

Emerald Acres, Oklahoma

Freedom Farm Academy

Design 9



Designed by:

Lindsay -Head of Designs, Graham-Project Manager, Mike-Plant List,
Annette Argabright-Designer, Cynthia & Graham-Narrative





The water runs orange with the red clay in the soil.



The beginning of the creek to the south that divides the land from the neighbor.



The deer are an important part of the property for Angi and Riley. They did not want fencing, but wanted to incorporate natural fencing as well as create spaces for the deer. Those areas are not included in the design area, but we did add in information for them in the narrative in an attempt to work with nature rather than against it.

As is typical in this part of the country, Cynthia had ticks when she got home. She sent them off to be tested to see if they had diseases. No diseases were found, thankfully, but it was good information to receive, an interesting way to use edges and value the marginal.

Blake Boles

1713 Robinwood Drive Fort Worth, TX 76111

blake@brbdesigns.art P: 254-243-0457

Tested specimen:

Official Lab Analysis Order

TC-33788

Adult female lone star tick (*Amblyomma americanum*) unengorged with blood.

Identified but untested specimens:

Adult male lone star tick (*Amblyomma americanum*) unengorged with blood.

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Tick specimen TC-33788 tested negative for the presence of *Borrelia burgdorferi*, *Ehrlichia chaffeensis*, *Francisella tularensis*, and *Rickettsia rickettsii*.

Pathogen Testing Breakdown:

| Pathogen | Associated Disease | Pathogen Presence |
|-------------------------------|------------------------------|-------------------|
| <i>Borrelia burgdorferi</i> | Lyme disease | NEGATIVE |
| <i>Ehrlichia chaffeensis</i> | human monocytic ehrlichiosis | NEGATIVE |
| <i>Francisella tularensis</i> | tularemia | NEGATIVE |
| <i>Rickettsia rickettsii</i> | Rocky Mountain spotted fever | NEGATIVE |

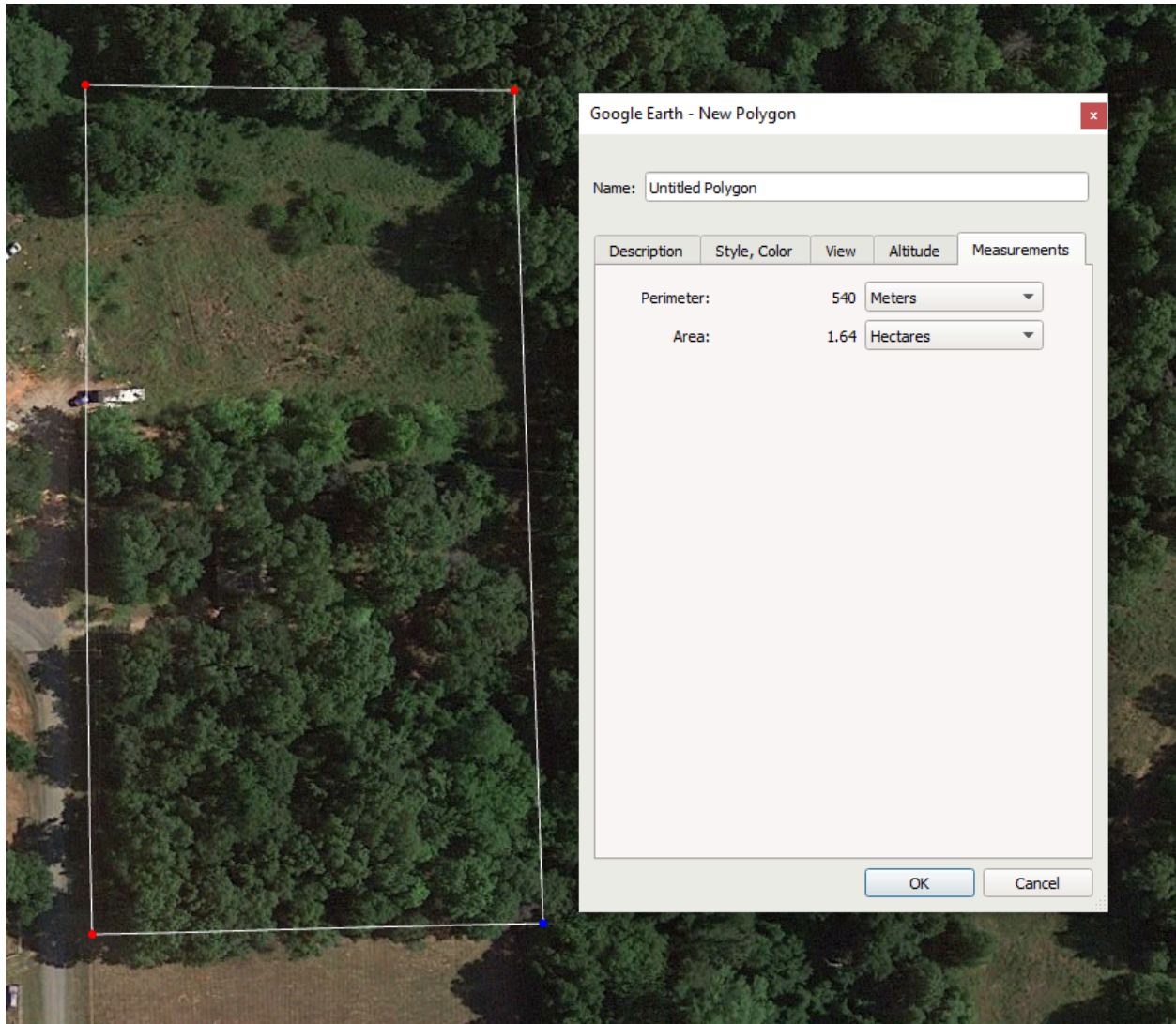
PCR test results were reported by the Northeast Wildlife DNA Laboratory on 03/29/2023 at 4:07 PM.

Report results are provided by the Northeast Wildlife DNA Laboratory in accordance with their standard procedures, terms and conditions. The test result for infectious agent screen does not rule out or confirm the presence of the agent or exposure to the patient. The result is intended to provide you and your physician or veterinarian with important information, when combined with other information, to help determine risk of exposure and subsequent clinical treatment and follow-up.

We keep your tick specimen's DNA on file for two years. To request additional disease tests at any time, call TickCheck at 866-713-8425 or email support@tickcheck.com.

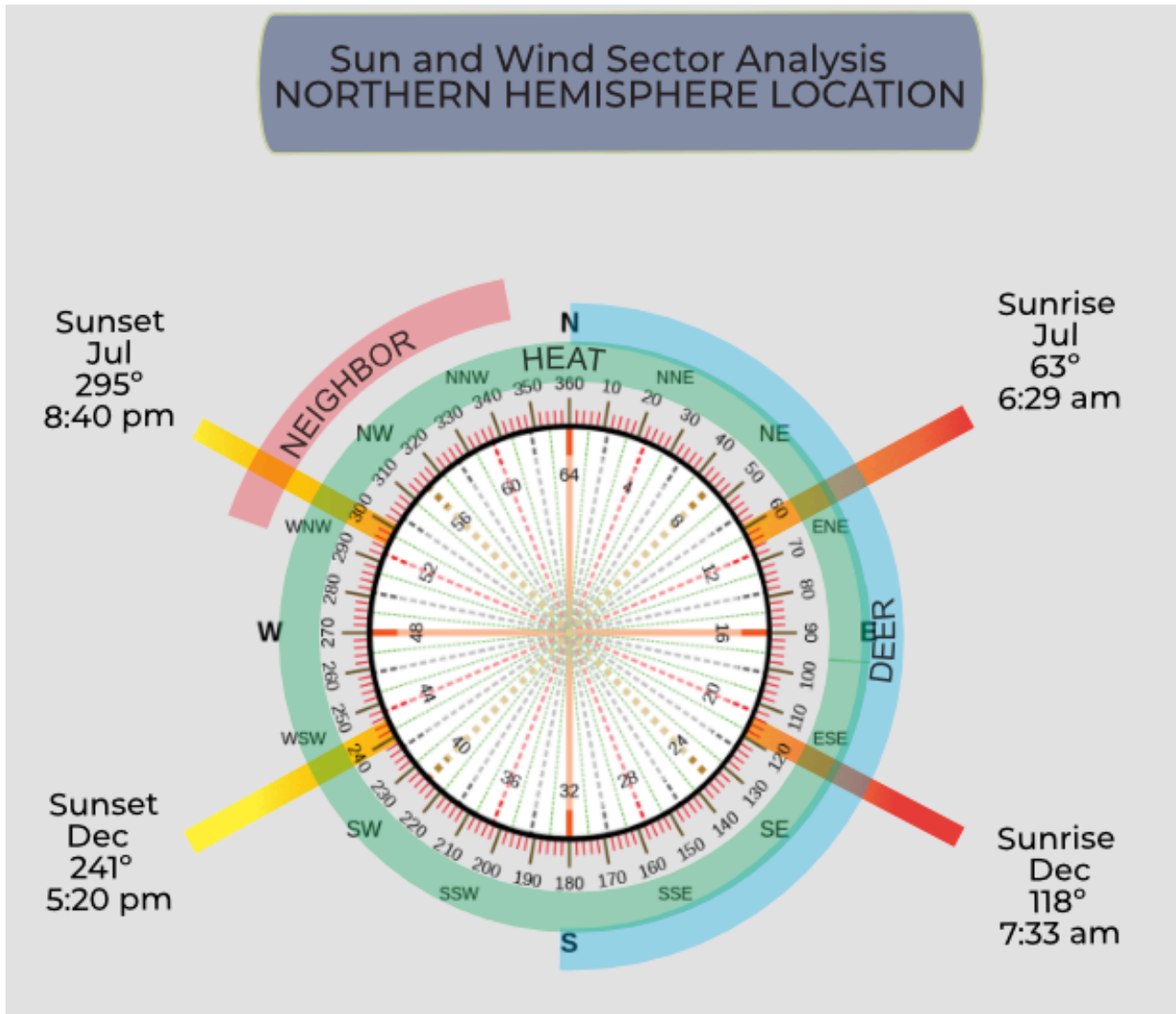
BOUNDARIES

Emerald Acres is a combination of 3 lots. The cleared lot is referred to as Lot 18. Physical boundaries of this property include 2 creeks and a road.



Sectors

Sectors to be considered are the summer and winter sun angles, the heat of summer, wildlife encounters (primarily deer), and limiting the view of one neighbor's property.



Other Boundaries

Other boundaries that we needed to design around include:

- Several design team members
- The design team was not located in the state of Oklahoma, but a site visit was performed to start the process of designing from patterns to details.
- This process was new for the company so we all worked together as a team towards creating the process for this type of design (creatively using and responding to change).
- A new plant list program was being established

RESOURCES

Within FFA, there is a team of about 16 primary designers, support designers, installers, and a core team of leaders. There are weekly webinars to learn from or teach, as well as meetings to share information and ideas. A designer is never alone in the process, neither is the steward.

Other resources include:

- Oregon State University's Natural Water Management course by Andrew Million
- Rainwater Harvesting for Drylands and Beyond Volumes I & II, by Brad Lancaster
- Affinity 2 design software
- Monday.com to organize design phases
- Google Earth and other websites and apps for climate data and sector analysis research
- Templates and processes
- Team's permaculture knowledge
- FFA and design team
- The owner of FFA's vision-Jim Gale
- Design installer, Austin - Thriving Roots
- Nearby plant nurseries
- Internet and books
- The stewards
- Lusi Alderslowe and the diploma process
- Ethics and principles

Ethics and Principles

Principles used were by David Holmgren, Bill Mollison, and Brad Lancaster.

| Ethics and Chosen Principles | How They were Used |
|---|--|
| People Care | <p>The stewards wish to share their permaculture and healing knowledge, land, and food with groups.</p> <p>Communication with the stewards and within the team.</p> |
| Earth Care | <p>Plans were made to manage the water flow patterns through the property, research was conducted to be aware of sun path, climate data, wildlife patterns, and leach fields. Things like the moss, trees, wildlife, and wildflowers were considered part of the pattern, protected and designed around.</p> |
| Fair Share | <p>The gardens and the paths are for the use and education of the family, friends, and small groups such as homeschool groups. Wildlife, especially deer, are included in the design to ensure they also benefit.</p> |
| <p>Observe and Interact</p> <p>Begin with long and thoughtful observation</p> | <p>This was used throughout the design process by both the stewards and the design team.</p> <p>Observations were made by the steward daily as they watched their deer, the videoed extreme rain event, and connections they made with the land.</p> <p>Observations were made by Cynthia as she</p> |

| | |
|--|--|
| | <p>analyzed the areas she walked with the steward on the site visit and shared with the team.</p> <p>Observations were made by the team as we researched the property and plant options, listened to the steward's stories, and studied the videos shared by the stewards and Cynthia.</p> |
| <p>Catch and Store Energy</p> <p>Always plan an overflow route, and manage that overflow as a resource</p> | <p>We were able to manage the flow of water, thanks to the videos shared with us by the steward. We designed for the deer and encouraged bats, and designed food forests to create perennial food sources.</p> |
| <p>Obtain a Yield</p> | <p>An example of syntropic forestry in the tree farm to build soil and create a harvest while the trees are growing</p> <p>Harvests of the gardens and food forests</p> <p>Educational yields of school groups and of the stewards as they continue to build their farm</p> <p>Financial yield of selling their food, healing services, and tours</p> <p>Yield of food and a safe habitat for wildlife</p> |
| <p>Apply Self Regulation and Accept Feedback</p> | <p>Every meeting with the stewards</p> <p>Studying the wildlife and climate patterns</p> |

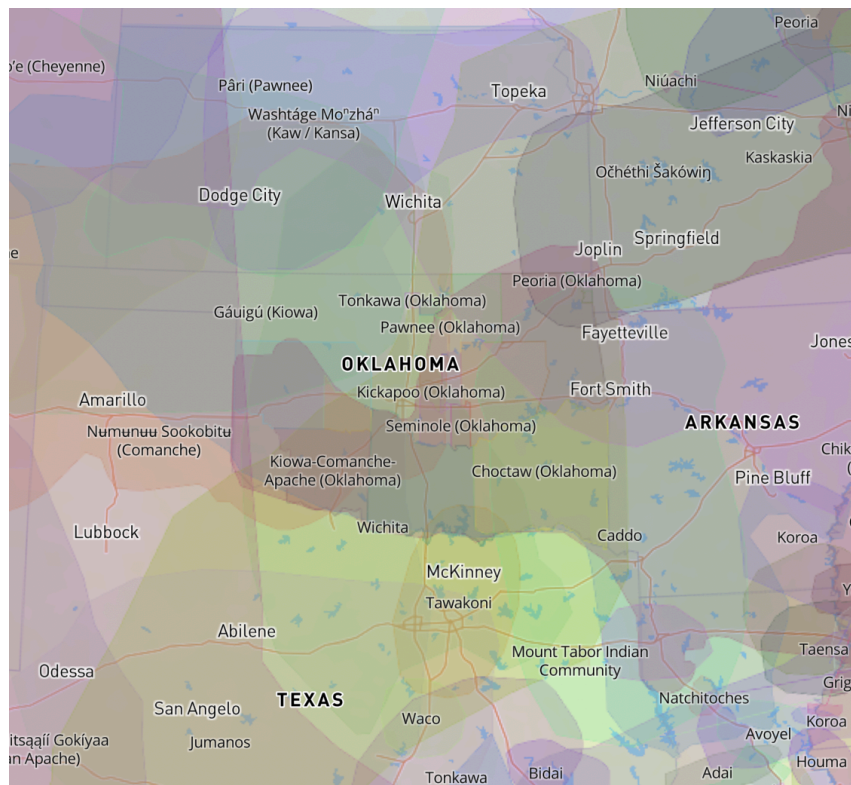
| | |
|---|---|
| | <p>The final draft review and approval process are ways to tweak and learn new skills for the next design.</p> |
| <p>Use and Value Renewable Resources and Services</p> <p>Slow, spread, and infiltrate the flow of water</p> | <p>The natural play area to be used by homeschool groups, and in repurposing fence posts that have remained in the ground.</p> <p>Designing the water management plan. The existing pooling areas were used to collect water, directing it from higher points.</p> |
| <p>Design From Patterns to Details</p> <p>Start at the top of your watershed and work your way down</p> | <p>The water flow, and deer habits.</p> <p>The water management plan was observed from the highest points (road, creek entrances, rooftop).</p> |
| <p>Use Small and Slow Solutions</p> <p>Start small and simple</p> | <p>The stewards have wisely focused on this principle in their implementation phases.</p> <p>The water management plan used simple solutions that connect pooling areas.</p> |
| <p>Use Edges and Value the Marginal</p> <p>Maximize beneficial relationships and</p> | <p>Natural edges include the 2 creeks and the main road. Other edges include wildlife paths, water flow paths, a wide path on the east of the property, and the tree lines.</p> <p>Edges were also found within each designer. It was in those edges that we either found great</p> |

| | |
|---|--|
| efficiency by “stacking functions” | ideas during brainstorming sessions, or a break in the flow when communication faltered. |
| Creatively Use and Respond to Change | Design process for this design product Adapt a water management plan by observing the water flow and pooling during the big rain event. |
| Work with Nature Rather than Against it | The deer, encouraging bats, being aware of the water flow, the moss, the trees, the indigenous cultures nearby, all became a part of the pattern here. |

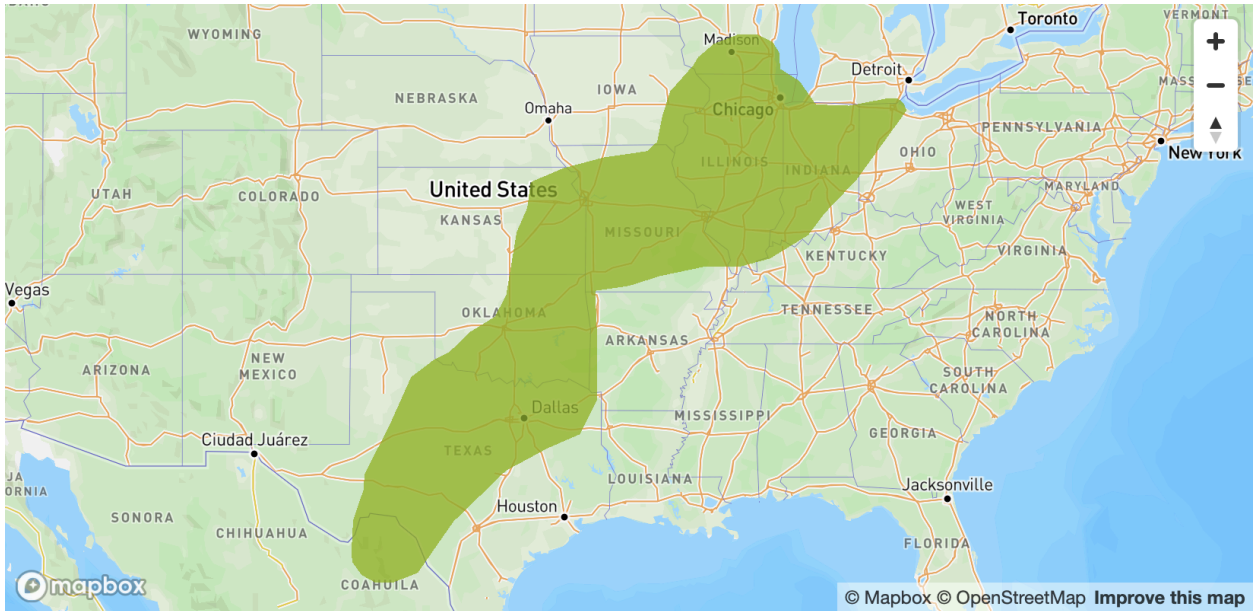
Historical

Indigenous Stewards of the Land around Norman, Oklahoma:

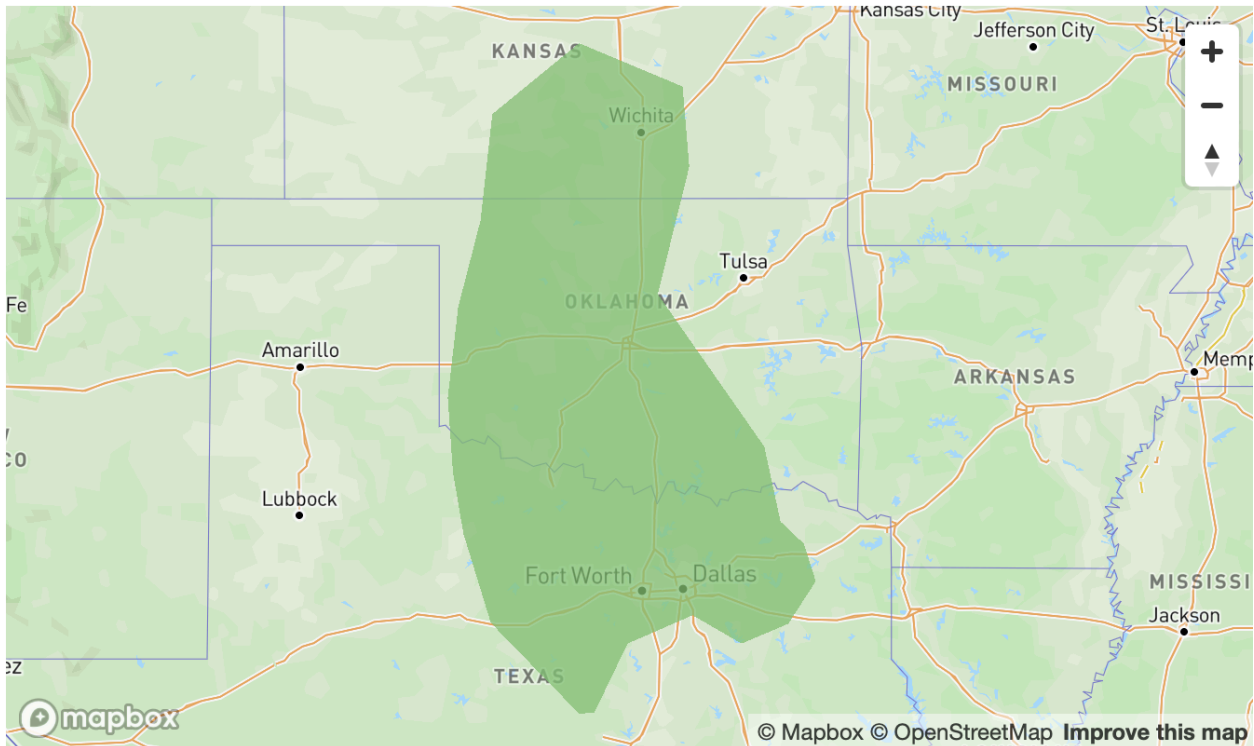
- Wichita ↗
- Kiikaapoi (Kickapoo) ↗
- Tawakoni ↗
- Source: <https://native-land.ca/>



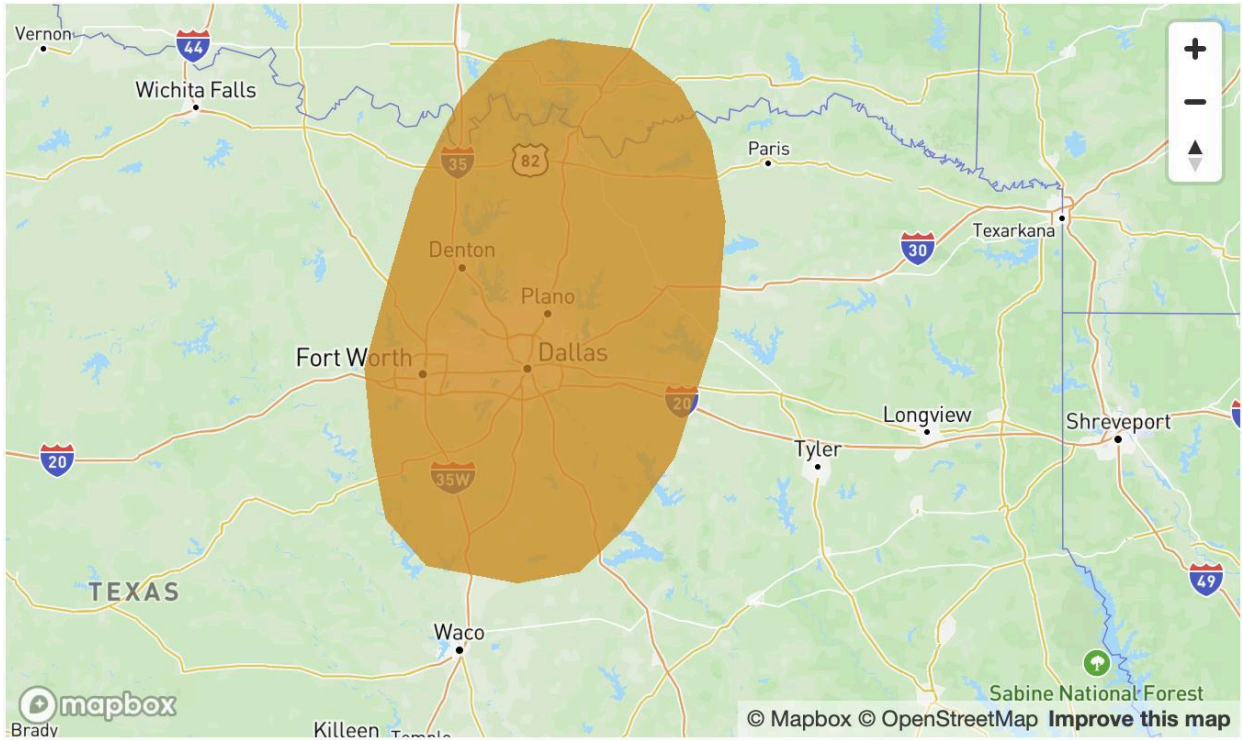
Kiikaapoi (Kickapoo) “those who walk the Earth”



Wichita People



Tawakoni “river bend among sand hills”



EVALUATION

Soil Analysis

The soil survey was performed by the stewards and sent off to the laboratory for analysis.



Soil, Water & Forage Analytical Laboratory

Oklahoma State University Division of Agricultural Sciences and Natural Resources
 045 Agricultural Hall
 Stillwater, OK. 74078
 E-mail: soiltesting@okstate.edu
 Website: www.soiltesting.okstate.edu

SOIL TEST REPORT

CLEVELAND CO EXTENSION OFFICE

601 E ROBINSON
 NORMAN, OK 73071
 (405) 321-4774

Name : Riley Mulinix

Location : Lawn - Trees
 #18

Lab ID No.: : 144495
 Customer Code : 14
 Sample No. : 4339
 Received : 10/19/2022
 Report Date : 10/20/2022

| | | | | | |
|-------------------------|---------------|--------------------------------|------|---------------------------|------|
| - Routine Test - | | - Secondary Nutrients - | | - Micronutrients - | |
| pH: | 6.6 | SO4-S (lbs/A) | | Fe (ppm): | 36.5 |
| Buffer Index: | | Surface: | 4 | Zn (ppm): | 1.2 |
| NO3-N (lbs/A): | | Subsoil: | | B (ppm): | 0.3 |
| Surface: | 23 | Ca (lbs/A): | 2469 | Cu (ppm): | 0.6 |
| Subsoil: | | Mg (lbs/A): | 364 | | |
| Soil Test P Index: | 10 (5 ppm) | - Additional Tests - | | | |
| Soil Test K Index: | 226 (113 ppm) | | | | |

* DL = Detection Limit

INTERPRETATION AND REQUIREMENTS FOR *Lawn (No Yield Goal Needed for N recommendation)*

| - Test - | - Interpretation - | - Requirement - | - Recommendations and Comments - |
|------------|--------------------|------------------------------------|----------------------------------|
| pH | Adequate | No Lime Required | |
| Nitrogen | Deficient | 0.7 lbs/1000 sq. ft. N | |
| Phosphorus | Deficient | 2.5 lbs/1000 sq. ft. P2O5 annually | |
| Potassium | Deficient | 1 lbs/1000 sq. ft. K2O annually | |
| Sulfur | Adequate | See PSS-2225 | |
| Calcium | Adequate | See PSS-2225 | |
| Magnesium | Adequate | See PSS-2225 | |
| Iron | Adequate | See PSS-2225 | |
| Zinc | Adequate | See PSS-2225 | |
| Boron | Adequate | See PSS-2225 | |

Comments :

Apply 12.5 lbs of 10-20-10 per 1000 sq ft -OR- commercially available equivalent. Nitrogen is prone to leaching and may require additional applications during the growing season. Do not apply phosphorus or potassium again until future soil test indicates it is needed.

Base Map



Designer:
Lindsay Brandon

Client:
Riley Mulinix
675 Wilkenson Dr.
Norman, Oklahoma
73026

Growing Zone: 7a
Climate: Temperate - Without Dry Season
Hot Summer
Koppen Class: Cfa
Soil Type: Harrah Fine Sandy Loam
Elevation: 315 - 327m
Slope:
Lat. 35°13'31.46"N
Long. 97°10'7.91"W

Date: January 2023
Scale:
Print Size: 2x3'

Design Size: Freedom Farm Academy

* For Concept Only Not Construction

Key

- Water Storage ---
- Septic ---
- Well ---
- Power Lines ---
- Water Lines ---
- Underground Utility ---
- Hoa Restrictions ---
- Gate ---

- Raised Beds ---
- Chicken Coop ---
- Fence ---
- Compost ---
- Access ---
- Trees ---
- Spigots ---
- Greenhouse ---

Zones

This zone map is based on future plans.

Zone 0 - Family's home

Zone 1 - yard, deck, kitchen garden

Zone 2 - (below Zone 1) chickens and where the stewards relax in the evening. The other Zone 2 is where the food forest will be.

Zone 3 - is a low maintenance pass through and for tiny houses.

Zone 4 - will include the parking lot, the teepee for healing ceremonies, and the briar bramble.

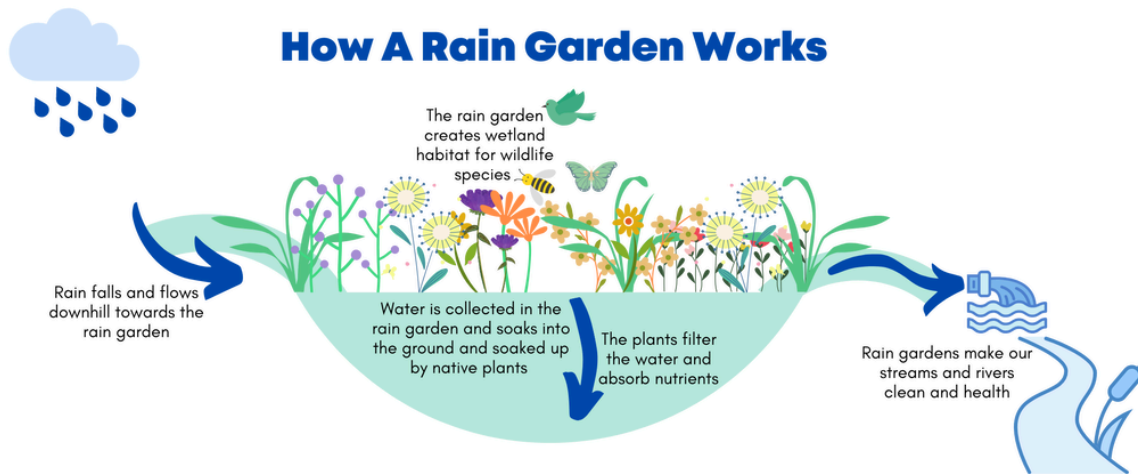
Zone 5 - is the south side of the property and along the creek to the east. They want to keep that wild other than creating the swale, pooling area, and pond there.



Overlays-Water Management

The larger blue paths are existing creeks that have some water in them most of the year, but are dry during the summer months.

The water on Emerald Acres enters from several locations. The swale across the area just off the main road will help to slow down the water, filling the water table. Strategically placed swales will slow the flow of water, spread it out, and sink it in, directing it through the food forest, rain gardens, pooling areas, and ponds. Where water pools, it will fill the water table and any overflow will move on to the next pooling area, and then direct the overflow into the creek on the east side.



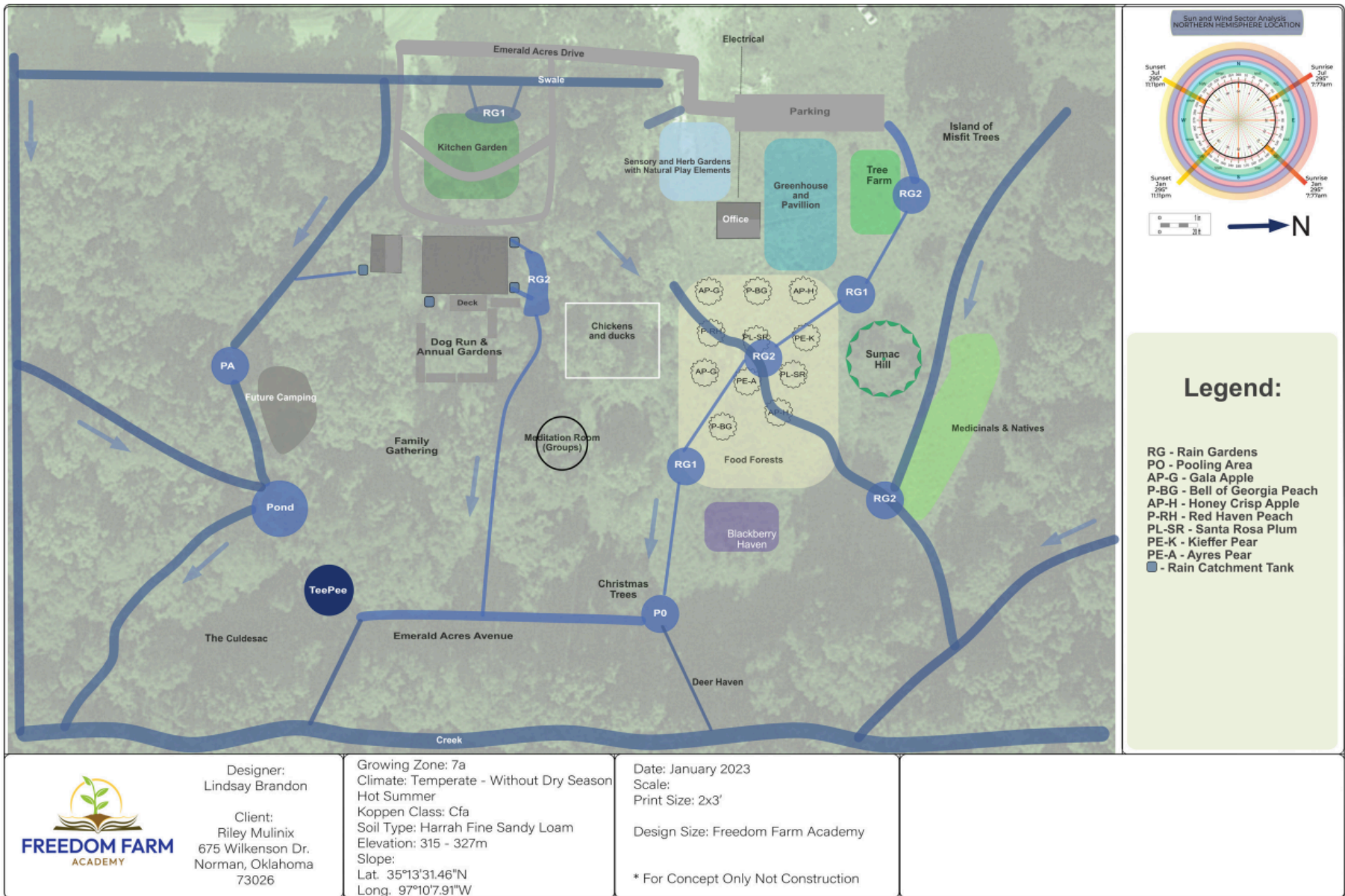
Establish A Rain Garden - TENNESSEE ENVIRONMENTAL COUNCIL (tectn.org)

Information for this water management design came from skills learned in the [Permaculture Water Management](#) Course from Oregon State University and the water management principles by Brad Lancaster. To further learn these principles, I led a webinar on [Permaculture Water Management Principles](#) for Food Forest Abundance.

1. Begin with long and thoughtful observations.
2. Start at the top (highpoint) of your watershed and work your way down.
3. Start small and simple.
4. Slow, spread, and infiltrate the flow of water.
5. Always plan an overflow route, and manage that overflow as a resource.
6. Maximize living and organic groundcover.
7. Maximize beneficial relationships and efficiency by “stacking functions.”
8. Continually reassess your system: the “feedback loop.”

Tools used to finalize water management plan:

- Water Management Course
- Client interviews
- Site analysis and client video
- Online water flow and ridgeline analysis



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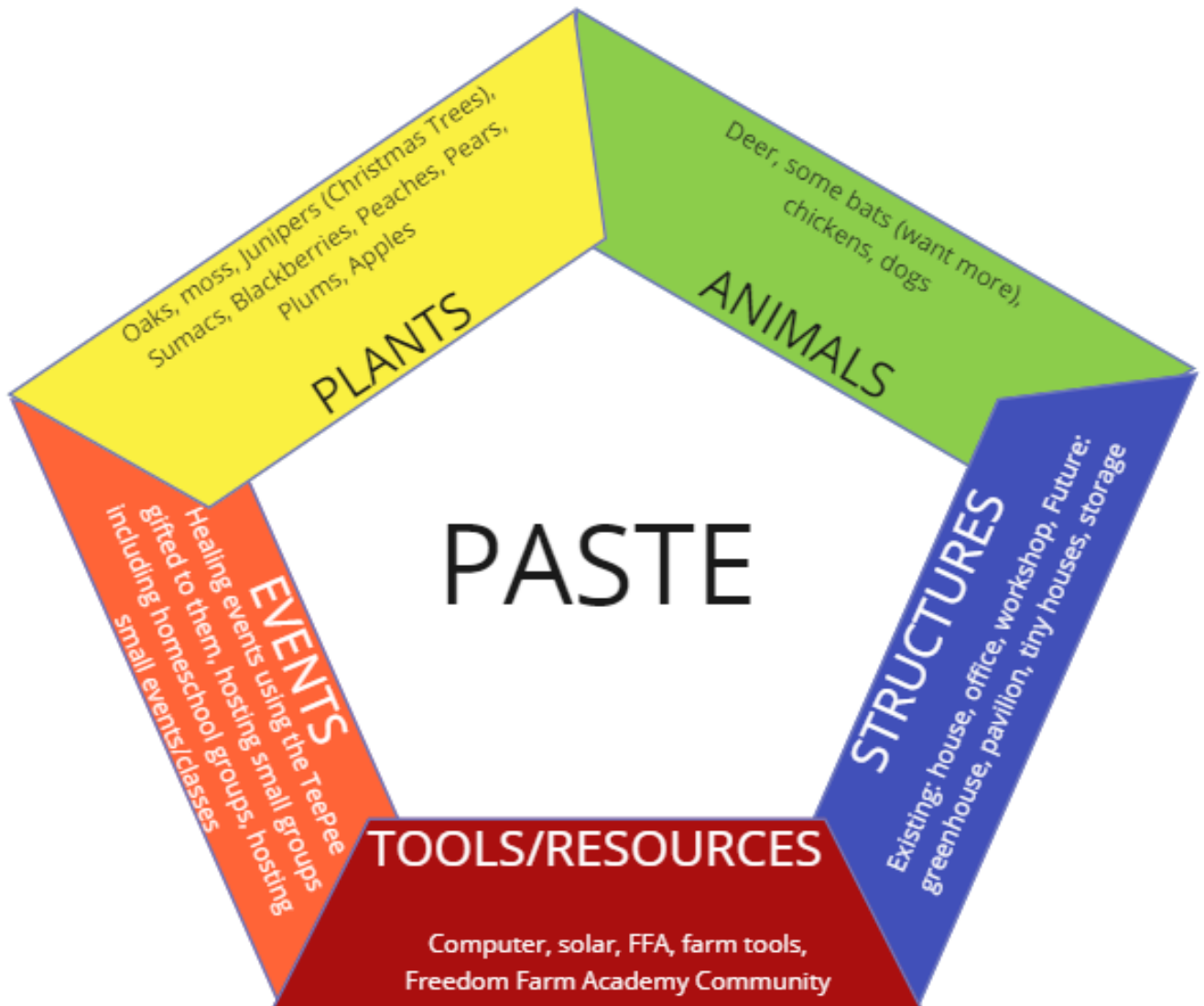
Elevation

Elevation changes almost 80 feet (24 meters) in the surrounding area, 20 feet (~6 meters) from the road to the eastern creek. Knowing this allowed me to create a water management plan.



PASTE

- Allowed us to break the land into special areas (Bramble Haven, Sumac Hill).
- Allowed us to design for and around the wildlife
- Knowing where the structures were and what was needed allowed us to narrow down the design space



Analysis

Plants

A large choice of plants was first chosen by sorting my [personal plant list](#) by planting zones. Some plants were removed due to high maintenance. Some, like their newly planted fruit trees, the ones we chose for deer fencing, and night blooming flowers like 4 O'Clocks, were added. As I worked through each area of the design, I narrowed the plant choices to the best options for the space (water needs, maintenance, favorites, etc). Some areas, like the sensory garden and the pollinator garden, I left the plant list long so they can choose based on what is available. From there I created the [final plant list](#) and submitted it to Mike to print out the [official plant list](#).

Deer in the ecosystem



Angi and Riley have a family of deer that visit their property daily along the eastern edge of the land. There is a wide path here and spaces where the deer can hide. They do not want fencing to protect their food forest so we recommended natural deer fencing with continuing the blackberry brambles and alliums between the eastern edge and the food forest. A plum thicket could also be introduced to create a deeper barrier.

Research was done to discover the behavior, habitat, and food of the deer of the region so that more of their favorite plants could be included in their area, as well as more protected areas for them to sleep.

“Deer presence influences and is influenced by other organisms that live alongside them in their natural habitat. Plants and animals all need beneficial conditions in order to survive.” [Purpose of Deer in the Ecosystem](#)

An imbalance in the system can occur due to a lack of predators such as wolves and cougars keeping their population down.



Deer love to eat **soft foliage, stems and flowers**. Especially **broadleaf foliage**. They're attracted to **sweet smells and sweet tasting plants** and **smooth foliage**.

They *don't* like any fuzzy leaves or smelly vegetables like garlic or onions. Plants like lamb's ear, zucchini leaves and borage are annoying to their tongue and palate.

They absolutely love Plantain Lily, Hosta, Daylily, Pansies, violas, dahlia, tulips, rose, hydrangea, rhododendron, hibiscus, morning glory, clematis, english ivy, grapes, lettuce, spinach, beans, peas, cabbage, broccoli, beats, and much more.

Information Credit: <https://www.gardeningchores.com/plants-deer-love-to-eat/>

Native Bats

There are seventeen native bat species of Oklahoma.

1. **Big Brown Bat** *Eptesicus Fuscus*
2. **Hoary Bat** *Lasiurus cinereus*
3. **Silver-haired Bat** *Lasionycteris noctivagans*
4. **Little Brown Bat** *Myotis lucifugus*
5. **Eastern Red Bat** *Lasiurus borealis*
6. **Tri Colored Bat** *Perimyotis subflavus*
7. **Evening Bat** *Nycticeius humeralis*
8. **Eastern Small-footed Bat** *Myotis leibii*
9. **Indiana Bat** *Myotis sodalist*
10. **Townsend's Big-eared Bat** *Corynorhinus townsendii*
11. **Mexican Free-tailed Bat** *Tadarida brasiliensis*
12. **Western Small-footed Myotis** *Myotis ciliolabrum*
13. **Seminole Bat** *Lasiurus seminolus*
14. **Yuma Myotis** *Myotis yumanensis*
15. **Southeastern myotis** *Myotis austroriparius*
16. **Pallid Bat** *Anthrozoos pallidus*
17. **Cave Myotis** *Myotis velifer*

Source: <https://birdwatchinghq.com/bats-in-oklahoma/>

Bats eat a variety of insects like moths, spiders, beetles, ants and more. We recommended bat houses and roosts to attract as many to the area as possible to assist in the creation of a balanced ecosystem.

