

PRAIRIE MANAGEMENT ON PROJECT LANDS



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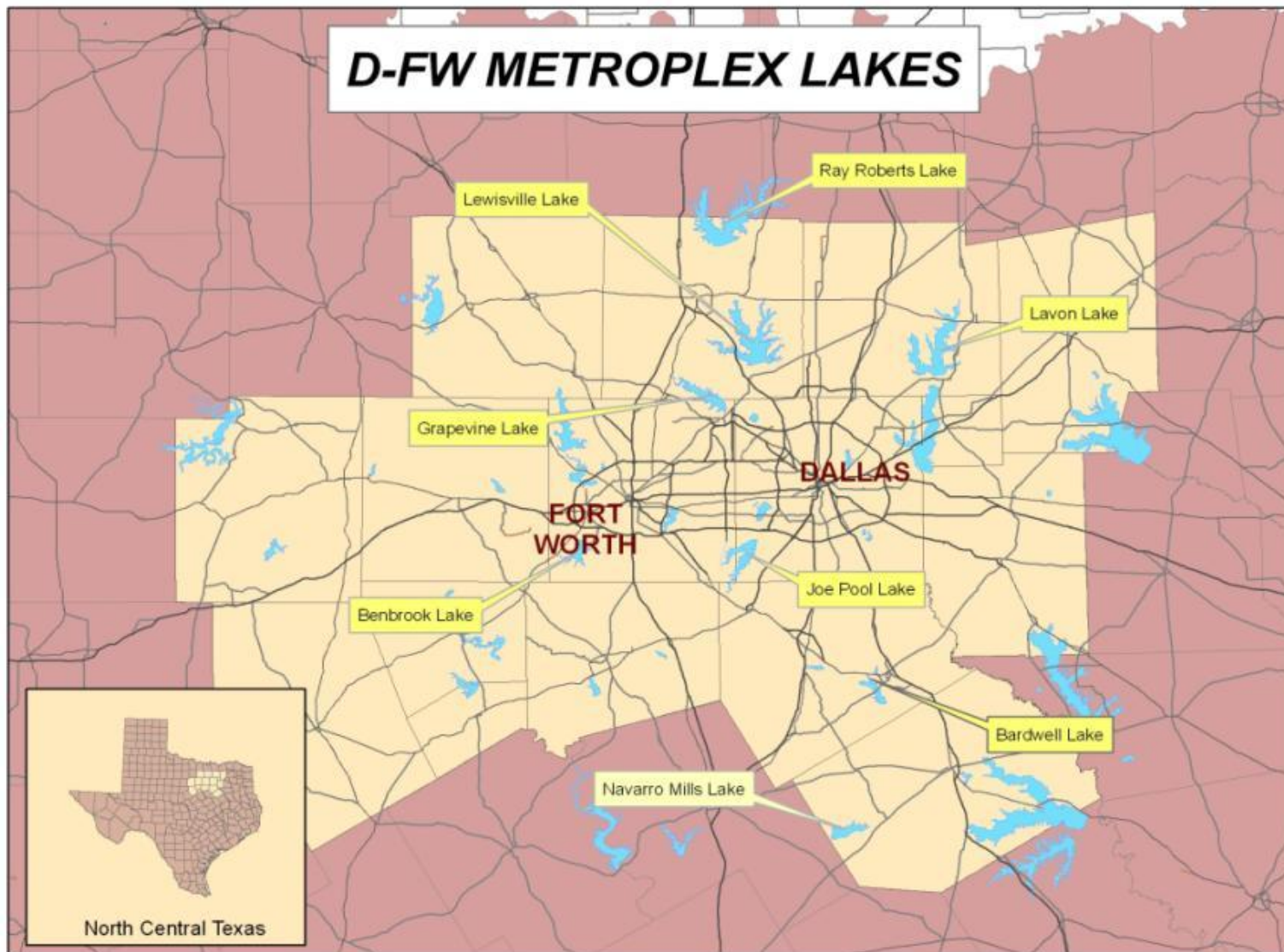
ENVIRONMENTAL STEWARDSHIP - MISSION

The mission of the environmental stewardship program within the Corps of Engineers is to maintain healthy ecosystems; ensuring the availability of the entrusted natural resources for future generations. By carefully balancing public needs and desires; wisely managed lands and waters contribute to the purity of the air we breathe and the water we drink, to the fertility of our soil, and to the abundance of fish and wildlife in nature.

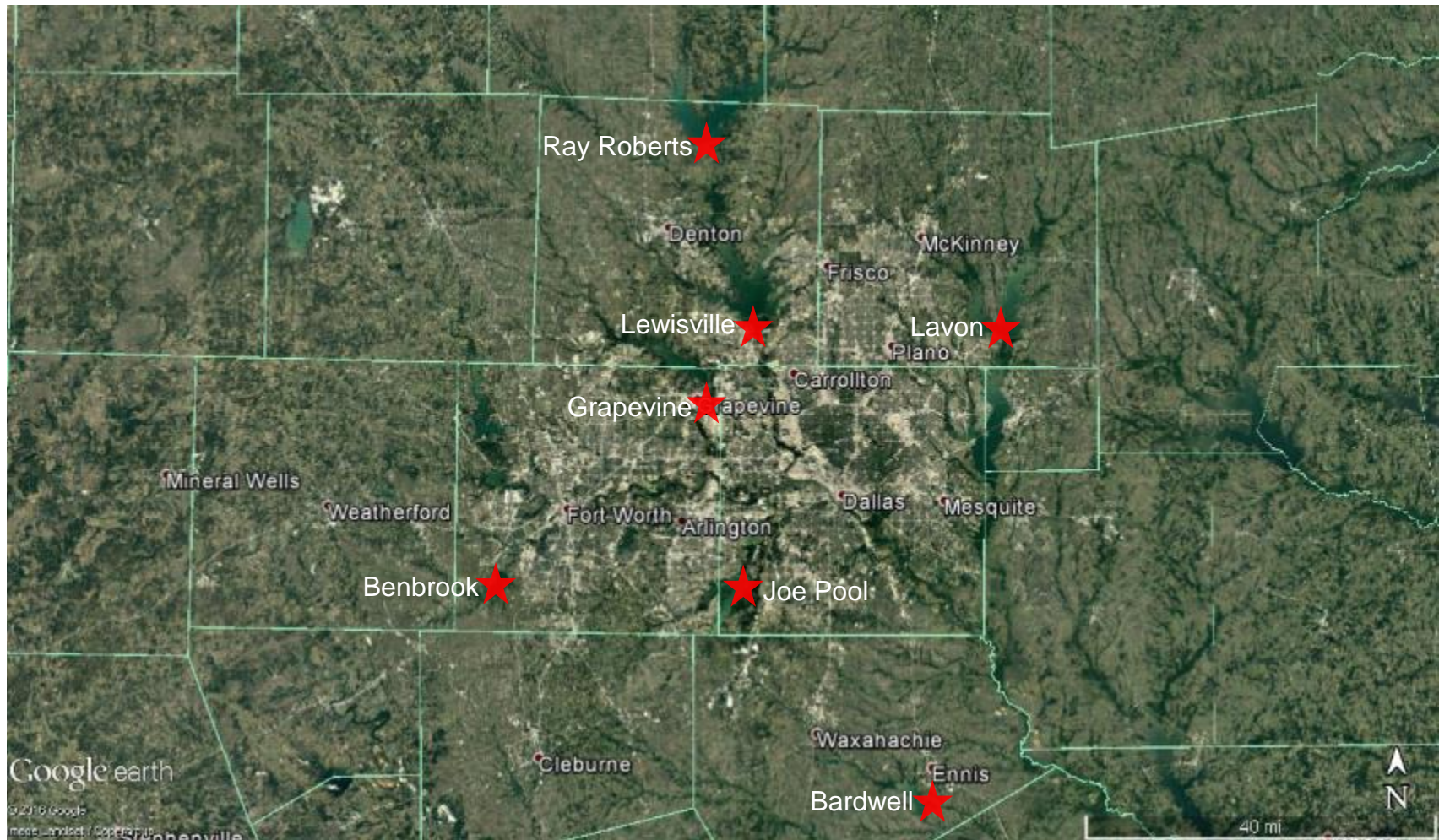


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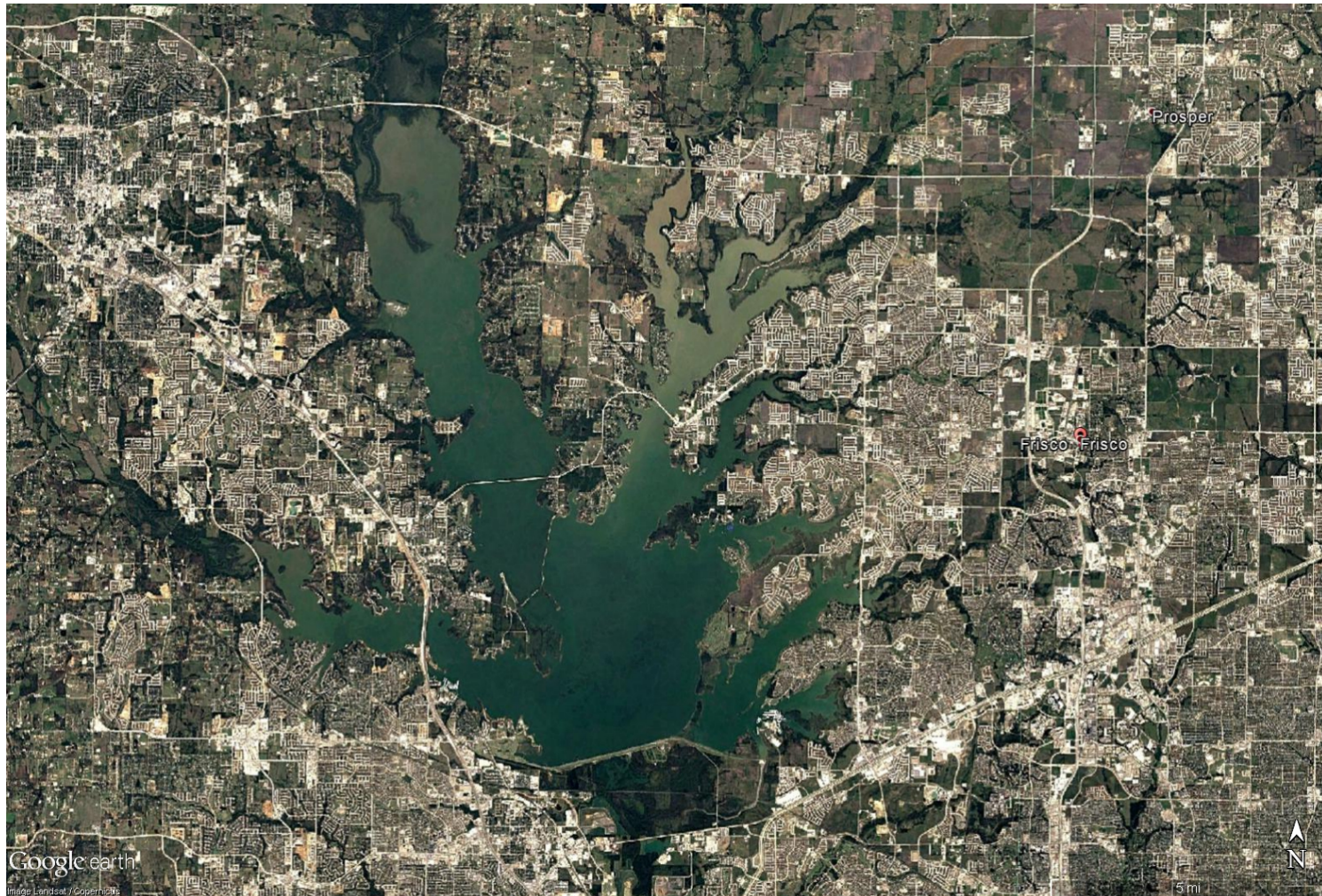




DFW METRO-PLEX LAKES – TRINITY REGION

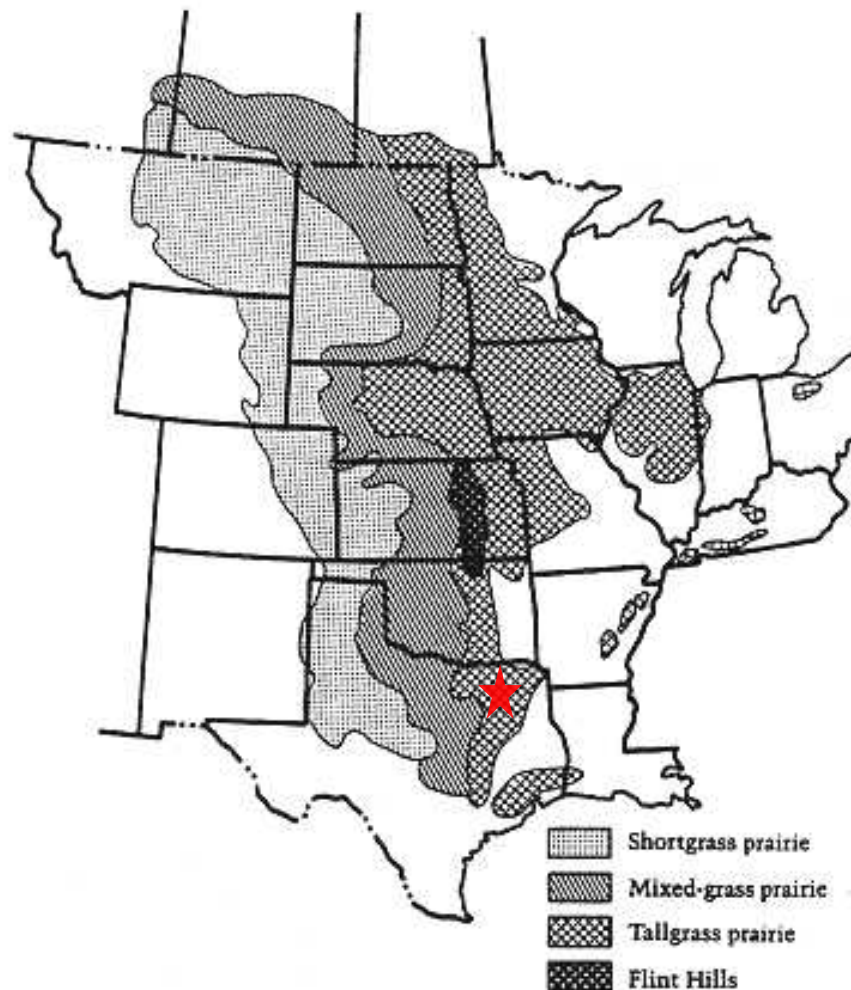


URBAN DEVELOPMENT AT LEWISVILLE LAKE



HISTORIC NATIVE PRAIRIE – NORTH AMERICA

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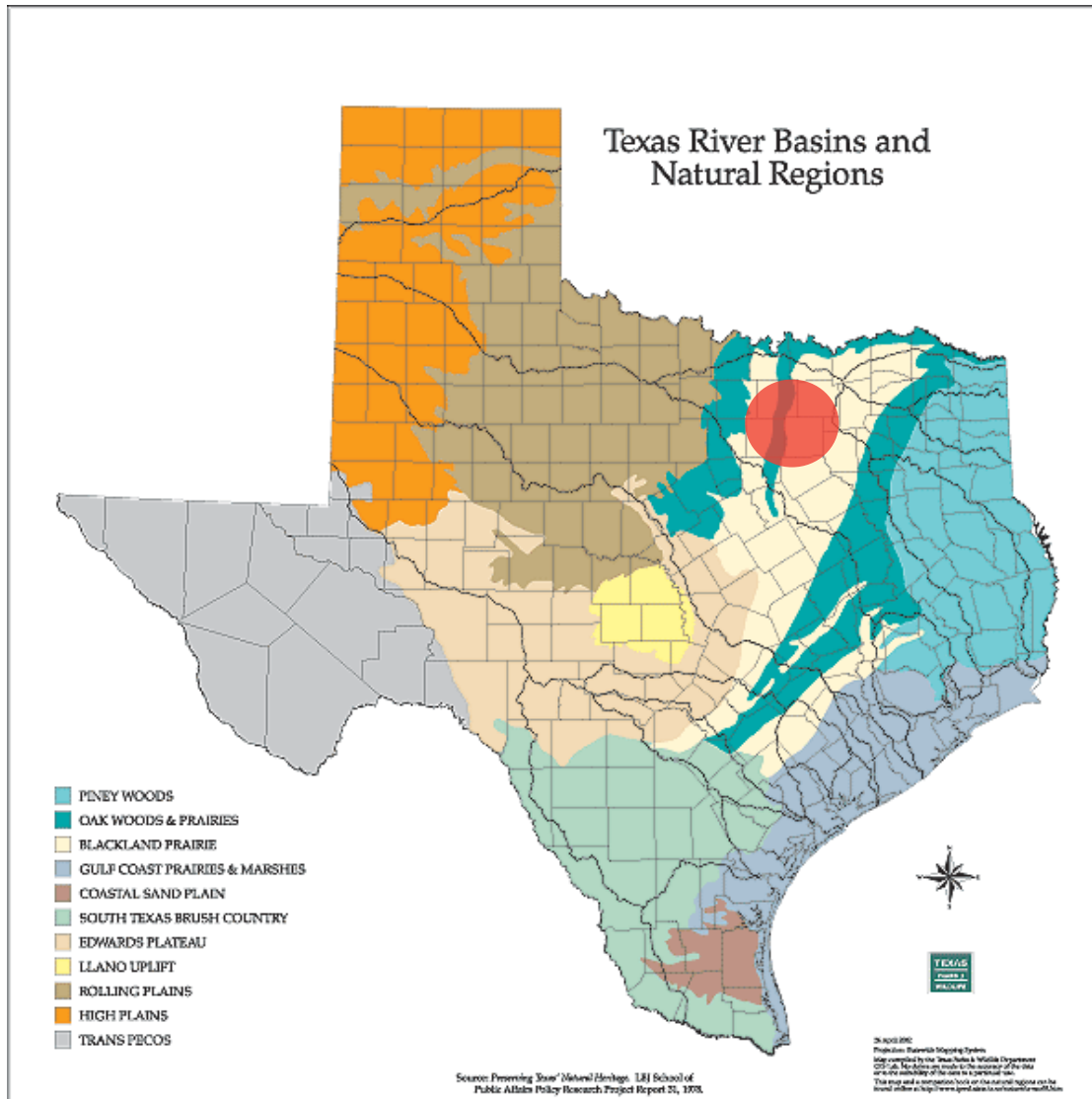


Prairie distribution at the time of European settlement (adapted from Reichman 1987).



TEXAS ECOREGIONS

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HISTORICAL ACCOUNT – GRAYSON COUNTY (RAY ROBERTS LAKE)

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*"I CAN SIT ON THE PORCH
BEFORE MY DOOR AND SEE
MILES OF THE MOST
BEAUTIFUL PRAIRIE
INTERWOVEN WITH
GROVES OF TIMBER,
SURPASSING, IN MY IDEA,
THE BEAUTIES OF THE SEA.
THINK OF SEEING A TRACT
OF LAND ON A SLIGHT
INCLINE COVERED WITH
FLOWERS AND RICH
MEADOW GRASS FOR 12
TO 20 MILES. . . ."*

*JOHN BROOKE, EARLY
SETTLER IN GRAYSON CO.,
TEXAS, 1849*



HISTORICAL ACCOUNT – ELLIS COUNTY (BARDWELL LAKE) - ROBERT MAYFIELD 1844

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"....the buffalo were the great wonder of the prairies. They came and went like a mighty torrent....as far as the eye could reach....one of their favorite haunts was the Waxahachie Creek country. Petty Apperson and I climbed those trees to get a good view - as far as the eye could reach in every direction, the whole prairie was covered with buffalo.....several tribes of friendly Indians often hunted these prairies..."



STILL SOME TALLGRASS PRAIRIE - REMINISCENT OF OLD

10



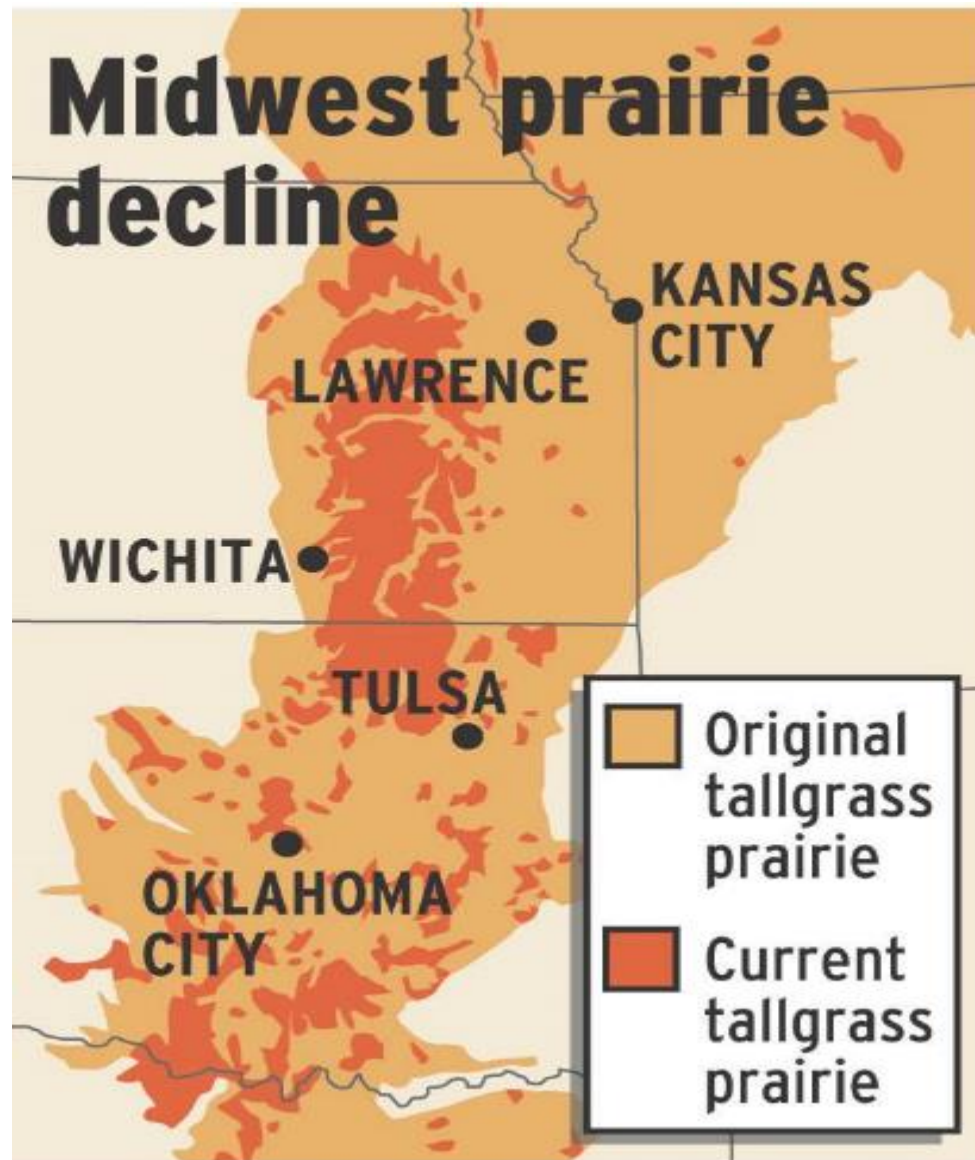
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MIDWEST TALLGRASS PRAIRIE DECLINE



How much prairie remains?

Shortgrass Prairie	Past area (hectares) ^a	Current area (hectares) ^a	Decline (percent)
Oklahoma	1,300,000	N/A ^b	N/A ^b
New Mexico	N/A ^b	1,255,200	N/A ^b
South Dakota	179,000	116,350	35.0
Texas	7,800,000	1,600,000	79.5
Wyoming	3,000,000	2,400,000	20.0

Mixed-grass Prairie	Past area (hectares) ^a	Current area (hectares) ^a	Decline (percent)
Alberta	8,700,000	3,400,000	60.9
Manitoba	600,000	300	99.9
Saskatchewan	13,400,000	2,500,000	81.3
Nebraska	7,700,000	1,900,000	75.3
North Dakota	14,200,000	4,500,000	68.3
Oklahoma	2,500,000	N/A ^b	N/A ^b
South Dakota	1,600,000	480,000	70.0
Texas	14,100,000	9,800,000	30.0

Tallgrass Prairie	Past area (hectares) ^a	Current area (hectares) ^a	Decline (percent)
Manitoba	600,000	300	99.9
Illinois	8,500,000	930	99.9
Indiana	2,800,000	404	99.9
Iowa	12,000,000	12,140	99.9
Kansas	6,900,000	1,200,000	82.6
Minnesota	7,300,000	30,000 - 60,000	99.2 - 99.6
Missouri	6,000,000	32,000	99.5
Nebraska	6,100,000	123,000	98.0
North Dakota	130,000	120	99.9
Oklahoma	5,200,000	N/A ^b	N/A ^b
South Dakota	2,600,000	20,000	99.2
Texas	7,200,000	720,000	90.0
Wisconsin	2,400,000	1,000	99.9

^a Estimates of past and current area based on information from the Nature Conservancy's Natural Heritage Data Center Network; Provinces of Alberta, Manitoba, and Saskatchewan; universities and state conservation organizations

^b N/A means information is not available

Mac, M.J., P.A. Opler, C.E. Puckett Haecker, and P.D. Doran. 1998. Status and trends of the nation's biological resources. 2 vols. U.S. Department of the Interior, U.S. Geological Survey, Reston, Va. 964 pp.



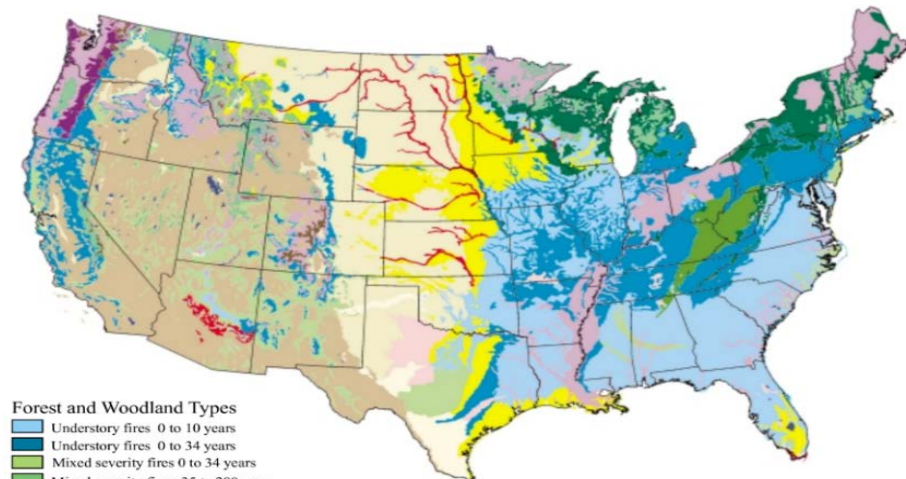
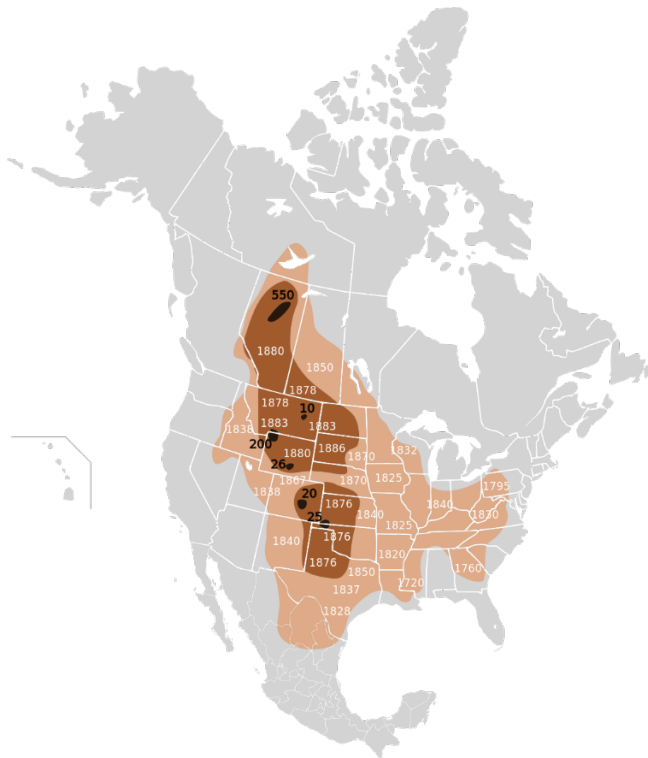
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CHANGES CAUSED BY SETTLEMENT

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- Lack of fire
- Decline of Bison
- Conversion to cropland and grazing
- Fences – Compartmentalized grasslands



Forest and Woodland Types

- Understory fires 0 to 10 years
- Understory fires 0 to 34 years
- Mixed severity fires 0 to 34 years
- Mixed severity fires 35 to 200 years
- Mixed severity fires 201 to 500 years
- Mixed severity fires 500+ years
- Stand replacement fires 0 to 34 years
- Stand replacement fires 35 to 200 years
- Stand replacement fires 201 to 500 years
- Stand replacement fires 500+ years

Grass and Shrub Types

- Mixed severity fires 0 to 34 years
- Stand replacement fires 0 to 10 years
- Stand replacement fires 0 to 34 years
- Stand replacement fires 35 to 100 years
- Stand replacement fires 101 to 500 years

Other
Water





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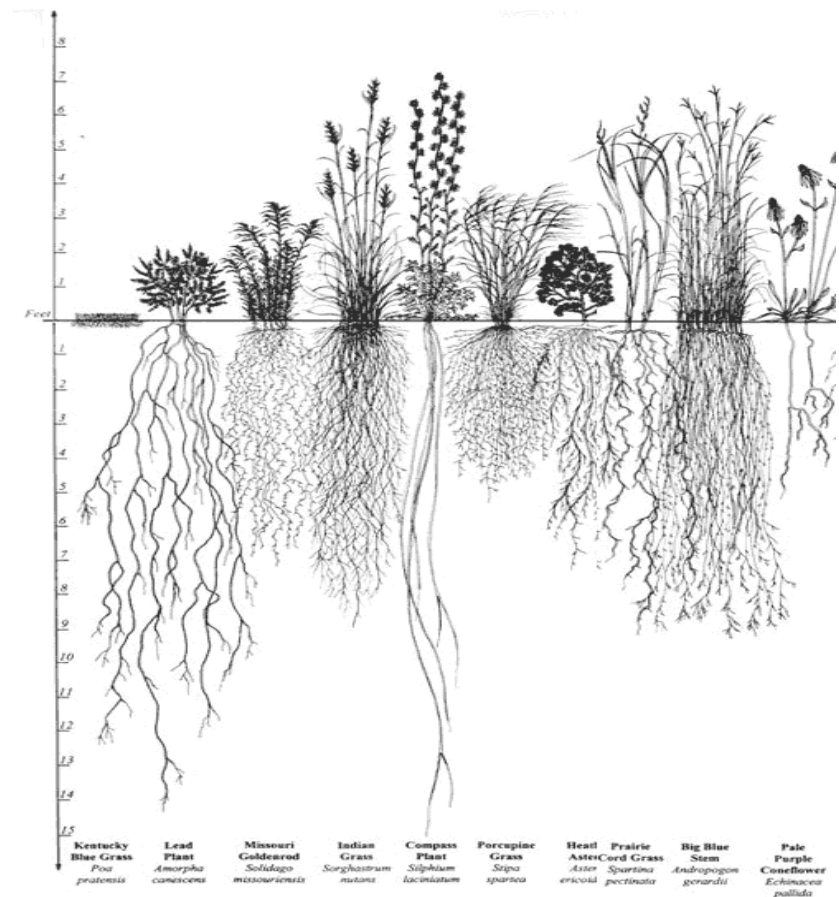
TALLGRASS PRAIRIE – TRINITY PROJECT LANDS

- Approximately 50,000 acres of terrestrial habitat is protected on fee lands within the Trinity Region, about 15,000 acres is at some degree of grassland type habitat.
- About one third of the fee property grasslands within the Trinity Region are at various stages of degradation, mostly from lack of management and invasive species.
- Approximately 1000 acres of remnant intact native prairie still exists on our project lands. Over 300 acres known at Benbrook Lake.



BENEFITS OF NATIVE PRAIRIE ON PROJECT LANDS

- Erosion Control
- Sediment Management
- Non-point Source Pollution Filter
- Groundwater and Surface Flows
 - Soil moisture retention
 - Filter Pollutants
- Environmental Stewardship
 - Wildlife Habitat
 - Aesthetics - Recreation



Root Systems of Prairie Plants



SOME IMPORTANT NATIVE GRASSES

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A FEW REMNANT NATIVE PRAIRIE FORB INDICATOR SPECIES FOR NORTH TEXAS

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A FEW IMPORTANT WILDLIFE SPECIES

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INVASIVE SPECIES

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**“It doesn’t seem to be covered in our
invasive species management plan.”**



TYPICAL INVASIVE GRASS SPECIES

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A FEW TYPICAL INVASIVE FORBS

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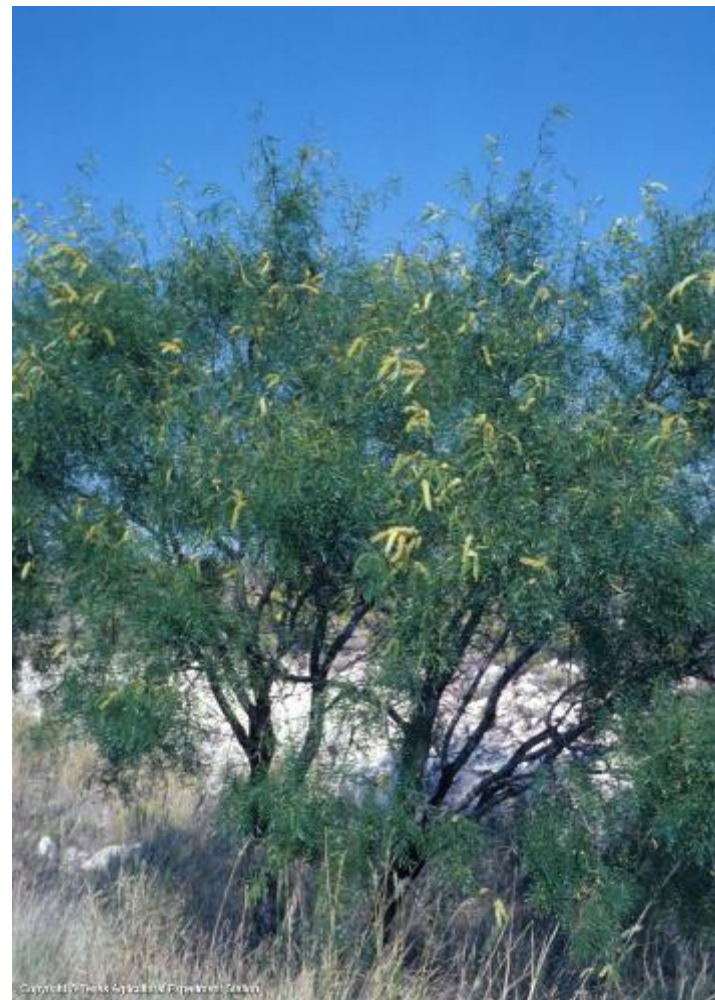


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TYPICAL WOODY INVASIVES

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PERTINENT USACE POLICIES FOR MANAGEMENT

- Pollinator Initiative (2014), USACE Program (Feb 2015)
 - Various Bee Species and Monarch Butterfly Decline
- ER-1130-2-540 Environmental Stewardship Operations and Maintenance Policies – * DRAFT *
- Non-Recreational Outgrant Policy (2009)
 - Statutory Mitigation
 - ESA
 - CWA
 - Non-statutory mitigation *
 - “Make the project whole again”
- Environmental Stewardship
 - ES-BEST/CWIFD
- Master Plan Revisions
 - Environmentally Sensitive Area Designation
- Encroachments and Trespasses
 - Restitution



GREEN MILKWEED



ANTELOPE HORN



BUTTERFLY WEED



POLLINATOR AREA – LLELA (LEWISVILLE LAKE)



POLLINATORS IN ACTION



OTHER POLLINATORS



PLANNED SEEDING AREAS FOR POLLINATORS AT GRAPEVINE LAKE

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MITIGATION AND RESTITUTION

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ES-BEST/CWIFD PACKAGE EXAMPLE FOR POLLINATOR ACTIVITIES

This project would include establishing, supplementing, and maintaining approximately 150 acres of native grassland with milkweed and other pollinator host plants. There are approximately 8 locations ranging in size from 5-20 acres. The goal will be to establish pollinator habitat to meet current pollinator initiatives. This work would include converting brome/fescue fields to native grasslands, supplementing existing native grasslands with pollinator host plants, applying herbicide to control noxious weeds, and using prescribed fire to manage native grasslands. \$25K. Perry Lake, KS.



SEEDING

- Seed Sources
 - Always best to collect local varieties
 - Difficult
 - Time consuming
 - Commercial Sources
 - Works best for us, quick, easy, cheap, and with success
 - Native American Seed, Junction, Texas (<http://www.seedsource.com>)
 - TurnerSeed Company, Breckenridge, Texas (<https://turnerseed.com>)
- Seeding Rate
 - We usually overseed from recommended rates
 - Normally 10 lbs/acre, we usually bump it up to at least 15 lbs/acre
- Watering
 - We normally try to water regularly (weekly) until vegetation gets fully establishes
 - For Mitigation/Restitution, normally request weekly watering until vegetation is established and then at least monthly thereafter through first growing season
- Goal
 - Aim for at least 80% cover in native vegetation after three years
- Monitoring and supplemental seeding as well as herbicide of non-natives



COMMERCIAL NATIVE SEED

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MIXING NATIVE SEED

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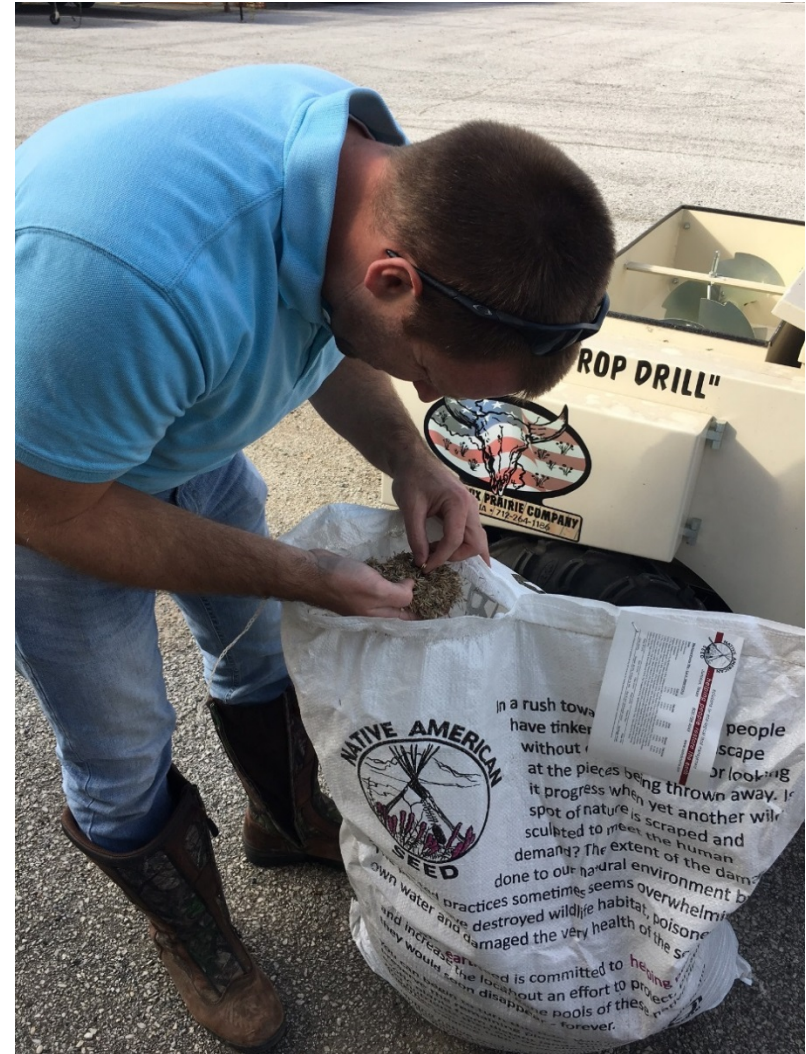


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GRAPEVINE LAKE SEEDING EFFORTS UTILIZING RESTITUTION FUNDS

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SEED DRILL IN ACTION

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SEEDING RESULTS

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WORKING WITH FLOOD RISK MANAGEMENT TEAM

- Education
- Restoring Non-Operational Project Lands that are used for borrow areas, laydown yards, and soil mixing areas
 - Mostly though seeding and watering
- We have written up specs for seeding of blackland prairie species with success

Trinity FRM BLM is fully on board and appreciates the effort because he gains from this as well

- Erosion Control
- Sediment Retention



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HERBICIDE

- RoundUp (General)
- Plateau (Targets Johnsongrass)
- Reclaim/Remedy (Mesquite)
- SWF doesn't have an approved list yet but we use EPA certification as a go-by.
- Good to have a Certified Applicator On Staff



RESTORATION WITH HERBICIDE AND SEEDING

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MOWING



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PRESCRIBED FIRE

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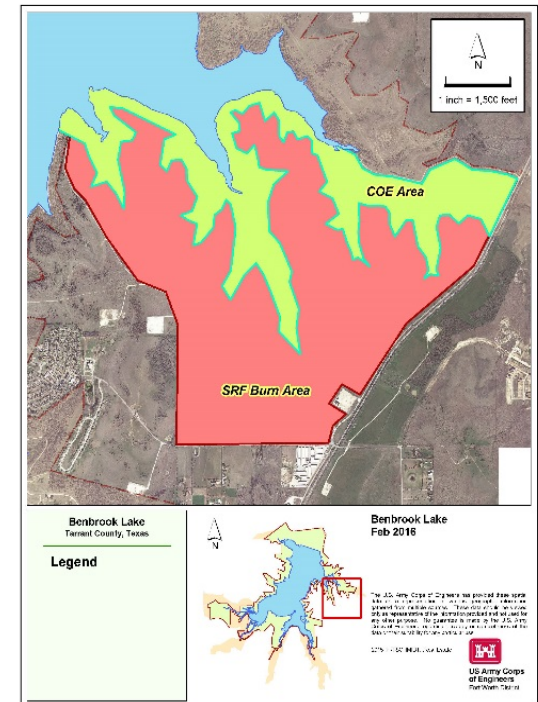
PRESCRIBED FIRE POLICY AND REGULATIONS

- We try to keep it simple, sometimes there are a lot of hurdles to jump through especially close to metropolitan areas
- Use guidance from Chapter 9 of ER-1130-2-540
 - Latest version still in Draft form
- Stick to what we know:
 - Use a licensed Contractor to write the burn plan and supervisor the effort, we provide the trained work force
 - S130/190 Training – Most or all of our Rangers are certified
 - Difficulty getting red cards approved and signed with USACE
 - Local Fire Departments
- Recommend using a licensed Contractor
 - We have someone in the Metro-plex that can do this for relatively little funds, under a micro-purchase.



BENBROOK LAKE 2016 PRESCRIBED BURN – COOPERATIVE EFFORT WITH ADJACENT LANDOWNER

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SID RICHARDSON FOUNDATION

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FIRE!

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POSITIVE RESULTS

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NATIVE PRAIRIE ASSOCIATION OF TEXAS COOPERATIVE EFFORT AT BENBROOK LAKE

- Prairie Seekers Program
 - NPAT, TPWD, The Nature Conservancy



LEWISVILLE LAKE ENVIRONMENTAL LEARNING AREA (LLELA) COOPERATIVE EFFORTS

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LLELA NURSEY

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LLELA SEEDING AND PLANTINGS

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UTILIZING VOLUNTEERS

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AESTHETICS – NATURE VIEWING

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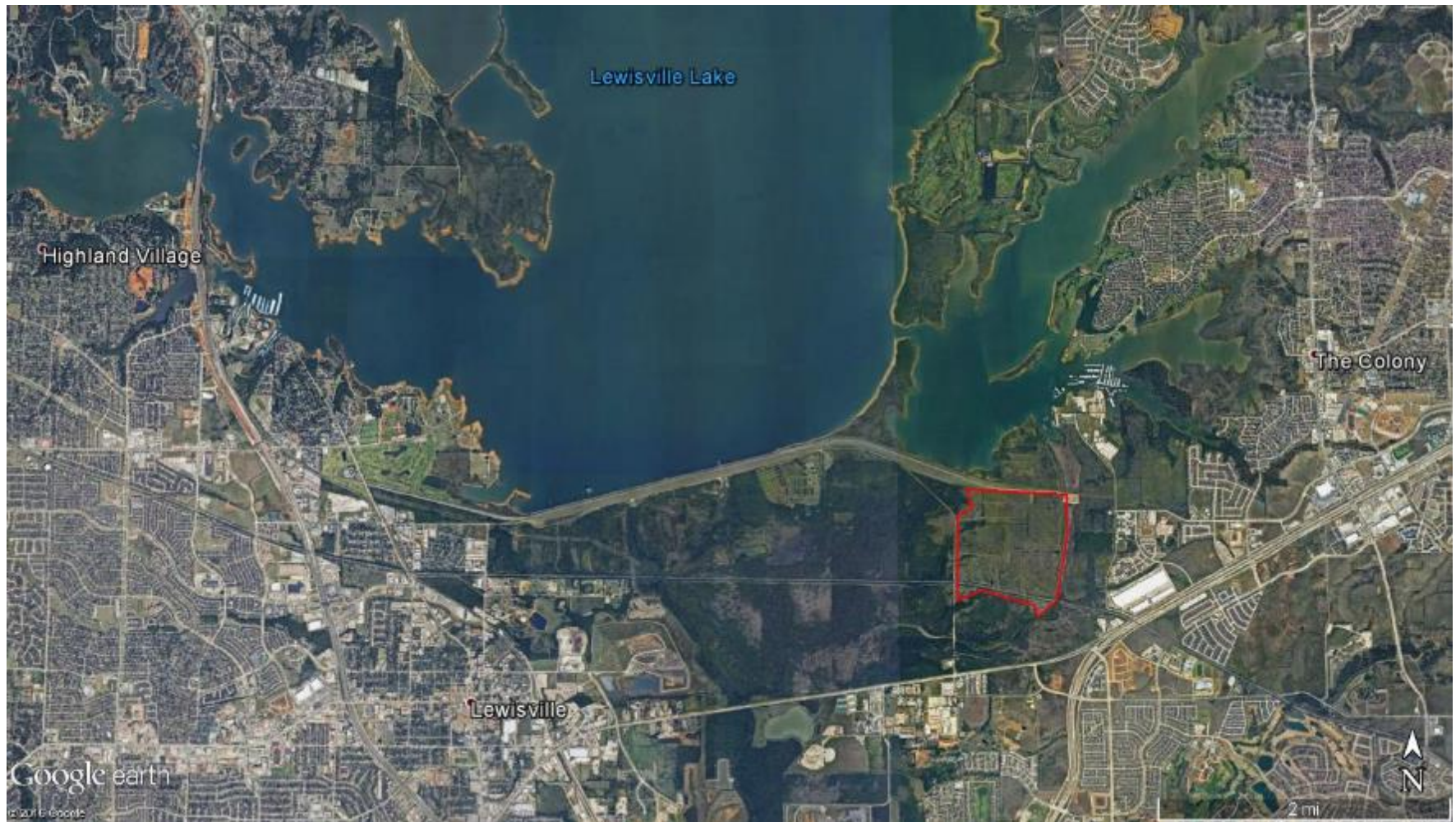


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PRAIRIE AREAS AT LEWISVILLE LAKE – LLELA BURNS

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LEWISVILLE BURN(S)

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LLELA/LEWISVILLE LAKE STAFF WINTER 2014 BURN RESULTS – EARLY SPRING

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LATE SPRING - EARLY SUMMER RESULTS

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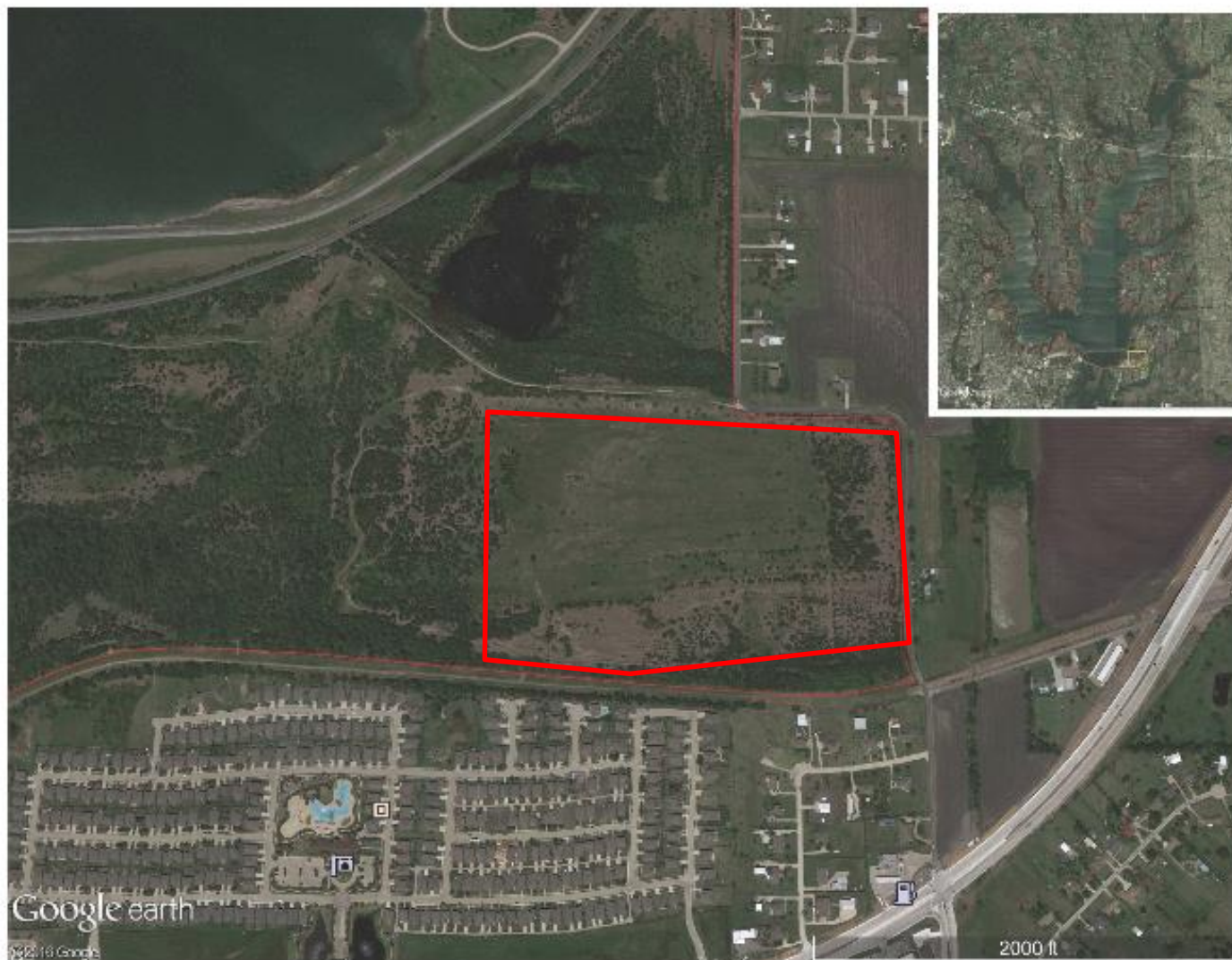


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FUTURE BURNS – 2017/2018

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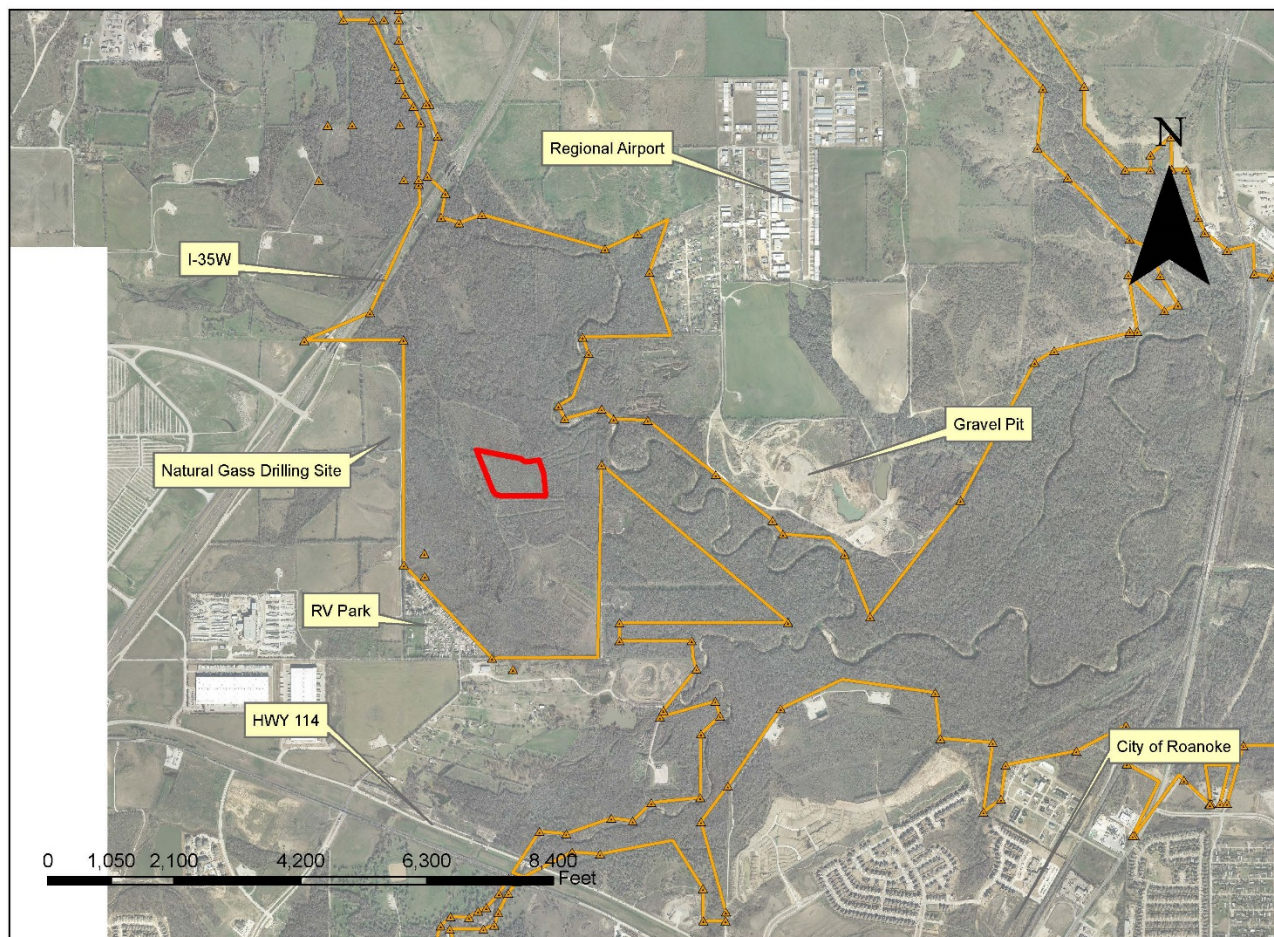


Lavon Lake – Old Borrow Area Burn (90 acres)



GRAPEVINE LAKE – CLEVELAND GIBBS WMA BURN

Cleveland Gibbs Prescribed Burn Points of Interests





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S-130/190 BURN TRAINING FEBRUARY 2017 – GRAPEVINE LAKE

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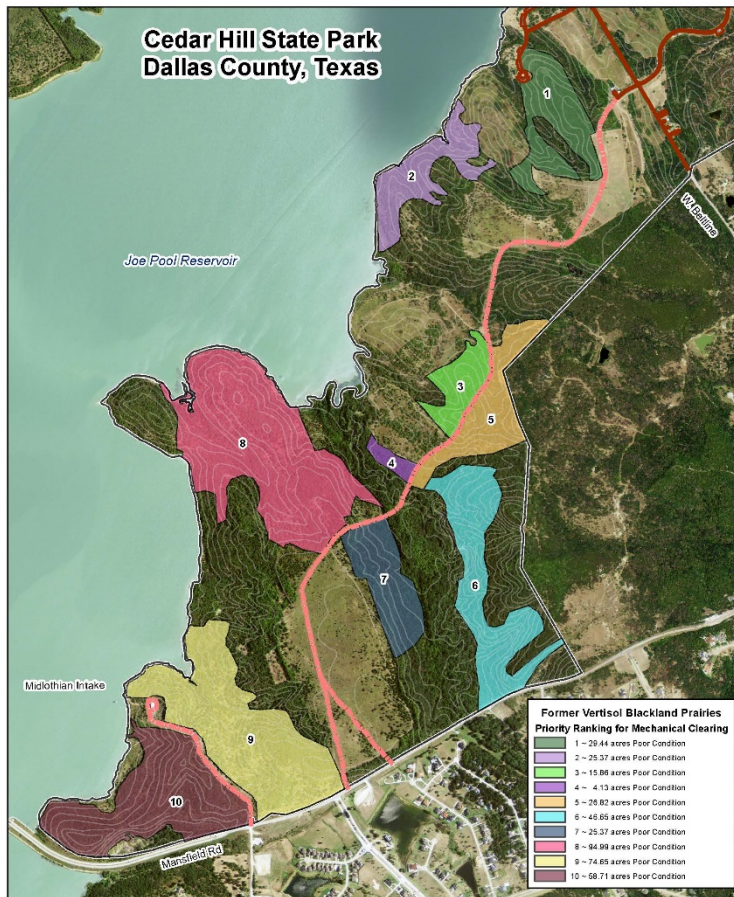


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JOE POOL LAKE – TPWD CEDAR HILL STATE PARK UTILIZING MITIGATION FUNDS

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WOODY INVASIVES (ASHE JUNIPER) TREATMENT - BEFORE

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WOODY INVASIVES (ASHE JUNIPER) TREATMENT - AFTER

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WOODY VEGETATION AND FIRE

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RAY ROBERTS LAKE EFFORTS

- Cooperative Effort with TPWD and NWTF
- TPWD Agreement with USACE to manage hunting areas
- Fencing, Invasive Species Control, and Prescribed Burns
 - Improving Hunter Access and Wild Turkey Habitat



DISCUSSION AND QUESTIONS

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