/Winter Grass, Carex/Sedge, Johnsongrass/Johnson Grass, Indiangrass, Japanese Brome	10	Prickly Pear Cactuses	1	Leavenworth Eryngo, 3 species of Gaura/Guara/Primrose/Sundrops/Pinkladies/Fa lse Gauras, Groundcherries, Tall Wild Mercury,3 species of Hedeoma spec., American Basketflower, Sagewort/Sagebrush/Wormwood/Sage Brush, Noseburn, Asteraceae spec., Dotted Gayfeather/Blazing Star, Wild Carrots, Grindelia spec., Other Salvias, Green Thread/Greenthread, Spurges/Sandmat/Sand Mat/Snow-on-the-Prairie/Mountain, (Croton, Hotwort, Skunkweed, etc.), Indian Blanket/Blanketflowers, Scurf Pea/Scurfpea, Thistles, Cuman Ragweed/Western Ragweed, Tall Wildmercury, Low Ragweed, Drummond's Scullcap/Wright's Scullcap/Other Scull Caps, White Rosinweed/Compass Plant/Rosin Weed, Common Yarrow, Low Wild Mercury, Buckwheat/Buck Wheat, Nuttall's Sensitive-Briar/Catclaw Briar, Blue Sage/Salvia, Queen's Delight/Texas Stillingia, Trailing Ratany/Prairie Bur, Broomweed	38	none	0	Plums, Hackberry/Sugarberry, Hercules Club/Pricklyash/Toothache Tree, Elm/Cedar Elm/American Elm/Winged Elm	4
100	goes uphill	Big Bluestem, Indiangrass, Sideoats Grama, Little Bluestem, Dropseeds/Cordgrass/Cord Grass, Scribner Panicum, Canada Wildrye, Seep Muhly, Tall Grama, Hairy Grama, Carex/Sedge, Japanese Brome	12	Yucca species, Prickly Pear Cactuses	2	White Tridens/Purpletop Tridens, Leavenworth Eryngo, Dotted Gayfeather/Blazing Star, Horse Balm, Agalinis spec., Broomweed, American Basketflower, Plantains, Sagewort/Sagebrush/Wormwood/Sage Brush, Wild Carrots, Hedeoma spec., Cocklebur, Asteraceae spec., Thistles, Gray Goldaster/Hoary False Goldaster, Bee Balms, Other Salvias, Cuman Ragweed/Western Ragweed, Queen's Delight/Texas Stillingia, Wild Tall Mercury, Indian Blanket/Blanketflowers, Texas Yellow Star/Yellowstar, Green Thread/Greenthread	23	none	0	Western Soapberry, Elm/Cedar Elm/American Elm/Winged Elm, Cedar/Juniper, Plums	4

Pt #	Trans Topo	Spec of Grass	# of grass spec	Spec of cactuses & yuccas?	# of Cactuses & yuccas spec	Spec of forbs	# of forb spec	Spec of shrubs & vines	# of shrub & vine spec	Spec of trees	# of Tree spec
73	goes downhill	Sideoats Grama, Canadian Wildrye, Fall Witchgrass, Little Bluestem, Purple Threeawn, Dropseeds/Cordgrass/Cord Grass, Seep Muhly, Scribners Panicum, Silver Beardgrass/Silver Beard Grass/Silver Bluestem	9	Prickly Pear Cactuses	1	Leavenworth Eryngo, Drummond's Scullcap/Wright's Scullcap/Other Scull Caps, Wild Carrots, Plantains, Thistles, 2 species of Gaura/Guara/Primrose/Sundrops/Pinkladies/Fa lse Gauras, (Croton, Hotwort, Skunkweed, etc.), American Basketflower, Indian Blanket/Blanketflowers, Purple Paintbrush, Buckwheat/Buck Wheat, Noseburn, Trailing Ratany/Prairie Bur, Hedeoma spec., Engelmann's Daisy, Twinleaf senna, (Verbena, Vervain, Mock Vervain, Mock Verbena), Bee Balms, Blue Sage/Salvia, Dotted Gayfeather/Blazing Star, Mexican Sagewort/White Sagebrush/Wormwood, Velvet Bundleflower, Snailseeds, Queen's Delight/Texas Stillingia, White Heath Aster	26	Greenbriers/Greenbriars/Sawbriers, Poison Ivy	2	Elm/Cedar Elm/American Elm/Winged Elm, Cedar/Juniper	2
7	goes uphill	Buffalograss, Carex/Sedge, Dropseeds/Cordgrass/Cord Grass, Slim Tridens, Switchgrass, Texas Cup Grass/Cupgrass, King Ranch Bluestem/Yellow bluestem/KRB, Little Bluestem, Sideoats Grama, Silver Beardgrass/Silver Beard Grass/Silver Bluestem, Digitaria spec., Slim Tridens, Purple Threeawn	13	Prickly Pear Cactuses	1	American Basketflower, Black-eyed Susan, Buckwheat/Buck Wheat, (Croton, Hotwort, Skunkweed, etc.), Drummond's Scullcap/Wright's Scullcap/Other Scull Caps, Engelmann's Daisy, Flaxes/Meadow Flax/Meadowflax, Groundcherries, Indian Blanket/Blanketflowers, Milkweeds/Milk Weeds/Antelope Horns/Antelopehorns, Nightshades/Horsenettle, Other Salvias, Purple Paintbrush, Queen's Delight/Texas Stillingia, Texas Paintbrush, Thistles, White Tridens/Purpletop Tridens, Wild Carrots, 2 Senna spec., Broomweed, Japenese Brome Tragia spec., Grindelia spec., Texas Bindweed, Mimosa spec., Poppymallows/Poppy Mallows/Winecup Mallows, Prairie Upright Coneflower/Mexican Hat, Low Wild Mercury, Prostrate knotweed, 2 Hedeoma spec.	33	none	0	Hackberry/Sugarberry, Honey Mesquite	2

Attachment B: Benbrook Lake Prairie Point Photographs

Benbrook Prairie Assessment #: 1A

Facing North



Facing East



Facing West



Facing South



Benbrook Prairie Assessment #: 9

Facing North



Facing East



Facing West



Facing South



Benbrook Prairie Assessment #: 12

Facing North



Facing East



Facing West



Facing South



Benbrook Prairie Assessment #: 15

Facing North



Facing East



Facing West



Facing South



Benbrook Prairie Assessment #: 17

Facing North



Facing East



Facing West



Facing South



Benbrook Prairie Assessment #: 20

Facing North



Facing East



Facing West



Facing South



Benbrook Prairie Assessment #: 48

Facing North



Facing East



Facing West



Facing South



Benbrook Prairie Assessment #: 74

Facing North



Facing East



Facing West



Facing South



Benbrook Prairie Assessment #: 75

Facing North



Facing East



Facing West



Facing South



Benbrook Prairie Assessment #: 82

Facing North



Facing East



Facing West



Facing South



Benbrook Prairie Assessment #: 87

Facing North



Facing East



Facing West



Facing South



Benbrook Prairie Assessment #: 88

Facing North



Facing East



Facing West



Facing South



Benbrook Prairie Assessment #: 100

Facing North



Facing East



Facing West



Facing South



Benbrook Prairie Assessment #: 108

Facing North



Facing East



Facing West



Facing South



Benbrook Prairie Assessment #: 113

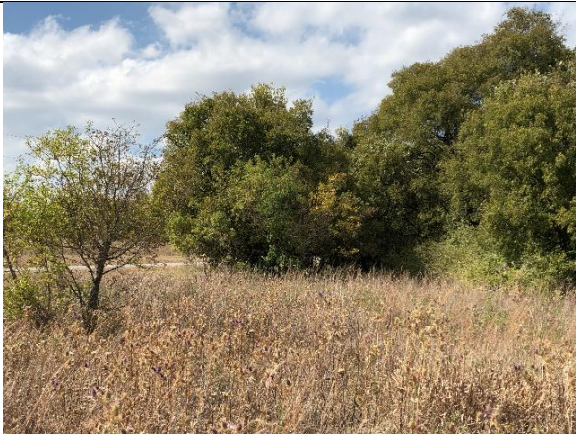
Facing North



Facing East



Facing West



Facing South

