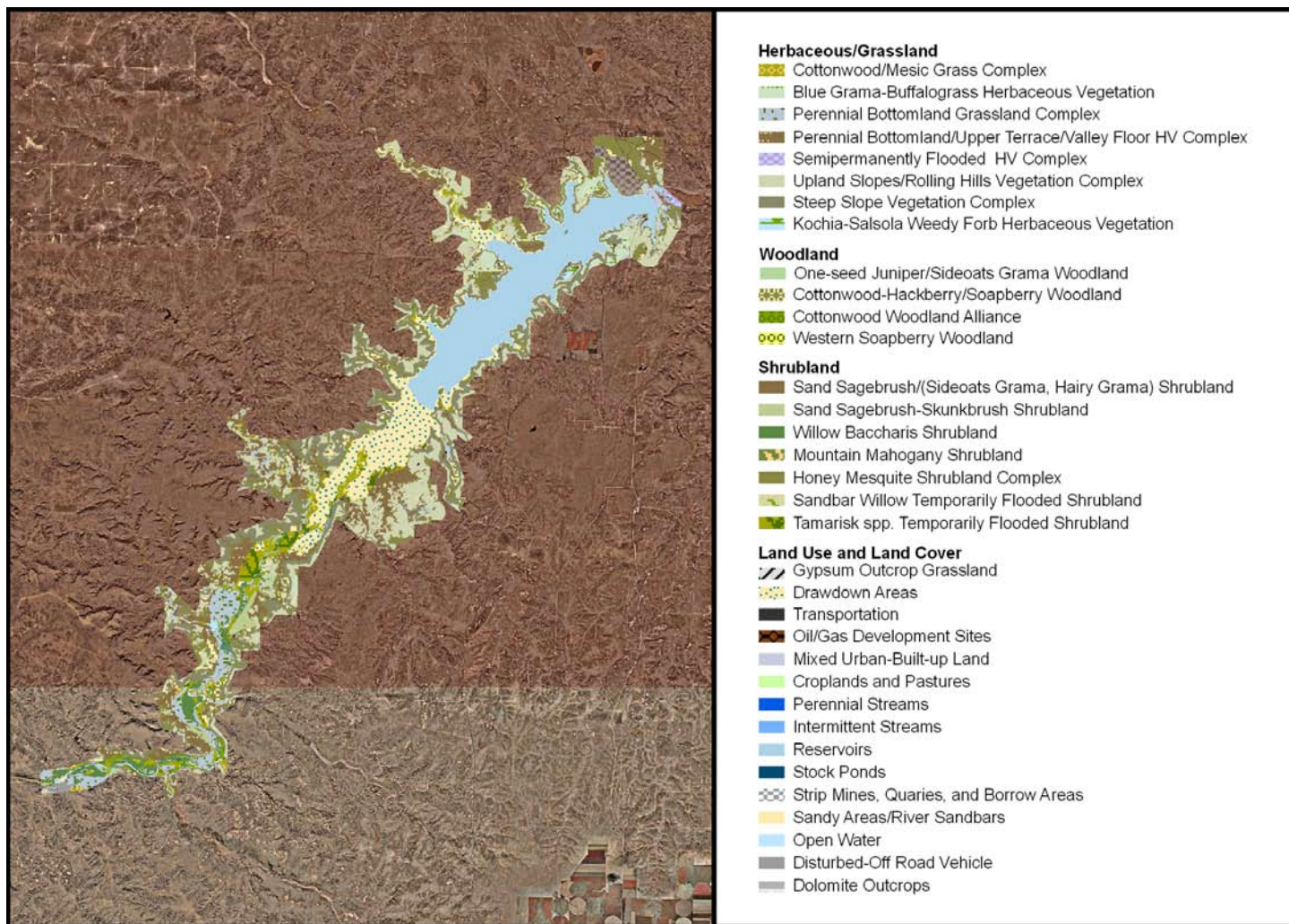


Vegetation Types

QUICK REFERENCE



Vegetation Associations and Alliances

NatureServe maintains a treatment of floristic units (alliances and associations), which are used as classification and mapping units by the vegetation mapping program whenever feasible. Vegetation sample plots and observational points were used to classify the vegetation of this park to these association/alliance levels. NatureServe Explorer®, an on-line database, can be found on the Internet at: <http://www.natureserve.org/explorer>.

Woodlands

One-seed Juniper / Sideoats Grama Woodland
(*Juniperus monosperma* / *Bouteloua curtipendula* Woodland)

This map unit occurs sparsely and is found primarily on moderate to steep slopes on terrain that is at the high end of drainages off of the Canadian River or on steep slopes overlooking the Canadian River bottomland. It is more prone to occur in the Triassic sandstone geologic formation and in the accompanying gravelly hills. The soils are generally shallow with moderate amounts of small rocks or gravel throughout the profile. Aspects range from west to northeast. The most extensive area of this community is found just outside of LAMR on the LX Ranch, just to the west of Chicken Creek. There are small “pockets” of this community along steep slopes mainly in the area from Bonita Creek to McBride Canyon.

Cottonwood / Hackberry - Soapberry Woodland
(*Populus deltoides* / *Celtis laevigata* - *Sapindus*)



saponaria Woodland)

This map unit occurs in dry riparian areas at the edge of the floodplain, usually at a slightly higher elevation than the floodplain bottom. The physical features of this community are complex, with wide variation in the cover of the three dominant species. Typically there are a few scattered tall cottonwood with a secondary canopy of smaller soapberry and hackberry. The hackberry often occur as solitary trees or in small groves. The soapberry frequently occur as small groves under the open canopy of scattered tall cottonwoods. Shrubs are nearly always present but are seldom abundant. The herbaceous stratum has moderate cover but can be quite variable depending on the degree of shading. Common species include mid and tall grasses, such as *Panicum virgatum* and *Pascopyrum smithii*. Representatives of this community can be found along the upper edge of riparian areas along tributary creeks to the Canadian River. This community is quite prevalent and can be found in the McBride Canyon, Plum Creek, Turkey Creek, and Mullinaw Creek areas.

Cottonwood Woodland Alliance

This alliance is fairly common within the park, although most of the *Populus* communities are included in associations. There is a good example of this alliance located at the mouth of Bonita Creek and at the mouth of Chicken Creek. It can also be found at lower Plum Creek. The tree canopy is usually over 50% and the understory is heavily shaded. There are almost no other tree species present and a large variation in the shrub strata. In general, *Salix exigua*, *Amorpha fruticosa*, *Baccharis salicina*, and occasional *Rhus trilobata* are the main shrubs present. There are few forbs and grasses present except in localized situations. Grass species found are usually shade tolerant species such as *Tridens flavus*, *Pascopyrum smithii*, and *Elymus canadensis*. *Vitis rupestris* is often found in abundance.

Western Soapberry Woodland (*Sapindus saponaria* Woodland)

This is a map unit not addressed by the NVC and/or not sampled for accuracy. Small clonal mottes of *Sapindus saponaria* occur on a scattered basis around LAMR and near ALFL. Although Western soapberry is a member of the Eastern Cottonwood-Sugarberry/Soapberry Woodland Association, these ½ to 5 acre sites appear distinct.

Shrublands

Sand Sagebrush / (Sideoats Grama, Hairy Grama) Shrubland (*Artemisia filifolia* / *Bouteloua (curtipendula, gracilis)* Shrubland)

This community occurs on sandy, rolling, upland hills. *Artemisia filifolia* dominates this community with an average canopy cover of 20-25%. Shrubs vary from 1-1.5 m in height. Scattered to frequent *Prosopis glandulosa* are present as shrubs and trees up to 2.5 m in height, and scattered plants of *Yucca glauca* are common. The ground layer is dominated by short to mid grasses, including *Bouteloua gracilis* and *Bouteloua curtipendula*. Lesser amounts of other grasses are common. Forbs are generally limited, with *Ambrosia psilostachya* and *Gaillardia pulchella* being the major species. This map unit occurs throughout the park, with concentrations northeast of Sanford Dam and in the area around McBride Canyon and Mullinaw Creek.

Sand Sagebrush - Skunkbush Shrubland (*Artemisia filifolia* - *Rhus trilobata* Shrubland)

This community is dominated by shrubs, most of which would be classified as short shrubs. *Artemisia filifolia* is the dominant species, with lesser amounts of *Rhus trilobata* present. Several species of tall grass and mid grass are present along with a variety of forbs. The dominant tall grass species are *Sporobolus cryptandrus*, *Stipa comata*, *Andropogon hallii*, and *Schizachyrium scoparium*. The amount of *Stipa comata* present is dependent on the amount of winter precipitation received; wet winters will result in more of this species being present. The major forbs include *Tradescantia occidentalis*, *Commelina erecta*, and *Ipomea leptophylla*.

Willow Baccharis Shrubland (*Baccharis salicina* Shrubland)

This community is dominated by shrubs, with *Baccharis salicina* being the dominant shrub. Willow baccharis is typically a short shrub, but it can occasionally reach a height of 2m. Taller shrubs, especially *Tamarix* spp. and *Salix* spp. are often present. The density of willow baccharis is usually dense to moderately dense and in places is difficult to walk through. There are areas of grass, but the density is variable depending on the degree of shading and competition from shrubs. The most common grass species include *Phragmites australis* and *Panicum virgatum*. Willow baccharis communities occur consistently at around 2900 ft. elevation and are occasionally to frequently flooded for short periods of time. This community is found at various locations at LAMR but is restricted to the river floodplain upstream from the lake. The area around Mullinaw Crossing has a significant presence of this community, as does the area downstream from the mouth of Bonita Creek.

Mountain Mahogany Shrubland (*Cercocarpus montanus* Shrubland)

This upland community occurs on dry, rocky hilltops and escarpments. Although *Cercocarpus montanus* dominates this shrubland community, *Dalea formosa* is also common. Total vegetation cover is low, with the vegetation often confined to small areas of soil accumulation and in fissures in the rock cover. Common forbs include *Tetrandeum scaposa* and *Eriogonum longifolium*, and common grasses include *Aristida purpurea* var. *wrightii* and *Bouteloua curtipendula*. This community has been found in only one location at the park—approximately 0.5 mile south of the Alibates Ranger Station, off of Cas Johnson Road on an escarpment and a separate hilltop. Slopes range from 25-50%.

Honey Mesquite Shrubland Complex (*Prosopis glandulosa* / *Bouteloua curtipendula* Shrubland & *Prosopis glandulosa* / *Bouteloua gracilis* Shrubland)

This map unit is composed of two NVC associations: Mesquite / Sideoats Grama Shrubland and Mesquite / Blue Grama Shrubland. *Prosopis glandulosa* is the dominant shrub, with lesser amounts of *Yucca glauca* and *Gutierrezia sarothrae* sometimes present. Canopy cover is usually around 25%. In some cases, the mesquite canopy may be less than 20% which makes this map unit a borderline grassland community. Typically there is a good cover of perennial grasses, consisting of *Bouteloua curtipendula* or *Bouteloua gracilis*. Forb cover is usually less than 10% and is variable and highly dependent on spring moisture. Location on the landscape includes gently sloping upper slopes or high nearly level areas, as well as on the lower gently sloping areas at the base of cliffs adjacent to grasslands.

Sandbar Willow Temporarily Flooded Shrubland (*Salix exigua* Temporarily Flooded Shrubland)

This map unit occurs in places where there is a permanent and stable ground water source, such as along the main river channel or in areas where there is an underground source of water. This community is dominated by *Salix exigua*. Sandbar willow may be either a tall or short shrub and usually occurs in small and localized stands. *Tamarix ramosissima* and *Baccharis salicina* are often present and sometimes in substantial density. The dense stands of willow do not allow a great number of other species to persist. This community is common at LAMR along the Canadian River streambed. It requires soil that is continually wet, and it occurs in narrow bands adjacent to the streambed or further up away from the river in the floodplain.

Tamarisk spp. Shrubland (*Tamarix* spp. Temporarily Flooded Shrubland)

This community is dominated by *Tamarix* spp. It can occur in

almost pure stands that range in height from short shrubs to as tall as 4 meters. It often occurs in bands that follow old stream terraces. Quite frequently there are few understory plants. This is due in part to the density of the salt cedar, as well as the accumulation of salt in the soil around the plants as the salt-accumulating leaves fall to the ground. Stand size varies from quite small, 0.1 acre, to quite large, over 300 acres, with a mean size of 11 acres. Characteristics of this community vary considerably from dense established thickets to newly established, rather sparse sites in areas that are influenced by the water fluctuations of the reservoir drawdown area. This community requires deep soils, commonly thin sandy loam soil over alluvial deposits of sand, gravel or cobbles. LAMR has an active program for salt cedar removal, which results in significant variation in this map unit.

Herbaceous Vegetation / Grassland

Cottonwood / Mesic Grass Complex (*Populus deltoides* / *Panicum virgatum* - *Schizachyrium scoparium* Woodland & *Populus deltoides* / *Pascopyrum smithii* - *Panicum virgatum* Woodland)

Two vegetation associations make up this map unit. It can be described as open cottonwood woodland with perennial grass understory. A shrub layer, if present, is poorly developed with cover values usually less than 10%. The understory vegetation is composed primarily of either warm season tall grasses, such as *Panicum virgatum* or *Schizachyrium scoparium*, or cool season perennial grasses, mainly *Pascopyrum smithii*, depending on the association. Grass cover typically ranges from 45-60%, with some variation resulting from the shade pattern of the cottonwood. Forbs are not prevalent, making up only 5-15% of the total herbaceous cover. This community occurs throughout LAMR. Large areas occur in the Rosita Flats area on the east end of the park. It can also be found in the floodplain of many of the tributary creeks of the Canadian River.

Blue Grama - Buffalograss Herbaceous Vegetation (*Bouteloua gracilis* - *Buchloe dactyloides* Herbaceous Vegetation)

This map unit is an upland grassland dominated by short grass species, *Bouteloua gracilis*, and lesser amounts of *Buchloe dactyloides*. Very small amounts of other grasses may be present, such as *Sporobolus cryptandrus*, *Panicum obtusum*, or *Pascopyrum smithii*. Forbs are relatively sparse, and shrubs are limited in this community. Typically, this map unit is found at the highest landscape position on uplands that are nearly level to gently sloping terrain. This community is not common on LAMR, because the park is located in the Canadian River Canyon and does not include the higher elevation uplands. It

is found in the Bugbee Shores area south of the town. There are also some areas on the Palo Duro Ranch, adjacent to the recreation area between McBride Canyon and Cas Johnson Road.

Perennial Bottomland Grassland Complex (*Andropogon hallii* - *Calamovilfa gigantea* Herbaceous Vegetation, *Andropogon hallii* - *Schizachyrium scoparium* - *Panicum virgatum* - *Sorghastrum nutans* Herbaceous Vegetation, *Panicum virgatum* - *Pascopyrum smithii* Herbaceous Vegetation, & *Phragmites australis* W. North America Temperate Semi-Natural Herbaceous Vegetation)

This map complex encompasses all of the grasslands that occur in the Canadian River floodplain. These tall grass associations occupy the small dunes along the streambed, as well as the first stream terraces. The terrain is nearly level to slightly undulating. These associations are subject to occasional flooding and the deposition of debris from time to time. The grass cover may vary from sparse, for those associations that occupy the sandy alluvium at the edge of the river streambed (Sand Bluestem - Giant Sandreed Herbaceous Vegetation), to more production and good grass cover (Sand Bluestem - Little Bluestem-Switchgrass - Indiangrass Herbaceous and Switchgrass - Western Wheatgrass Herbaceous Vegetation). Common Reedgrass Western North America Temperate Semi-Natural Herbaceous Vegetation occur in narrow bands immediately adjacent to the stream channel and scattered throughout the river floodplain; it seems to be dependent on a particular ground water regime in which the water table is close to the soil surface.

Perennial Bottomland / Upper Terrace / Valley Floor Herbaceous Vegetation Complex (*Andropogon hallii* - *Schizachyrium scoparium* - *Hesperostipa comata* Herbaceous Vegetation, *Bouteloua curtipendula* - *Bouteloua (gracilis, eripoda)* Herbaceous Vegetation, *Panicum obtusum* Herbaceous Vegetation, *Pascopyrum smithii* Herbaceous Vegetation, *Sporobolus airoides* Southern Plains Herbaceous Vegetation, & *Phragmites australis* Western North America Temperate Semi-Natural Herbaceous Vegetation)

This map complex encompasses the grasslands that occupy the upper floodplain terraces of the Canadian River, the valley floors and floodplains of the major contributing streams and tributary canyons, and the transition zones between the riparian and upland grasslands. As a group, these associations may represent the characteristics of both riparian and upland. Alkali Sacaton Southern Plains Herbaceous Vegetation occurs on nearly level terrain with deep soils with a high degree of alkalinity. It usually occupies broad colluvial fans or benches just outside of the main river floodplain, but it may also be found in the outer reaches of the floodplain. Western Wheat-

grass Herbaceous Vegetation is found in broad, open valley floors that receive overflow from the surrounding areas and also in riparian areas with deep soils and scattered trees. Vine Mesquite occurs on broad, moderately sloping overflow sites along major drainages. Sideoats Grama - Grama (Blue, Black) Herbaceous Vegetation and Sand Bluestem - Little Bluestem-Needle-and-Thread both occupy upland areas and the transition areas between floodplain and upland. Common Reedgrass Western North America Temperate Semi-Natural Herbaceous Vegetation is included in this map class due to its habit of occurring throughout the river floodplain.

Semipermanently Flooded Herbaceous Vegetation Complex (*Typha latifolia* - *Schoenoplectus (americanus, validus)* Herbaceous Vegetation & *Phragmites australis* Western North America Temperate Semi-Natural Herbaceous Vegetation)

This map complex consists of two NVC alliances. Cattail, Softstem Bulrush, and Threesquare Bulrush Herbaceous Vegetation alliance occur in areas that are wet from underground streamflow and periodic flooding. While the cattails may occupy large areas, especially at the upper end of the lake, the bulrush are found in small patches on the banks of standing water or margins of ponds. Common Reedgrass Western North American Temperate Semi-Natural Herbaceous Vegetation alliance occupies floodplain areas where the water table is close to the soil surface. It often occurs in narrow monotypic stands along the active river channel, as well as scattered in with other grasses of the floodplain. The growth of cattails in the upper end of Lake Meredith is strongly influenced by the water regime; in times of extended drought, cattails may die off over vast areas, only to return when the area water is replenished. This dynamic nature is seen in the pattern of live cattails, large areas of dead plant material, and mud flats visible on the aerial photography. This map complex occurs throughout the project area, most often in very small stands.

Upland Slopes/Rolling Hills Vegetation Complex (*Bouteloua curtipendula* - *Bouteloua (gracilis, eripoda)* Herbaceous Vegetation, *Cercocarpus montanus* Shrubland, *Dalea formosa* - *Mimosa* Shrubland, *Gutierrezia sarothrae* - *Yucca glauca* Dwarf-Shrubland, *Krascheninnikovia lanata* Dwarf-Shrubland, & *Schizachyrium scoparium* - *Bouteloua curtipendula* Herbaceous Vegetation)

This map complex is composed of a varied mix of vegetation associations including grassland, dwarf shrubland, and shrubland communities. All of the common shrub species share some of the characteristics of xeromorphic species: small leaves, spines, low growth form or short for the range of height

of that particular species. These associations tend to be at least moderately sparse with low biomass and litter production with a droughty appearance.

**Steep Slope Vegetation Complex (*Rhus trilobata* /
Bouteloua curtipendula - *Schizachyrium scoparium*
Herbaceous Vegetation & *Schizachyrium scoparium* -
Bouteloua curtipendula Herbaceous Vegetation**

This map unit is composed of two NVC associations. This complex occupies the steep talus slopes that line the Canadian River floodplain corridor. Slopes are steep, ranging from 25-50%. The skunkbush sumac/sideoats grama shrubland association is likely to be found on the more mesic eastern and northern exposure slopes. The little bluestem-sideoats grama is more common on the drier south and west-facing slopes. Large and small pieces of dolomite that have broken off of a layer at the top of the slope and tumbled downhill are common. This community is found throughout much of the LAMR area. Specific examples are the northeast facing slope in McBride Canyon and the paved road leading to the Alibates Ranger Station.

Kochia - Salsola Weedy Forb Herbaceous Vegetation

This is a vegetated map unit not addressed by the NVC and/or not sampled for accuracy. Numerous non-native species of plants flourish at LAMR and ALFL. Specifically, *Kochia scoparia* and *Salsola kali* can become difficult to control. These weed blooms were mapped when visible on the aerial photographs. However, due to their transient nature, a consistent or all-inclusive mapping of weedy forbs is not within the scope of the NVC mapping program. Large areas of weedy forb growth may be discernable on the aerial photographs depending on the timing of the growth spurt and the date of photo acquisition. Nevertheless, this map unit was included because it provides valuable information.