Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin

MLRA Explorer Custom Report

J - Southwestern Prairies Cotton and Forage Region
86A - Texas Blackland Prairie, Northern Part
85 - Grand Prairie
84C - East Cross Timbers
84B - West Cross Timbers

J - Southwestern Prairies Cotton and Forage Region

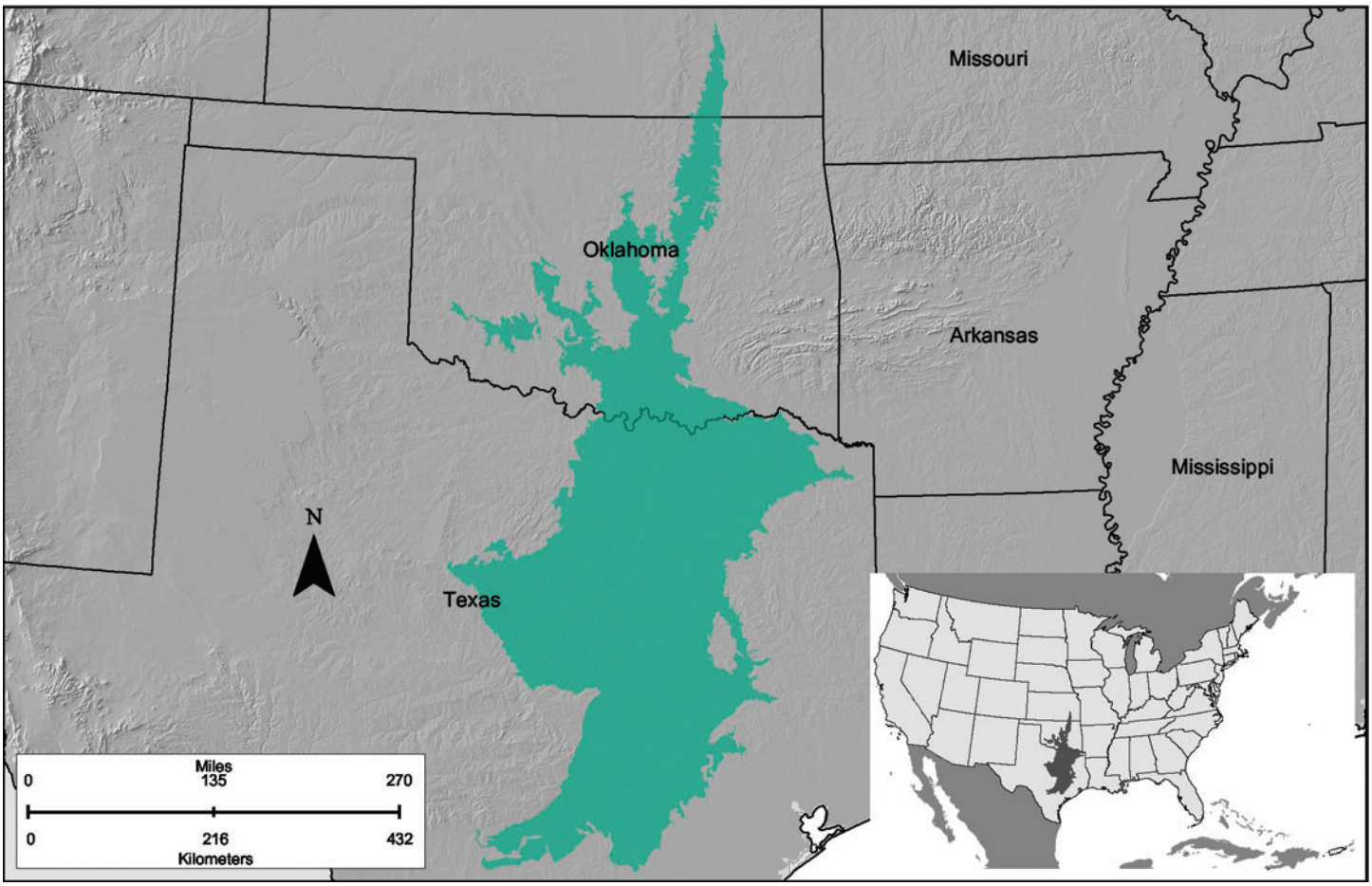


Figure J-1: Location of Land Resource Region J

LRR Overview

This region (shown in fig. J-1) is in Texas (78 percent), Oklahoma (21 percent), and Kansas (1 percent). It makes up 59,700 square miles (154,695 square kilometers). It is in the southern Great Plains. Most of the population in Texas, away from the coast, lives in this region.

The northern and western parts of this region consist of gently rolling to hilly uplands dissected by numerous streams, and the rest of the region is mainly a nearly level to gently sloping, dissected plain. The Arbuckle and Wichita Mountains are in the northern part of the region.

Moderate precipitation is accompanied by moderately high temperatures. The average annual precipitation ranges from 31 to 44 inches (785 to 1,120 millimeters). Most of the precipitation falls in spring and summer. The average annual temperature ranges from 62 to 67 degrees F (17 to 19 degrees C). The freeze-free period ranges from 245 to 290 days, increasing in length from north to south.

The total withdrawals of freshwater in this region average about 4,935 million gallons per day (18,680 million liters per day). About 86 percent is from surface water sources, and 14 percent is from ground water sources. In this heavily populated region, about 62 percent of the water is used for municipal and industrial supply and 28 percent is used for public supply.

The soils in this region are dominantly Mollisols, Entisols, Alfisols, and Vertisols. The major soil suborders are Paleustalfs, Haplustolls, Haplusterts, and Argiustolls. All of the soils in the region have a thermic soil temperature regime, and most have an ustic soil moisture regime. Mineralogy is dominantly mixed or smectitic, but it is siliceous in the Cross Timbers area and carbonatic on the Edwards Plateau, the central part of the region.

About 98 percent of this region is privately owned. The native vegetation consists mainly of grasses and scattered trees. The areas of trees are concentrated in the Cross Timbers area. Grasslands include mixtures of range, pasture, and improved pasture. Grazing by beef cattle is the dominant land use in most of the region, but hay, grain sorghum, and small grains are grown in areas where the soils, topography, and moisture supply are favorable. Other locally important crops include corn, cotton (fig. J-2), and peanuts. Pecans are grown on well drained soils that are not flooded very often and are on the higher terraces along many of the major rivers crossing the region. Vegetables are grown in areas where irrigation water is available.

The major resource concerns are overgrazing and the invasion of undesirable plant species. Water erosion also is a major resource concern, especially on cropland. Surface compaction, moisture management, and maintenance of the content of organic matter in the soils are additional concerns in areas of cropland.

J-2: Cotton and prairie grasses in an area of Land Resource Region J

MLRA 86A - Texas Blackland Prairie, Northern Part

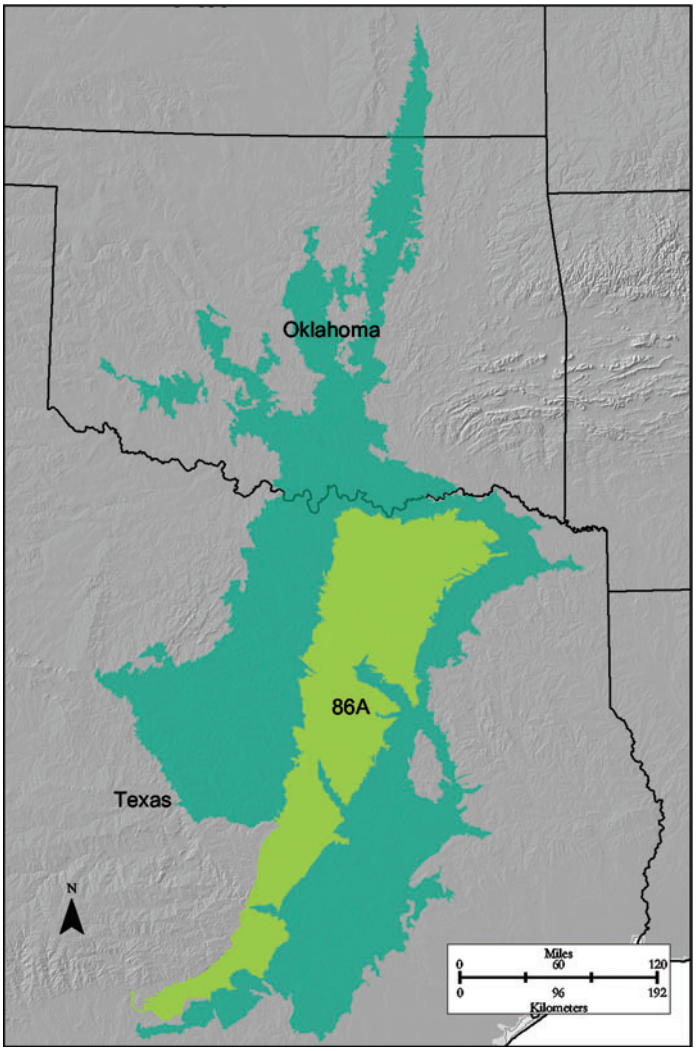


Figure 86A-1: Location of MLRA 86A in Land Resource Region J

Introduction

This area is entirely in Texas (fig. 86A-1). It makes up about 15,110 square miles (39,150 square kilometers). The cities of Austin, Dallas, San Antonio, San Marcos, Temple, and Waco are in this MLRA. Interstate 35, a major thoroughfare for commerce and travel, traverses the length of the MLRA from San Antonio to Dallas. Bergstrom, Randolf, and Lackland Air Force Bases are in the southern end of this area. The Caddo National Grasslands are in the northern part of the area.

Physiography

Almost all of this area is in the West Gulf Coastal Plain Section of the Coastal Plain Province of the Atlantic Plain. The west-central edge of the area is in the Central Texas Section of the Great Plains Province of the Interior Plains. Most of this MLRA is a nearly level to gently sloping, dissected plain. Dissected areas with steeper slopes occur along entrenched river and creek valleys. Broad meander belts are associated with the major streams, and wide flood plains are flanked by nearly level stream terraces. Elevation ranges from 300 to 600 feet (90 to 185 meters), increasing gradually from southeast to northwest. Areas of hilly land are associated with the Austin Chalk escarpment near the western edge of the area.

The extent of the major Hydrologic Unit Areas (identified by four-digit numbers) that make up this MLRA is as follows: Trinity (1203), 39 percent; Lower Brazos (1207), 20 percent; Red-Sulphur (1114), 14 percent; Central Texas Coastal (1210), 9 percent; Sabine (1201), 7 percent; Middle Brazos (1206), 6 percent; and Lower Colorado-San Bernard Coastal (1209), 5 percent. The headwaters of the Sabine and Sulphur Rivers are in the northern end of this area. The Trinity and Brazos Rivers cross the center of the area. The rivers in the south end of the area include the Colorado, Lavaca, Guadalupe, and San Antonio Rivers.

Geology

This area is underlain by chalk, claystone, marl, and shale in the Eagle Ford Group, Austin Chalk, and the Navarro Group (including the “Taylor marl”) of Cretaceous age. These Cretaceous rocks are incised by several major stream systems. Quaternary stream terraces and alluvium are associated with the rivers, and drainage patterns are controlled by more resistant Cretaceous bedrock.

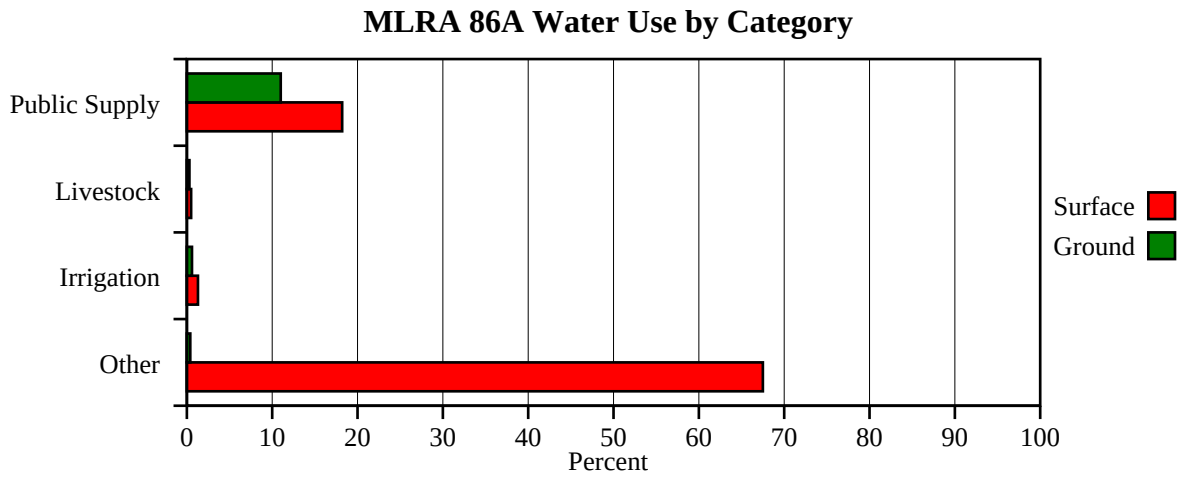
Climate

The average annual precipitation is 30 to 46 inches (760 to 1,170 millimeters) in most of this area, but it is less than 30 inches in the southern tip. Most of the rainfall occurs in spring and fall. The average precipitation during the freeze-free period is about 24 to 26 inches (610 to 660 millimeters). The average annual temperature is 63 to 69 degrees F (17 to 21 degrees C). The freeze-free period averages about 280 days and ranges from 250 to 310 days. Average annual temperatures and the length of the freeze-free period increase to the south.

Water

The total withdrawals average 2,315 million gallons per day (8,760 million liters per day). About 12 percent is from ground water sources, and 88 percent is from surface water sources. In most years the moderate rainfall is adequate for crops and pasture, but summer droughts commonly reduce crop yields. Large reservoirs on the major streams provide municipal water. The water from the reservoirs is supplemented by some ground water. The reservoirs not only provide water for public supply and industry but also serve as recreational facilities. Small farm ponds are an important source of water for farm use (primarily livestock) and recreation. The surface water is of good quality and is suitable for almost all uses.

Shallow ground water is scarce throughout this area, but several areas obtain small quantities of ground water from wells. Sandstone and carbonate layers in the Trinity Group are the principal aquifers in the MLRA. This ground water is very hard and has a median level of 619 parts per million (milligrams per liter) total dissolved solids. About 30 percent of the samples from this aquifer exceeded the national drinking water standards for nitrate. Falling water tables limit the use of this aquifer.



Category (Surface,Ground): Public Supply (18.2, 11.0), LiveStock (0.5, 0.3), Irrigation (1.3, 0.6), Other (67.5, 0.4)

Soils

The dominant soil orders in this MLRA are Entisols, Mollisols, and Vertisols. The soils are well drained or moderately well drained and fine textured or medium textured. They have a thermic soil temperature regime, an ustic soil moisture regime, and smectitic, carbonatic, or mixed mineralogy. Moderately deep to very deep, nearly level to gently sloping Haplusterts (Branyon, Burleson, Heiden, Houston Black, Dalco, Leson, and Fairlie series) formed on uplands and stream terraces. Deep and very deep, gently sloping to strongly sloping Haplusterts (Ellis, Ferris, and Vertel series) formed on hillsides. Moderately deep to very deep, gently sloping to moderately sloping Haplustolls (Austin, Krum, Lott, and Stephen series) formed on side slopes and stream terraces. Very deep, gently sloping Calciustolls (Lewisville and Venus series) formed on stream terraces and footslopes below hills and ridges. Shallow, gently sloping to strongly sloping Ustorthents (Eddy series) formed on hillsides and breaks. Very deep, nearly level to gently sloping Haplustalfs (Wilson series) and Paleustalfs (Crockett and Mabank series) formed on ancient stream terraces. Very deep, nearly level Haplustolls (Gowen series) and Hapluderts (Kaufman, Tinn, and Trinity series) formed on flood plains.

Biology

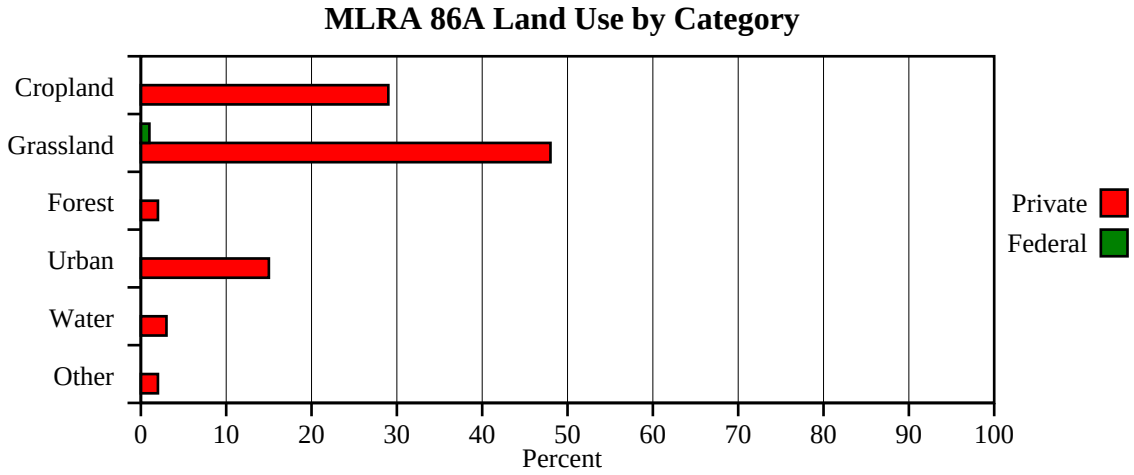
This area supports mixed tall and mid prairie grasses. Little bluestem is the dominant species. Indiangrass, big bluestem, switchgrass, tall dropseed, silver bluestem, sideoats grama, eastern gamagrass, and vine mesquite are the major herbaceous species. The plant community has many forbs, such as prairie clover, western ragweed, Maximilian sunflower, gayfeather, rattlesnake master, and Indian plantain. Areas along the major rivers and streams support savanna vegetation. Oak, elm, cottonwood, hackberry, and pecan trees produce a canopy cover of about 30 percent.

Some of the major wildlife species in this area are white-tailed deer, javelina, coyote, fox, bobcat, raccoon, skunk, opossum, jackrabbit, cottontail, turkey, bobwhite quail, scaled quail, white-winged dove, and mourning dove.

Land Use

Nearly all of this area is improved pasture, cropland, or rangeland. Urban development is rapidly increasing adjacent to the major cities. Cotton, corn, and grain sorghum are the major crops. Other crops are small grains, soybeans, and hay. Native and improved pecan orchards are common on the flood plains where better drainage or less frequent flooding occurs. The current land use trend is a decrease in the acreage of cropland on the more sloping and eroded soils and an increase in the acreage of improved pasture. The main kind of livestock is beef cattle.

The major soil resource concerns are water erosion, maintenance of the content of organic matter and productivity of the soils, and management of soil moisture. Conservation practices on cropland generally include terraces, grassed waterways, buffer strips, crop residue management in reduced till and no-till systems, and nutrient management. Conservation practices on pasture and hayland generally include grazing management systems, applications of the proper kinds and amounts of fertilizer, and control of brush and weeds. The most important conservation practice on rangeland is prescribed grazing. Generally, cultural practices are not used to increase forage production on the rangeland in this area.



Category (Private,Federal): Cropland (29.0, 0.0), Grassland (48.0, 1.0), Forest (2.0, 0.0), Urban (15.0, 0.0), Water (3.0, 0.0), Other (2.0, 0.0)

MLRA 85 - Grand Prairie

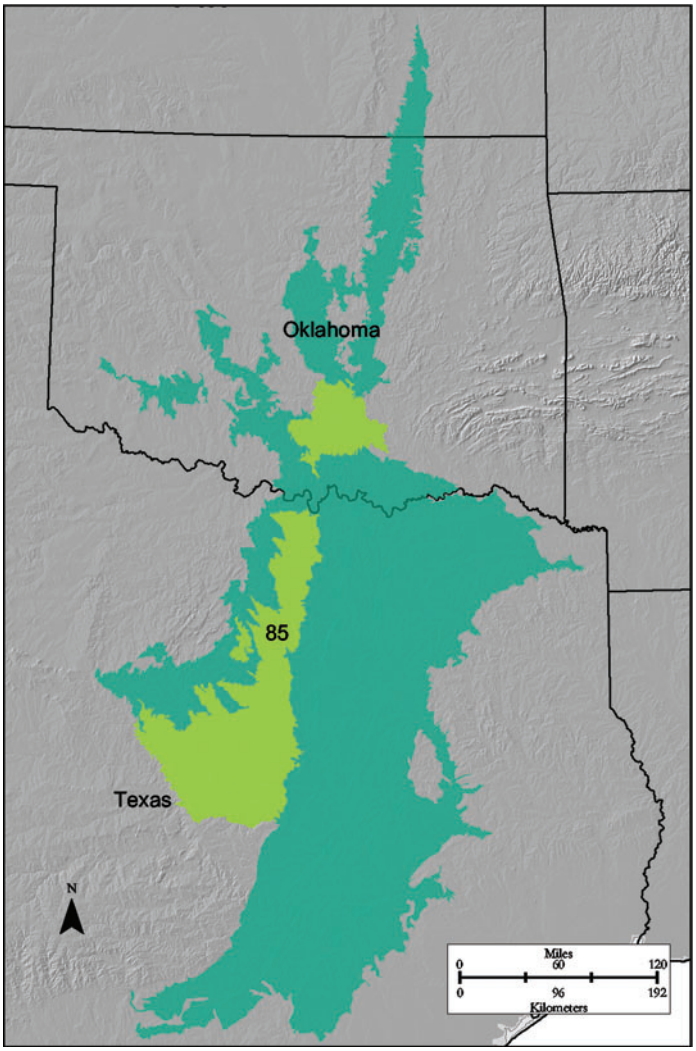


Figure 85-1: Location of MLRA 85 in Land Resource Region J

Introduction

This area (shown in fig. 85-1) is in north-central Texas (83 percent) and south-central Oklahoma (17 percent). It makes up about 10,400 square miles (26,955 square kilometers). It occurs in two separate parts. The cities and towns of Belton, Cleburne, Denton, Fort Worth, Gainesville, Killeen, and Weatherford, Texas, and Ardmore and Sulphur, Oklahoma, are in this MLRA. Interstate 35 crosses this area in both States, and Interstate 20 crosses Interstate 35 in Fort Worth, Texas. The Fort Hood Military Reservation, most of Dinosaur Valley State Park, and the eastern tip of the Lyndon B. Johnson National Grasslands are in the part of this area in Texas. The Chickasaw National Recreation Area is in the part in Oklahoma.

Physiography

The northern one-third of this area, in Oklahoma and Texas, is in the Osage Plains Section of the Central Lowland Province of the Interior Plains. The southern two-thirds is in the Central Texas Section of the Great Plains Province of the Interior Plains. This area is characterized by gently rolling to hilly, dissected limestone plateaus and the adjacent gently sloping valleys. Steep slopes commonly border the valleys along the major streams that cross the area. The Arbuckle Mountains, in southern Oklahoma, consist mainly of rugged hills and plateaus with deeply dissected canyons and steep slopes bordering valleys. Elevation ranges from 500 to 1,310 feet (150 to 400 meters) in most of the area, but it ranges from 1,310 to 1,650 feet (400 to 505 meters) in the Arbuckle Mountains.

The extent of the major Hydrologic Unit Areas (identified by four-digit numbers) that make up this MLRA is as follows: Lower Brazos (1207), 32 percent; Middle Brazos (1206), 26 percent; Trinity (1203), 19 percent; Red-Washita (1113), 11 percent; Lower Colorado-San Bernard Coastal (1209), 6 percent; Red-Sulphur (1114), 4 percent; and Lower Canadian (1109), 2 percent. The upper tributaries and reaches of the Trinity and Brazos Rivers are in the part of this area in Texas. The Colorado River is just outside the southern end of the area. The Washita River is in the northern part of the area, in Oklahoma. Numerous flood-control and water-supply reservoirs are throughout this area.

Geology

Most of this area is underlain by limestones and shales in the Glen Rose Formation, Walnut Clay, Comanche Peak Limestone, Edwards Limestone, Duck Creek Limestone, and the Kiamichi Formation of Cretaceous age. These are mostly flat-lying formations. The more resistant members form the summits of ridges and hills, and the less resistant members form hillslopes and valleys. There is a gentle southeastward dip of about 15 feet per mile (3 meters per kilometer). In the structurally complex Arbuckle Mountains of southern Oklahoma, outcropping rocks are primarily limestone, sandstone, dolomite, quartzite, and chert. These units are exposed as alternating beds of Paleozoic rocks that have been faulted, tilted, and deformed to form a tombstone-like topography. Deep oil and gas wells have been drilled into these folded sediments. This area has significant exposures of granite, rhyolite, and gabbro of Precambrian age.

Climate

The average annual precipitation in this area is 27 to 41 inches (685 to 1,040 millimeters). Most of the rainfall occurs in spring and fall. The average precipitation during the freeze-free period is 23 to 26 inches (585 to 660 millimeters). The average annual temperature is 60 to 67 degrees F (16 to 19 degrees C). The freeze-free period averages 260 days and ranges from 235 to 290 days.

Water

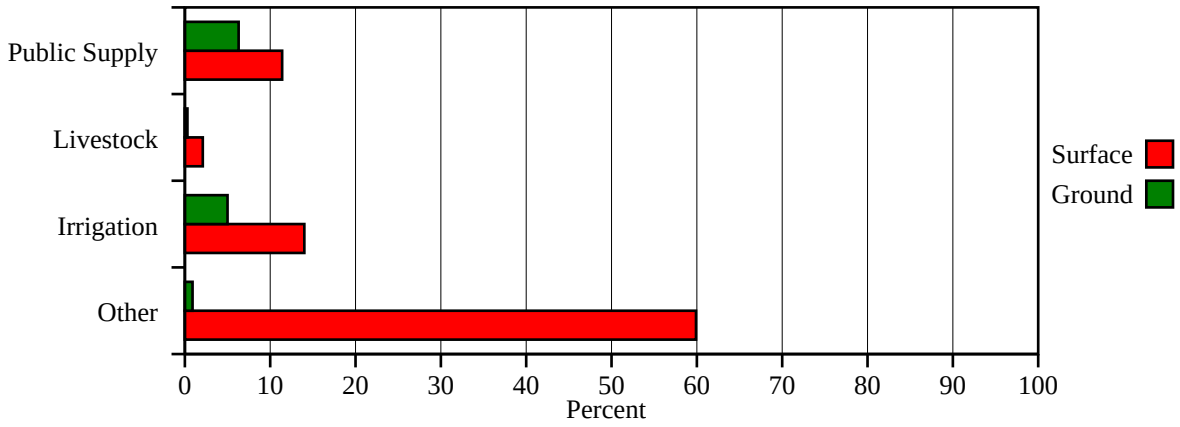
The total withdrawals average 545 million gallons per day (2,060 million liters per day). About 13 percent is from ground water sources, and 87 percent is from surface water sources. In most years the moderate and often erratic rainfall is adequate for crops, pasture, and rangeland. Summer droughts commonly reduce yields. The large rivers flow all year, and large reservoirs provide municipal water and opportunities for recreation. Most of the lakes and reservoirs within the Brazos River watershed are brackish and used mainly for flood control and recreation. Small farm ponds are an important source of water for farm use (primarily livestock) and wildlife.

Deep ground water is abundant in the Cretaceous limestone and sandstone layers of the Trinity Group aquifer in Texas. This aquifer is at the surface throughout most of the part of this area in Texas, and many seeps, springs, and local streams provide water, mostly during spring and winter. The median level of total dissolved solids in this ground water is 619 parts per million (milligrams

per liter), and the water is very hard. About 30 percent of all the wells tested in this aquifer have nitrate concentrations that exceeded the national drinking water standard of 10 parts per million (milligrams per liter). This aquifer is heavily used for public supply, for municipal and industrial water, and for irrigation. Some areas where water levels have dropped significantly have begun to limit pumping from this aquifer.

The Arbuckle-Simpson aquifer is in the part of this area in Oklahoma. It supplies drinking water to domestic users but has not been fully developed. The water is generally of good quality, although chloride and fluoride levels exceed the national standards for drinking water in some areas. The median level of total dissolved solids in this ground water is 369 parts per million (milligrams per liter), and the water is very hard.

MLRA 85 Water Use by Category



Category (Surface,Ground): Public Supply (11.4, 6.3), LiveStock (2.1, 0.3), Irrigation (14.0, 5.0), Other (59.9, 0.9)

Soils

The dominant soil orders in this MLRA are Vertisols and Mollisols. The soils generally have a thermic soil temperature regime, an ustic soil moisture regime, and smectitic, carbonatic, or mixed mineralogy. Moderately deep to very deep Haplusterts (Crawford, Sanger, and Slidell series) have smectitic mineralogy and typically formed in nearly level to gently sloping areas. Very deep, moderately well drained Haplusterts (Branyon series) have smectitic mineralogy and formed on stream terraces. Shallow and very shallow, gravelly and stony Calciustolls (Aledo and Purves series) formed over limestone bedrock in gently sloping to steep areas. Moderately deep and deep, well drained Calciustolls (Bolar and Denton series) formed over limestone bedrock primarily in gently sloping areas. Shallow Haplustolls (Eckrant series) with smectitic mineralogy and shallow Ustorthents (Maloterre series) with carbonatic mineralogy formed in limestone residuum in gently sloping to moderately steep areas on ridges and plateaus. Shallow Haplustepts (Brackett series) and shallow Calciustolls (Real and Doss series) have carbonatic mineralogy and formed in limestone residuum in sloping to steep areas. Shallow, nearly level to sloping Argiustolls (Speck and Tarpley series) formed over limestone bedrock on ridges and plateaus. Very deep, well drained Haplustolls (Krum series), Calciustolls (Venus and Lewisville series), and Argiustolls (Blanket series) formed on stream terraces and the lower valley slopes. Very deep, well drained Haplustolls (Frio, Bosque, and Gowen series) have significant accumulations of organic matter and formed on flood plains. Rock outcrop occurs along ridgetops throughout the area.

In the Arbuckle Mountains of Oklahoma, most of the soils are Ustolls, Ustalfs, or Ustepts. They have a thermic soil temperature regime, an ustic soil moisture regime, and mixed, siliceous, or smectitic mineralogy. Very shallow to deep, gently sloping to steep Haplustolls (Kiti, Rayford, and Timhill series), Haplustalfs (Bromide series), Argiustolls (Scullin series), and Haplustepts

(Travertine and Tussy series) formed on plateaus and mountain slopes. Very deep, gently sloping Paleustalfs (Bastrop and Gasil series) and Haplustalfs (Konawa series) formed on stream terraces. Very deep, nearly level Haplustolls (Dale series) and Ustifluvents (Yahola series) formed on flood plains along the major drainageways. Rock outcrop occurs throughout the Arbuckle Mountains.

Biology

The native vegetation in this area consists of mid and tall grasses interspersed with scattered oaks. Little bluestem, Indiangrass, big bluestem, and switchgrass are typical species on the deeper soils. Texas wintergrass, little bluestem, silver bluestem, buffalograss, and sideoats grama, as well as scattered shin oak, live oak, elm, ash, and juniper, are characteristic plant species on shallow soils and on soils along escarpments. Areas of deteriorated rangeland commonly have increased amounts of short grasses, annuals, weeds, pricklypear, elm, mesquite, and blueberry juniper.

The Arbuckle Mountains support mid and tall grasses. Sideoats grama and little bluestem are the major species. Indiangrass, big bluestem, switchgrass, hairy grama, dropseed, and forbs are common. Sycamore and willow grow along creeks. Prairie fires restrict the spread of sumac, skunkbush, and other shrubs. Resource deterioration results in a higher percentage of short grasses, annuals, pricklypear, and eastern redcedar.

Some of the major wildlife species in this area are white-tailed deer, javelina, coyote, fox, bobcat, raccoon, skunk, opossum, jackrabbit, cottontail, turkey, bobwhite quail, scaled quail, white-winged dove, and mourning dove.

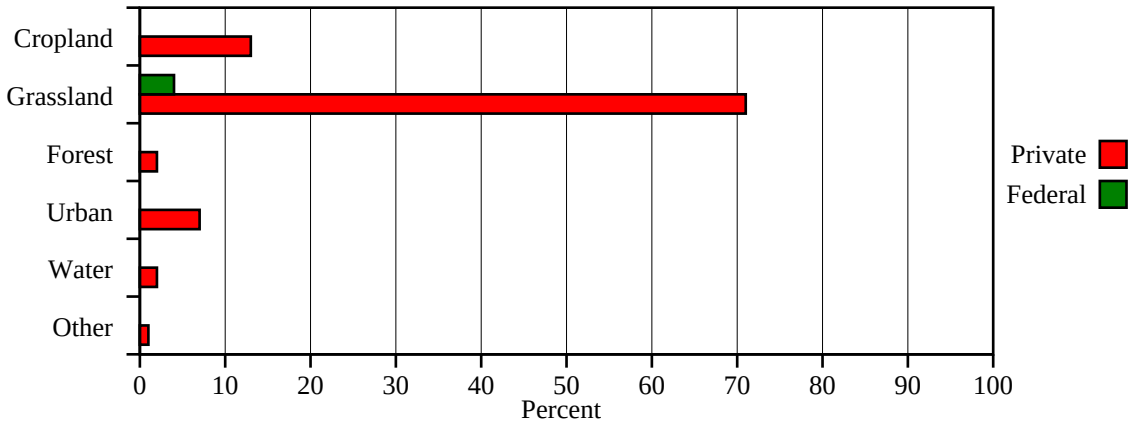
Land Use

Most of this area is in ranches, farms, and other private holdings. The dominant land use is livestock grazing on rangeland. A smaller acreage is used as cropland or improved pasture. Many ranches are involved in wildlife management. The major crops in the area are small grains and forage sorghum, which are used as supplemental feed for livestock and wildlife. Pastured areas support mainly improved bermudagrass and kleingrass. Native pecan orchards are common on flood plains. Deer and wild turkey hunting leases are an important source of income in the southern part of the area. Urban land is rapidly expanding adjacent to the major cities.

The major resource concerns on cropland are encroachment of woody species, maintenance of the content of organic matter in the soils, conservation of soil moisture, and water erosion. The major resource concerns on rangeland are overgrazing and the invasion of undesirable plant species.

Conservation practices on cropland generally include grassed waterways and terraces. Conservation practices on rangeland include control of brush and invasive weeds, reasonable stocking rates, and rotational grazing.

MLRA 85 Land Use by Category



Category (Private,Federal): Cropland (13.0, 0.0), Grassland (71.0, 4.0), Forest (2.0, 0.0), Urban (7.0, 0.0), Water (2.0, 0.0), Other (1.0, 0.0)

MLRA 84C - East Cross Timbers

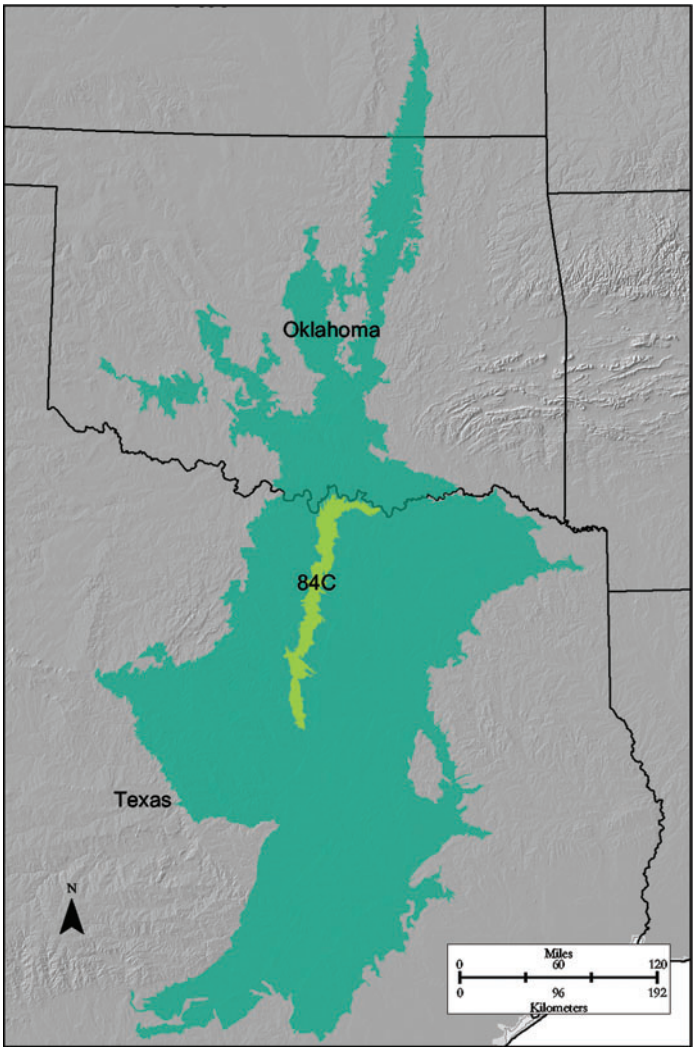


Figure 84C-1: Location of MLRA 84C in Land Resource Region J

Introduction

This area is entirely in north-central Texas (fig. 84C-1). It makes up about 1,320 square miles (3,425 square kilometers). The cities of Arlington, Cleburne, Denton, Gainesville, and Fort Worth are in this MLRA. Interstate 20 crosses the area from east to west, and Interstate 35E roughly forms the eastern boundary. Ray Roberts State Park, on Lake Ray Roberts, and the Eisenhower State Parks, on Lake Texoma, are two of the more well known recreational areas in the MLRA.

Physiography

The boundary between two major physiographic divisions occurs in this area. Most of the western half of the area is in the Osage Plains Section of the Central Lowland Province of the Interior Plains. The eastern half is in the West Gulf Coastal Plain Section of the Coastal Plain Province of the Atlantic Plain. The area is characterized by gently sloping to rolling uplands that are moderately dissected. Sandstone-capped hills and ridges rise prominently above the surrounding landscape. Stream valleys are narrow and have steep gradients. Elevation ranges from about 500 to 1,000 feet (150 to 305 meters). Local relief is mostly 3 to 50 feet (1 to 15 meters).

The extent of the major Hydrologic Unit Areas (identified by four-digit numbers) that make up this MLRA is as follows: Trinity (1203), 65 percent; Red-Washita (1113), 16 percent; Middle Brazos (1206), 15 percent; and Red-Sulphur (1114), 4 percent. The Brazos, Red, and Trinity Rivers dissect the MLRA. Lake Texoma, on the Red River, is in the northern part of the area. Lakes Arlington, Grapevine, Lewisville, and Ray Roberts are in the central part, on tributaries of the Trinity River. Lake Aquilla is in the southern part of the MLRA, on a tributary of the Brazos River.

Geology

This area is underlain by interbedded sandstones and shales in the Woodbine Formation of Cretaceous age. On this gently sloping to rolling landscape, the more resistant sandstones form ridges and hilltops and the more erodible sediments form side slopes, hillsides, and valleys.

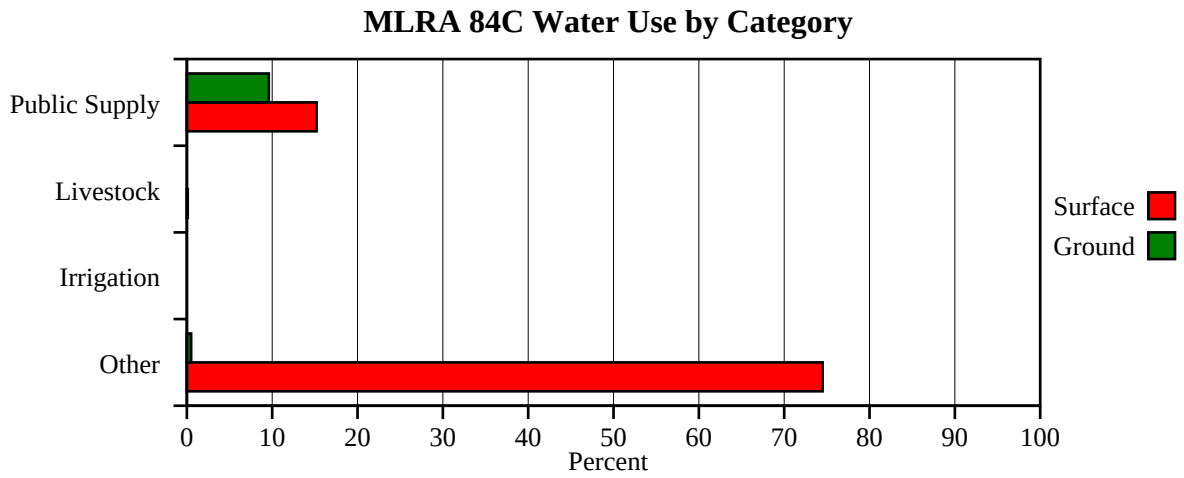
Climate

The average annual precipitation in this area is 34 to 41 inches (865 to 1,040 millimeters). Most of the rainfall occurs in spring and fall. The average precipitation during the freeze-free period is about 24 to 26 inches (610 to 660 millimeters). The average annual temperature is 62 to 66 degrees F (17 to 19 degrees C). The freeze-free period averages about 265 days and ranges from 255 to 280 days.

Water

The total withdrawals average 1,510 million gallons per day (5,715 million liters per day). About 10 percent is from ground water sources, and 90 percent is from surface water sources. The moderate and somewhat erratic rainfall is generally sufficient for quality native forage and for watering livestock. Also, it is the major source of water for pasture and crops. Local streams flow intermittently. Large reservoirs on the major streams provide water for cities and towns. The lake water is used for public supply, industry, and recreation. Farm ponds are a major source of water for livestock. The surface water is generally of good quality and is suitable for most uses.

In most of this area, shallow wells supply water for domestic use. A few small irrigation wells supply a limited quantity of water. Sandstone and carbonate layers in the Trinity Group are the principal aquifers in this MLRA. The ground water in these aquifers is very hard and has a median level of 619 parts per million (milligrams per liter) total dissolved solids. About 30 percent of the samples from areas of these aquifers exceeded the national drinking water standard for nitrate. Falling water tables limit the use of this aquifer.



Category (Surface,Ground): Public Supply (15.2, 9.6), LiveStock (0.1, 0.0), Irrigation (0.0, 0.0), Other (74.5, 0.5)

Soils

The dominant soil orders in this MLRA are Alfisols, Entisols, and Mollisols. They are moderately deep or deep, medium textured to coarse textured, and moderately well drained to somewhat excessively drained. They have a thermic soil temperature regime, an ustic soil moisture regime, and smectitic, siliceous, or mixed mineralogy. Shallow and moderately deep Haplustalfs (Rayex series) and Paleustalfs (Birome series) formed on sandstone-capped hills and ridges. Deep, well drained and moderately well drained Paleustalfs (Callisburg and Crosstell series) formed in clayey material on hillsides. Very deep, well drained, moderately permeable Ultic Paleustalfs (Gasil and Konsil series) formed in sandy material on hillsides. Very deep, well drained Arenic Paleustalfs (Silstid series) and very deep, somewhat excessively drained Psammentic Paleustalfs (Eufaula series) formed in sandy material and have a thick, sandy surface layer. Deep, gently sloping Paleustalfs (Bastrop and Bastsil series) formed on stream terraces and footslopes on erosional remnants. Nearly level Haplustolls (Whitesboro series) and Ustifluvents (Pulexas and Bunyan series) formed on narrow flood plains along tributaries.

Biology

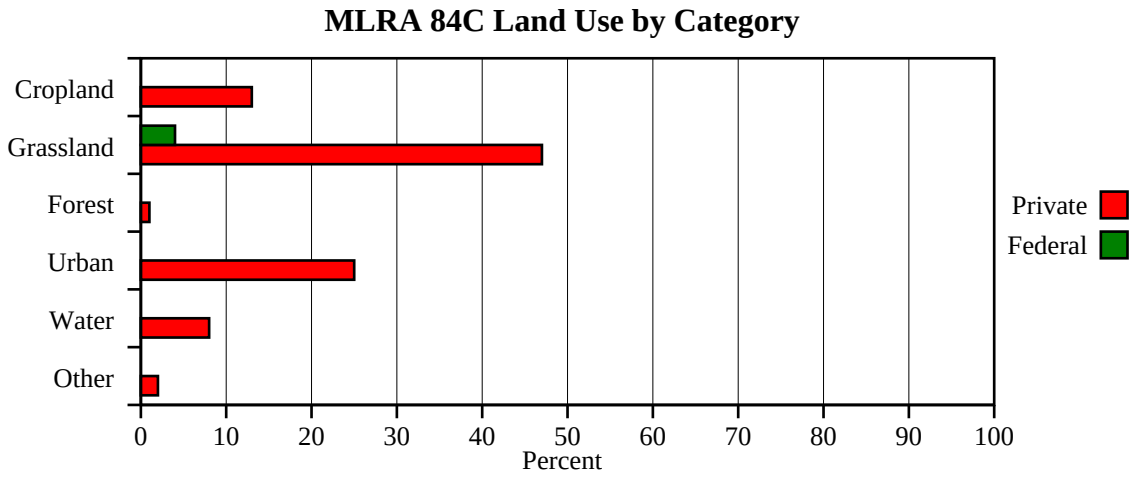
The native vegetation in this area consists of mid and tall grasses interspersed with blackjack oak and post oak. The area supports oak savanna vegetation with an understory of tall grasses. Little bluestem, purpletop tridens, Indiangrass, switchgrass, big bluestem, post oak, blackjack oak, elm, coralberry, American beautyberry, bumelia, greenbrier, and elbowbush are some of the dominant species. Engelmann’s daisy, lespedezas, and trailing wildbean are among the numerous perennial forbs.

Some of the major wildlife species in this area are white-tailed deer, javelina, coyote, fox, bobcat, raccoon, skunk, opossum, jackrabbit, cottontail, turkey, bobwhite quail, scaled quail, white-winged dove, and mourning dove.

Land Use

Most of this area is in farms and ranches, but sizable tracts in the central part of the area are rapidly being converted to urban uses. Some of the large tracts are being fragmented into smaller ranches. Most of this rural area is used as improved pasture, native grass pasture, or noncommercial oak forest and is grazed mainly by beef cattle. Some areas are used for peanuts, small grains, forage sorghum, fruits, or vegetables.

The major resource concerns are water quality, wind erosion, and water erosion. Conservation practices that are important for water quality are nutrient management and riparian buffers. Also, proper management of septic tank absorption fields can help to prevent pollution of the lakes in the MLRA. Wildlife habitat is an important management objective of the landowners in the MLRA. Warm-season improved pastures are established to protect the area from erosion and to produce forage for livestock.



Category (Private,Federal): Cropland (13.0, 0.0), Grassland (47.0, 4.0), Forest (1.0, 0.0), Urban (25.0, 0.0), Water (8.0, 0.0), Other (2.0, 0.0)

MLRA 84B - West Cross Timbers

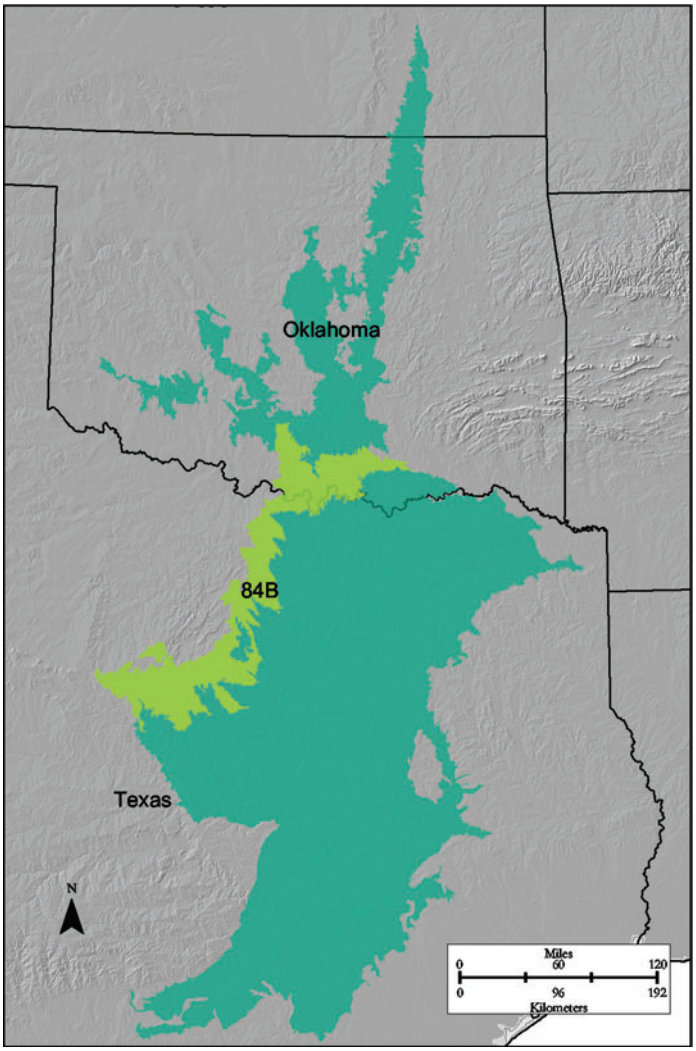


Figure 84B-1: Location of MLRA 84B in Land Resource Region J

Introduction

This area (shown in fig. 84B-1) is in Texas (73 percent) and Oklahoma (27 percent). It makes up about 6,165 square miles (15,970 square kilometers). The city of Stephenville, Texas, is at the southern end of this long, narrow MLRA. The towns of Weatherford and Gainesville, Texas, are just outside the eastern border of the area, in the middle and northern parts, respectively. The part of this area in Oklahoma is between the cities of Ardmore and Durant. Interstate 35 crosses the northern part of the MLRA, and Interstate 20 crosses the middle. The Tishomingo National Wildlife Refuge is in the northeast corner of the area, in Oklahoma. The Lyndon B. Johnson National Grasslands is in the part of this area in Texas, and Dinosaur Valley State Park is on the southeastern boundary, in Texas.

Physiography

Most of this area is in the Osage Plains Section of the Central Lowland Province of the Interior Plains. The southeastern part of the area is in the Central Texas Section of the Great Plains Province of the Interior Plains, and the northeast corner is in the West Gulf Coastal Plain Section of the Coastal Plain Province of the Atlantic Plain. This MLRA is mainly undulating and has low relief and numerous narrow streams. The uplands are nearly level to rolling and are moderately dissected. The northern part of the area has a higher average slope gradient than the southern part and is gullied. The southern part is nearly level to undulating and has been significantly affected by wind erosion. Stream valleys are narrow and have steep gradients. Elevation is mainly 1,000 to 1,300 feet (305 to 395 meters), but it is about 660 feet (200 meters) along the Red River. Local relief is mostly 10 to 50 feet (3 to 15 meters).

The extent of the major Hydrologic Unit Areas (identified by four-digit numbers) that make up this MLRA is as follows: Red-Washita (1113), 32 percent; Middle Brazos (1206), 24 percent; Lower Brazos (1207), 20 percent; Trinity (1203), 19 percent; Lower Colorado-San Bernard Coastal (1209), 3 percent; and Red-Sulphur (1114), 2 percent. The Red River separates the States of Oklahoma and Texas in this area. Lake Texoma, on the Washita River, covers a significant portion of this area in Oklahoma. The Brazos and Trinity Rivers cross the part of this area in Texas. Denton Creek and many other streams forming the headwaters of the Trinity River also are in the Texas part of the area.

Geology

Cretaceous rocks of the Trinity Group are the primary aquifers underlying the surface throughout the length of this MLRA. Because of the southeast dip of these rocks, the oldest units are exposed along the west side of the area and successively younger units are exposed to the south and east. From youngest to oldest, the four units in the Trinity Group are the Antlers, Paluxy, Glen Rose, and Twin Mountains Formations. The Antlers and Twin Mountains Formations consist of alternating beds of sandstone, claystone, and conglomerate. The Paluxy Formation is primarily fine grained sandstone. The Glen Rose Formation is primarily a massive limestone and dolomite unit at its base and grades upwards into limestone, shale, marl, and gypsum beds. The Cretaceous Fredericksburg Formation, an interbedded limestone, shale, and clay unit overlying the Antlers Formation, is not an aquifer in this area. Unconsolidated sands and gravel fill the valleys along the Brazos and Trinity Rivers and their larger tributaries.

Climate

The average annual precipitation in most of this area is 26 to 42 inches (660 to 1,065 millimeters). It is 26 to 30 inches (660 to 760 millimeters) in the extreme southern part of the area. It declines from east to west. Most of the rainfall occurs as high-intensity, convective thunderstorms during summer. Almost 75 percent of the total annual precipitation falls during the freeze-free period. The typical summer moisture deficit ranges from about 7 to 10 inches (180 to 255 millimeters). Snow can occur in this area, but it does not remain on the ground for long periods. The average annual temperature is 62 to 66 degrees F (17 to 19 degrees C). The freeze-free period averages 255 days and ranges from 230 to 275 days.

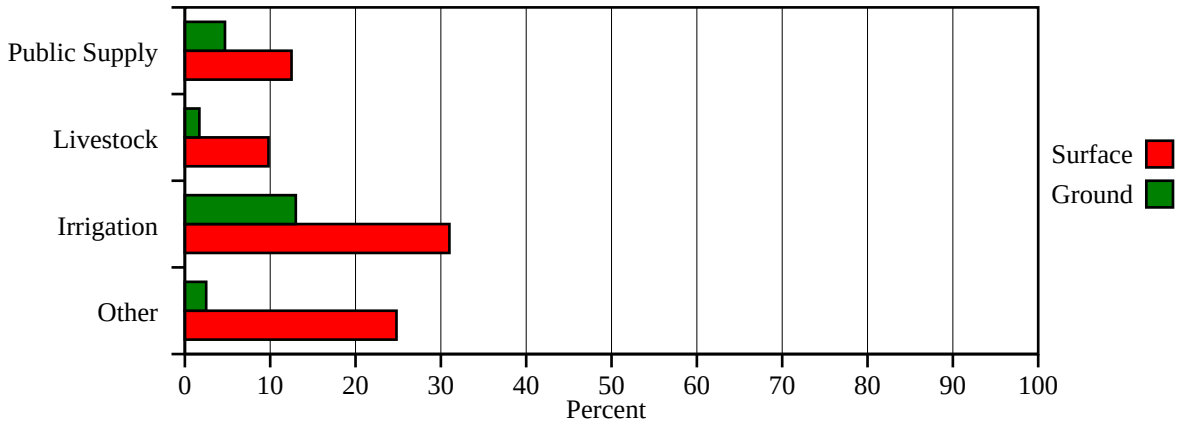
Water

The total withdrawals average 80 million gallons per day (300 million liters per day). About 22 percent is from ground water sources, and 78 percent is from surface water sources. The moderate and somewhat erratic rainfall is the source of water for pasture and crops. Farm ponds are a major source of water for livestock. Local streams flow intermittently. A few large reservoirs provide water for cities and towns and for recreation and irrigation. The surface water is generally of good quality and is suitable for almost all uses.

In most of this area, shallow wells supply water for domestic use, but ground water is scarce in areas where sandstone and shale are near the surface. The sandstone and carbonate layers in the Trinity Group are the primary aquifers throughout the area. Water in these units is very hard and has a median level of total dissolved solids of 619 parts per million (milligrams per liter). About 30 percent of the wells sampled in areas of these aquifers showed levels of nitrate in excess of the national drinking water standard of 10 parts per million (milligrams per liter). Public supply, irrigation, and some industrial supply wells occur throughout the area. Shallow wells for irrigation are common in the southern part of the area, but the availability and quantity of water vary greatly. Water levels have been declining because of overuse, so future development of ground water resources in this area is in jeopardy. Contamination from nitrate sources is a problem in these shallow aquifers.

Another source of ground water in this area is the unconsolidated deposits of sand and gravel that fill the major river valleys. This calcium-magnesium, carbonate-bicarbonate type of water is very hard, and almost half the samples tested showed levels of total dissolved solids that exceeded 1,000 parts per million (milligrams per liter). This aquifer also contained nitrate at concentrations greater than 10 parts per million (milligrams per liter) in 40 percent of the samples tested.

MLRA 84B Water Use by Category



Category (Surface,Ground): Public Supply (12.5, 4.7), LiveStock (9.8, 1.7), Irrigation (31.0, 13.0), Other (24.8, 2.5)

Soils

The dominant soil orders in this MLRA are Alfisols and Entisols. The soils in the area dominantly have a thermic soil temperature regime, an ustic soil moisture regime, and mixed or siliceous mineralogy. They generally are deep or very deep, well drained or moderately well drained, and loamy or clayey. Ustifluvents (Pulexas series) formed in alluvium on flood plains. Paleustalfs formed in residuum on plains (Chaney series) and in sandy, loamy, and/or clayey sediments on uplands (Demona, Duffau, Nimrod, Pedernales, Selden, and Windthorst series). Paleudalfs (Bernow series) formed in loamy sediments on uplands.

Biology

This area supports savanna vegetation. Tall grasses are interspersed with trees and underbrush. Little bluestem, purpletop tridens, Indiangrass, switchgrass, big bluestem, sand lovegrass, post oak, blackjack oak, elm, coralberry, greenbrier, and elbowbush are the dominant species. Engelmann’s daisy, Maximilian sunflower, and trailing wildbean are among the numerous perennial forbs.

Some of the major wildlife species in this area are white-tailed deer, coyote, fox, bobcat, raccoon, skunk, opossum, rabbit, armadillo, squirrel, quail, and mourning dove. The species of fish

in the area include largemouth bass, channel catfish, and bream.

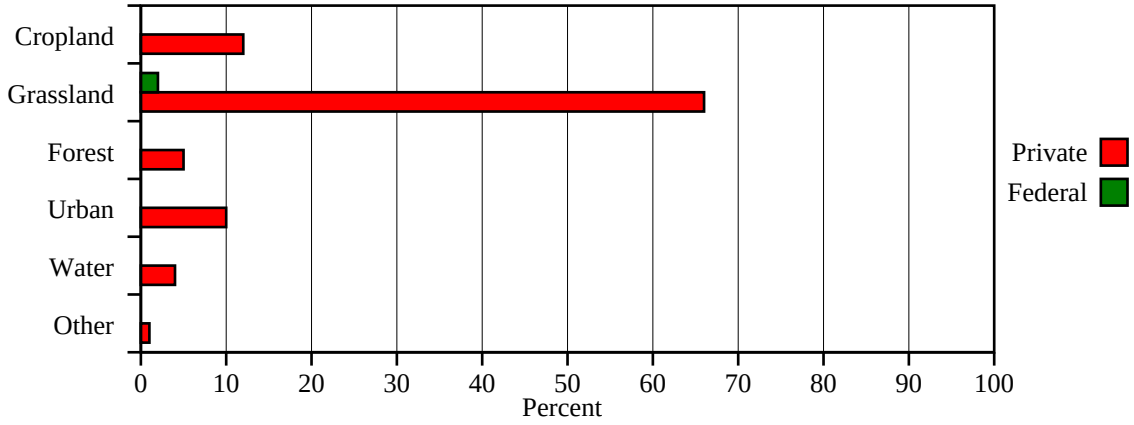
Land Use

Most of this area is in farms and ranches. About 70 percent of the area is native grass pasture, improved pasture, or noncommercial oak forests that are used for grazing. Most of the areas of pasture, rangeland, and woodland are grazed by beef cattle, but dairy cattle are important in some areas. Generally, the acreage of cropland is decreasing and that of improved pasture is increasing. The main crops are peanuts, grain sorghum, small grains, and forage sorghum. Improved bermudagrass and other hay crops also are important in the area. Locally, peaches, apples, pecans, and vegetables are important crops. About one-tenth of the area is used for urban development and other purposes.

The major natural resource concerns include wind erosion; water erosion (gully, sheet, and rill erosion); streambank erosion; plant productivity, health, and vigor; and water for livestock.

Conservation practices on cropland generally include nutrient and pest management, crop residue management, critical area planting, development of ponds, and streambank and shoreline protection. Conservation practices on pasture, rangeland, and forestland generally include riparian forest buffers, fencing, forage harvest management, brush management, prescribed burning, and proper grazing use.

MLRA 84B Land Use by Category



Category (Private,Federal): Cropland (12.0, 0.0), Grassland (66.0, 2.0), Forest (5.0, 0.0), Urban (10.0, 0.0), Water (4.0, 0.0), Other (1.0, 0.0)