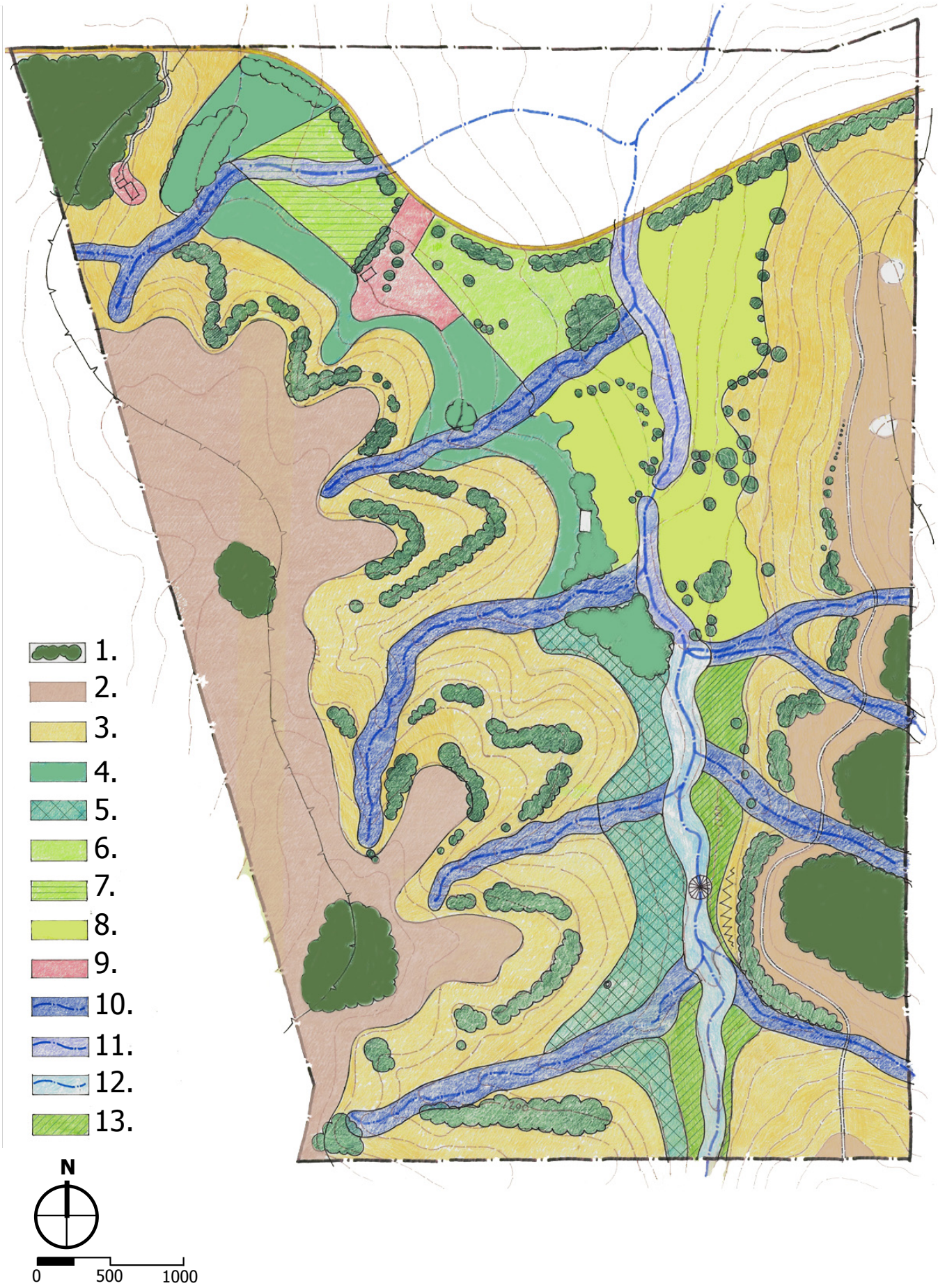
Plan of Potential Plant Communities and Habitats



Proposed Plant Communities and Habitats:

1. Plateau Forest—Ashe Juniper-Live Oak-Red Oak
2. Plateau Savanna—Little Blue Stem-Ashe Juniper- Persimmon
3. Valley Slope Savanna—Little Blue stem-Stunted Live Oak-Ashe Juniper
4. Shinnery—Little Blue Stem-Sumac-Stunted Live oak-
5. Lowland Forest—Mixed Oaks-Pecan-Cedar Elm-Hackberry
6. Wildflower Meadow–Texas Bluebonnet-Sunflower-Indian Blanket
7. Hay Field—Little Blue Stem-Green Sprangletop-Side Oats Grama-Canadian Wild Rye
8. Tall Grass Meadow—Indian Grass-Big Bluestem-Bushy Bluestem
9. Cultural Landscape—Plants of SW Texas
10. Canyon Forest—Live Oak-Red Oak-Black Cherry- Possum Haw-Rough-leaved Dogwood
11. Riparian Forest-Live Oak-Post Oak-Pecan-Cedar Elm-Sycamore
12. Riparian Meadow—Lindheimer Muhly-Eastern Gamma Grass-Switchgrass
13. Floodplain Meadow—Big Bluestem – Indian Grass – Canadian Wild Rye

Plant Community Descriptions

1. PLATEAU FOREST

   This Forest plant community is found on the upland plateaus and valley slopes on the Browning Ranch. This community sits upon very shallow, calcareous soils under the Brackett-Real classification. Slopes in these areas range from 0 to 15%. Exposure to wind and sun, in addition to nutrient-depleted soils are the primary limitations to plant growth.

   The present plant community for this type is dominated by Ashe juniper and Live oak. Within the Upland Forest, especially along north facing slopes and escarpment breaks, Texas red oaks and Escarpment Black Cherries are mixed in with the Ashe juniper and Live oak. Flame-leaf sumac and Gum bumelias are the common understory trees in the uplands.

   The proposed plant community for the upland forest includes more Texas red oaks and less Ashe juniper. Blackjack oak, Shin oaks, and Rusty black-haw viburnums will make up the preferred understory in this area.

   All forested areas are in a mid-succession transition into an Ashe juniper monoculture with Live oaks as their main competitor for water resources. The management strategy for these areas is to thin the secondary-growth Ashe juniper. This will enable the growth of an herbaceous ground cover that will aid in reducing runoff.

   Ashe juniper thinning and the removal of grazers are the only treatments that have been applied to date.

2. PLATEAU SAVANNA

The Upland Savannah plant community refers to the open expanses of grasslands that occupy the higher elevations on the Browning Ranch. This community also sits upon the shallow, calcareous Brackett-Real soils that are quick to release moisture. Slopes in this area range from 0 to 5 %. Plants in this area are stressed from wind and sun exposure and low soil fertility.

The present plant community for this area is dominated by secondary-growth Ashe juniper. Stunted Live oaks are also common. The grass community is composed of Little bluestem, Texas wintergrass, Old Field three-awn, Texas grama, and Hairy grama. The shrubby understory of this area is dominated by Persimmon and Agarita

The proposed plant community for this area is a mid to tallgrass savannah with 10% canopy. Little bluestem will dominate this grassland with Side-oats grama, Texas cupgrass, and Texas wintergrass, Plains lovegrass, Canyon and Seep muhly, Canadian wild-rye, and Green Sprangletop intermixed. Hardwood trees will be uncommon, and represented primarily by Live oaks, Texas red oaks, and Blackjack oaks.

Most of this area is mid-succession and transitioning from grassland into shrub land. Since this area is proposed for residential development, it will include a mix of both warm and cool season grasses. Restoration strategies to revitalize the grassland include prescribed burning, Ashe juniper thinning, and re-seeding with native grasses, particularly little bluestem which predominates in this area and is very visually attractive. Hardwood trees will be also be thinned to re-create a characteristic, local savannah landscape with typical distances between the clusters of trees (in general, 80% of the savanna vegetation is herbaceous and 20% of the vegetation is woody). Ashe juniper thinning and the removal of grazers are the only management strategies applied to date.

3. VALLEY SLOPE SAVANNA

The Valley Slopes plant community occupies the transition zone in between the uplands and the lowlands. In places these slopes exceed 20%, and are on average about 10-15%. This area is sits on Brackett-Real soils, which are shallow and rocky.

Stunted Live oaks and Ashe juniper predominate in this area. Flame-leaf sumac, Persimmon, Agarita, and juvenile Live oaks comprise the understory. Little bluestem, which is well established in the Upland Savanna, is competing against the King Ranch bluestem, which predominates in the lowlands. Hairy grama, and Texas grama are also commonly found in this area.

Vegetation on the valley Slopes must not only provide fodder for the cattle operation, but also control erosion and encourage the infiltration of rainwater into the soil and from there into the limestone bedrock. After mechanical thinning of Ashe juniper and

scrub Live oak, this area will be managed with prescribed fire. Frequent burns will control the re-growth of woody vegetation and maintain open grasslands. Several old quarries are presently without vegetation and can be used as feeding stations for the cattle. The additional fodder provided will provide extra biomass and nutrients and ultimately help to re-vegetate the bare ground.

Most of this area is mid-succession and transitioning from grassland into shrub land. Since this area is proposed as rangeland for cattle, it will include a mix of both warm and cool season grasses. The restoration strategies to revitalize this rangeland include prescribed burning, rotational cattle grazing, Ashe juniper thinning, and re-seeding the range with native grasses. Hardwood trees will be also be thinned to re-create a savannah landscape with characteristic distances between the clusters of trees (typically 80% of the vegetation of a savanna is herbaceous and 20% of the vegetation is woody).

Proposed plants for this area are primarily grasses, with Little bluestem as the most abundant. Many Upland Savannah grasses will also be appropriate in this area. These grasses include: Side-oats grama, Sand lovegrass, and Green sprangletop. Very few hardwood trees will remain in this area, and those that do will most likely be mature Live oaks. There will be very little understory vegetation in this zone.

Ashe juniper thinning and the removal of grazers are the only treatments that have been applied to date.

4. SHINNERY

This area is located at the base of the valley slopes and occupies an area where the Brackett-Real soil types transition into the Krum clay soil types. Slopes in this area are typically 5-10% and provides an opportunity for a wide range of plant types to grow.

The present plant community is comprised of Scrub Live oak, Persimmon, Flame-leaf sumac, Agarita, and juvenile Live oaks. Little bluestem and King Ranch bluestem are the primary grasses.

The proposed plant communities will be managed as shrub-filled grassland or "shinnery." Sumacs and juvenile Live oaks will be encouraged to provide sufficient habitat for wildlife, especially birds. Live oaks in shrub form, mixed with shrubs will provide food and nesting resources for a wide variety of wildlife. This area will not be burned as frequently to allow the shinnery to remain dense. Scrub live oaks will be cut down occasionally to promote re-growth with a multitude of stems. The trees and shrubs, such as Persimmon, juvenile Ashe juniper and Agarita, will be thinned out as they mature to keep the general height 8 to 10 feet.

Ashe juniper thinning and the removal of grazers are the only treatments that have been applied to date.

5. LOWLAND FOREST

The Lowland Forest plant community stretches out along the valley floor of Honeycut Creek. This area is where the deepest soils, the Krum clays, are found on nearly flat areas—0 to 3% slopes.

Some of the largest and oldest Ashe junipers are found in the present Lowland Forest. Other canopy trees include: Live oak, Post oak, Blackjack oak, Pecan, Cedar elm, and Hackberry. The most common understory plants are Persimmon and Agarita. King Ranch bluestem is the most common grass with occasional patches of Hairy grama, or Side-oats grama.

The proposed plant community for this area is a mixed hardwood forest dominated by a variety of oaks, mainly Lacey oak, Live oak, Post oak, Blackjack oak, and Bur oak. Escarpment black cherries, Rusty black-haw viburnum, and Hop trees will be the primary understory vegetation. Underneath these canopies will grow shade-tolerant grasses such as Canadian wild-rye, and Longtom paspalum.

Management prescriptions for this area will include the removal of secondary-growth Ashe juniper and tree planting. All mature junipers will remain, as these areas are home to our old-growth forest where the juniper has historically grown. Seed collection, propagation, and protection of the desirable trees will take place in this area. Fire frequency will be moderate to control understory growth but without excessive damage to any juvenile trees.

Ashe juniper thinning and the removal of grazers are the only treatments that have been applied to date.

6. WILDFLOWER MEADOW

This plant community occupies gentle, north-facing terrace in between the Valley Slopes and Lowland Forest. The soils here are Krum clays mixed with Doss silty clay on 1-3% slopes. Very few trees are present as these fields were formerly rangeland where considerable efforts rid them of trees, shrubs, and rocks to make them suitable for crops of corn and hay.

The herbaceous cover is comprised of Curly mesquite, Texas wintergrass, Old field three-awn, and a small variety of forbs such as Upright prairie coneflower. There are also low shrubs such as Catclaw acacia, and Prickly pear cactus and the occasional Mesquite. Recently, King Ranch bluestem was planted in these areas to turn this area into rangeland.

The treatment for these proposed wildflower meadows will be to plant them with the Browning Ranch custom wildflower mix. This mix contains sixteen different wildflowers including Texas bluebonnets, Maximilian sunflowers, Indian blankets and Partridge peas and a number of other handsome, local wildflowers.

Management techniques for these wildflower meadows include the removal of all shrubs and succulents, periodic disturbances such as fire and soil aeration, and frequent re-seeding.

To date, the present management has been frequent mowing to eliminate mid and tall grass species and to favor the growth of the low growing herbaceous vegetation. Mechanical shrub removal has been attempted with moderate success.

7. HAY FIELD

The hay field has a similar history as the Wildflower Meadows, with King Ranch bluestem and Texas wintergrass as the dominant species. In the 1940's this field was terraced by the Soil Conservation Service and the result is a washboard-like topography of berms and swales. To create a field of nutritious hay, four existing species will require control and elimination—Upright prairie cone-flower, Mesquite, Prickly pear cactus, and Catclaw acacia.

The hay grown in this field will provide fodder during times when the natural range conditions are insufficient to meet the requirements of the herd. This situation typically occurs in the winter and summer. The hay should be a mix of three to four grass species that are nutritious and palatable throughout their growth cycles such as Green sprangletop, Little bluestem, Side-oats grama, and Canadian wild-rye.

Time, effort, money, and herbicide will be needed to eliminate the aggressively competitive King Ranch bluestem from these fields, and from future hay cuttings. One option would be to allow the King Ranch bluestem to remain in the field, and counterbalance its influence by heavily over-seeding with desirable grass species. This technique is called inter-seeding, where desirable seeds are planted into an existing stand of less desirable vegetation. Selection of the seeding rate, type of seeds sowed and timing of the seeding and harvesting will be important considerations in reducing the amount of King Ranch bluestem in the hay crop. Use of cover crops, plowed into the ground before sowing the desired grass seed to increase biomass, will be explored. "Hay-grazer" is a common sorghum hybrid that has been used successfully. This management strategy should retard the regrowth of King Ranch bluestem, and enable the establishment of the planted grass seed.

Chemical herbicide will be needed to control problematic species. The Catclaw acacia, Prickly pear cactus, and Mesquite can be controlled with basal stem applications to reduce chemical use. The Upright prairie coneflower will require broadcast chemical applications methods in the early spring when the plant is no more than six inches tall. After the two years of broadcast treatments, spot applications should be sufficient to control the coneflower.

To date, this field has experienced one prescribed burn and been mown six times in the

past seven years.

8. TALL GRASS MEADOW

This plant community is located on the east side of the primary waterway and sits on the deep Krum clay soils. Overall, this area is flat and level until it tapers upward into the Valley Slope community.

The present plant community in this area is predominantly Live oak and King Ranch bluestem. Cedar elms, hackberries, and Gum bumelia tower over an understory of Persimmon and Agarita.

The proposed plant community for this area will be a tall grass savannah with 10-30% canopy cover. This is a lowland environment with deep soils that could host several tallgrass species, such as Yellow indiangrass, Eastern gamma grass, Big bluestem, Switchgrass, Canadian wild-rye, and Bushy bluestem.

In order to re-create the savannah-like distribution of vegetation, scrub Live oaks will be thinned. With the large oaks, dead wood will be pruned and the ball moss removed. Any understory species growing within the circle of the canopy in particular, Agarita and Persimmon, will also be removed. Native grasses will be sown in this area. Treatments such as soil aeration and prescribed burning should foster the growth of desirable grasses already in the seed bank.

Ashe juniper thinning and the removal of grazers are the only treatments that have been applied to date.

9. CULTURAL LANDSCAPE

There are two cultural landscapes on the ranch in two very different settings. The Ranch House is located on the edge of the Wildflower Meadow and sits upon the deep Krum clay soil class. The Manager House is located at the top of the Valley Slopes on shallow Brackett-Real soils.

A number of the existing plantings in these areas are common in the natural plant communities found on the ranch: Persimmon, Flame-leaf sumacs, Lacey oaks, Live oaks, Carolina buckthorns, and Cedar elms. Some species planted around the residences are not found elsewhere on the Ranch, including Texas mountain laurel, Desert willow, Cenizo, Anacacho orchid trees, and Retama. All of these plants are native to the western regions of the Texas Hill Country and the eastern regions of the Trans-Pecos.

The residential landscape plays an important role for the pollinators on the Ranch due to the common occurrence of flowering trees, shrubs and wildflowers in these areas. It is desirable both aesthetically and environmentally, to plant more flowering species that will bloom throughout the year. The most appropriate species are those that are

currently found in the residential areas but further research should be done. These plants should look as if they belong in this landscape, be attractive and appropriate to Edwards Plateau ranch house.

The existing plants in each of the residential landscapes should be catalogued by blooming period. This inventory should reveal gaps in blooming times and help pinpoint future species to be added. The vegetation around the residences can be watered if necessary, but all new plants should be appropriate to this climate and tolerant of drought stress.

10. CANYON FOREST

This plant community is found within the tributary canyons that drain the uplands. Some of the steepest slopes on the ranch occur in these gorges and range from 15-20%. The soil profiles in this area are in a constant state of transition since it is the primary passageway for uplands soils moving down into the lowlands environments.

The current plant community in these areas is a mix of Ashe juniper, Live oak, Texas red oak, Escarpment black-cherry, possum-haw holly, Rough-leaf dogwood, Little walnut, and Carolina buckthorn. Persimmon and Agarita dominate the understory plant communities. Sunlight rarely reaches the upper parts of these canyons and there is little herbaceous material on the ground in these areas. The most common grasses in this area are Lindheimer muhly, Bushy bluestem, and Cedar sedge. Spikerush, White-top sedge, Scribner's rosettegrass, Knotgrass, Maidenhair fern, Dewberry, and Frog fruit grow at the edges of the tiny intermittent streams.

This is a rare and interesting plant community with few invasive or weedy natives. Therefore proposed management is an enhancement of these existing stands. In particular, Mexican buckeyes, Carolina buckthorns, and Possum-haw hollies should be encouraged to expand their colonies. Bushy bluestem and Lindheimer muhly are the predominant wetland grasses.

These Canyon Forests are plant refuges. Every attempt should be made to prevent fire from entering the canyons, as these are not historically areas that would experience a significant burn. Habitat enhancement methods such as nesting structures, watering sources, and feeding stations could help perpetuate seed dispersal in these areas. If cattle become an option, they should be excluded from these canyons by permanent fencing.

Cessation of cattle grazing is the only treatment that has been applied to this area.

11. RIPARIAN FOREST

This plant community is located along the primary waterway in the valley bottom. Much of this area stretches out downstream from a perennially flowing spring. There

are three dams downstream from the spring that pool water up year round except during times of extreme drought. Much of the soil is saturated in this area and is predominantly Krum clay with negligible slopes.

The present plant community consists of Ashe juniper, Live oak, Post oak, Pecan, Cedar elm, and Sycamore. Along the banks of the waterway, Button bush, Possum-haw holly, Red mulberry, and juvenile Sycamores are found. Off of the creek bank, Persimmon and Agarita dominate the understory. Grasses such as Bushy bluestem, Longtom paspalum, Canadian wild-rye, and Switchgrass make use of what sunlight they get on the forest floor.

The proposed plant community recognizes that this unique landscape will be used for recreation, mainly nature exploration. Large oak trees will be cleared of understory, dead wood, and ball moss. The pecan grove will be expanded through irrigated tree plantings.

During heavy rain, the flood stage is at is highest in this area. To effectively dissipate the energy of the flood, large hardwood trees are needed and will therefore be the primary management concern. In site-specific locations, the Ashe juniper will either be thinned of secondary growth, or significantly removed to enable the growth of more Pecans, Sycamores, and Cedar elms.

To date, this area has been partially thinned of Ashe juniper, Persimmon, and Agarita. Several large oaks trees have been trimmed of dead wood and ball moss.

12. RIPARIAN MEADOW

This plant community occupies the upper reaches of the primary watershed. Most of the tributary watersheds drain into this area and bring with them nutrients and plant material from the uplands. Krum clay is the soil type on 1-3% slopes.

The existing plant community includes Ashe juniper, Live Oak, Blackjack oak, Post oak, Sycamore, Cedar elms, Little walnuts, and Texas red oak. The understory is made up of Persimmon, Agarita, Rusty black-haw viburnum, and juvenile Sycamore. The area is dominated by grass, in particular, King Ranch bluestem.

This ability for this area to filter runoff from the uplands is very important to the riparian areas downstream. The proposed plant community will therefore focus on mid to tall grass species such as Lindheimer muhly, Eastern gamma grass, Switchgrass, Yellow indiangrass, Big bluestem, and Canadian wild-rye. Desirable woody vegetation along the creek will include Button bush, Little walnut, and Red mulberry.

In order to develop a dense stand of grasses in this area, infrequent burning and seasonal grazing will be needed. Inter-seeding the desired grasses into the existing stand of King Ranch bluestem will likely not be successful. Other techniques that will

stress the King Ranch bluestem without denuding the creek banks, such as scalping the King Ranch bluestem, and then apply an erosion control blanket of mulch, compost, and grass seed, will be considered.

Cessation of cattle grazing is the only treatment that has been applied to this area.

13. FLOODPLAIN MEADOW

This plant community occupies the floodplain terraces within the upper elevations of the primary watershed. Soils in this area are moderately deep Krum clays with 0-3% slopes. Due to the level grasslands in this area, it has been a preferred location for cattle during previous grazing sessions. This area is moistened by the seeps and springs that originate in the tributary canyons that drain into this the Floodplain Meadow.

King Ranch bluestem is the dominate plant within the meadow in its current condition. Large Live oaks, Texas red oaks, and Cedar elm are also found in this area. The understory of this area consists of Rusty black-haw viburnum, Possum-haw holly, Persimmon, and Agarita.

The proposed plant community for this area is a mid-to tallgrass meadow with 10-30% canopy consisting of oak and elms. Grasses will dominate and will include Lindheimer muhly, Eastern gamma grass, Switchgrass, Yellow Indiangrass, Big bluestem, and Canadian wild-rye. Very few Persimmon or Agarita will be left in this area.

Restoration strategies to replace the King Ranch bluestem with desirable mid to tallgrass species is the primary management objective for this area. Techniques will include causing stress to the King Ranch bluestem prior to inter-seeding. A prescribed burn in the growing season is a successful method to reduce the competition from the King Ranch bluestem. Cattle will be used on a limited basis to provide seed transport services.