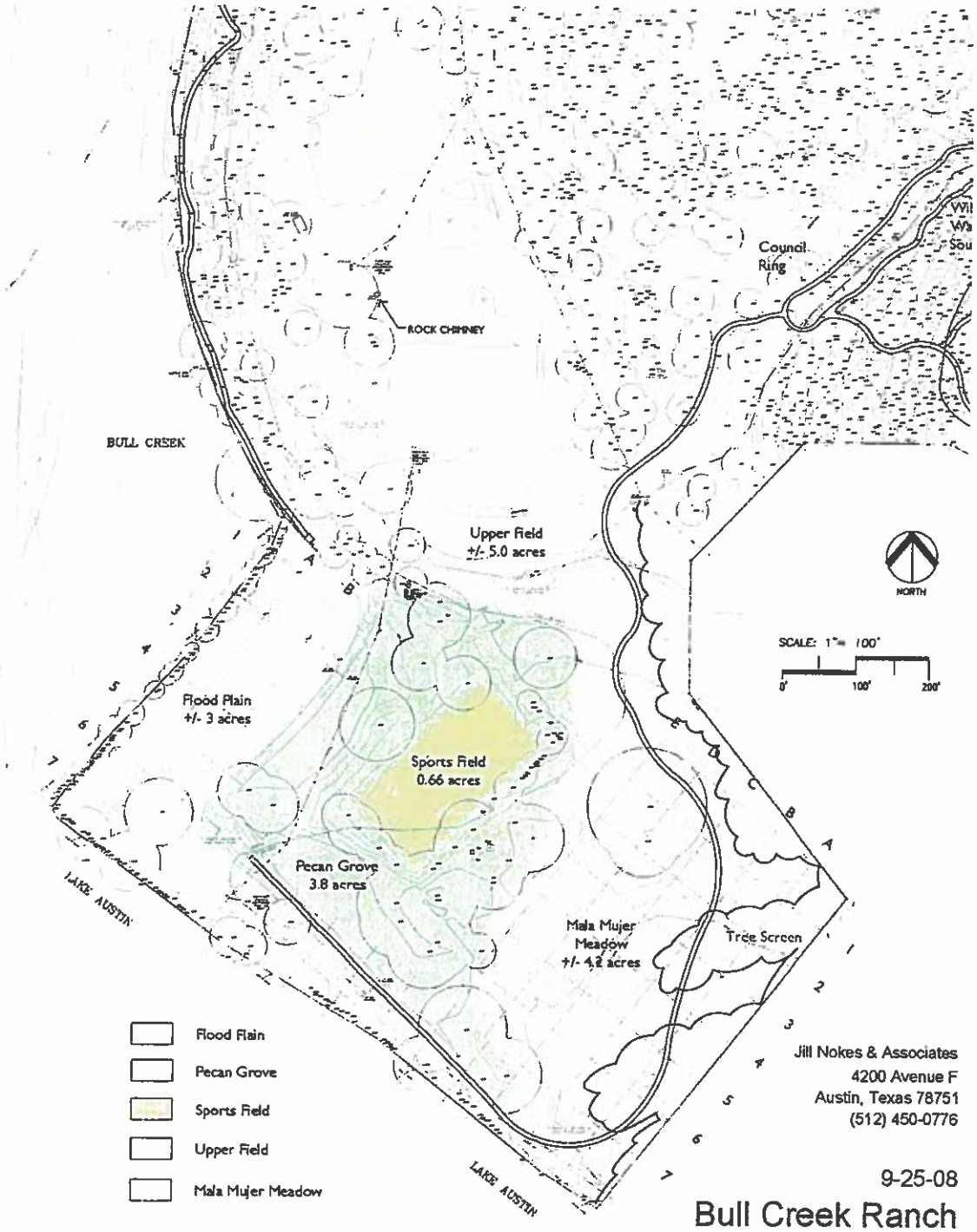
Grassland Enhancement Project
Bull Creek Ranch
Spring 2009 Update
May 26, 2009

Chimney Meadow May 15, 2009
Horsemint and Plains Coreopsis on Display

**Introduction:**

The intention of this report is to record observations on the progress of the grassland rehabilitation project at Bull Creek Ranch during the spring of 2009. These notes follow the previous proposal outline, and the report on planting methods during November of 2008.




Jill Nokes & Associates
4200 Avenue F
Austin, Texas 78751
(512) 450-0776

9-25-08

# Bull Creek Ranch

## Prairie Enhancement Plan

**Winter 2008-2009 Sowing Report:**

As noted in the November report, plowing, disking, and sowing of the Chimney Meadow and the KR Field (see map) was completed by the end of October 2008. Although this sowing time was later in the season than is typically considered optimum for wildflowers, our delay likely had little negative consequences because severe drought continued through the fall and winter, and normal optimum conditions for germination would not have been present earlier in the season. By November 4th, temporary above-ground irrigation was providing regular watering to the Chimney Meadow and the KR Field. By November 12, seeding of both the Upper and Lower Mala Mujer Meadows with cool-season cover crops was complete, and irrigation was operating as well. Once the area became uniformly dampened, irrigation was set to run every 10 days.

The Mala Mujer Meadows were sown in two cover crops: yucchi arrow-leaf clover in the upper MM Meadow, and cereal rye in the lower MM Meadow.

**KR Field: Germination Report:**

By December first the KR Field began to display a lush fringe of winter grasses, thanks to the irrigation. Despite the visual appeal, this was not an encouraging sign, as our seed mix had not included a significant amount of cool season grasses (but did include plenty of winter-germinating wildflowers). Although a few wildflowers such as bluebonnets, Englemann daisy, phlox, standing cypress, and others were beginning to appear, eventually they were overwhelmed by Western wheatgrass (*Elymus smithii*), wild oats (*Avena fatua*), perennial rye (*Lolium perenne*), and most of all, rescue brome (*Bromus catharticus*). Although the fall sowing in the KR field was composed of the same seed mix as for the Chimney Meadow, (see list), the appearance of these winter grasses was much heavier and dense in the KR Field. The presence of many of these exotic grasses was due to both the favorable conditions provided by irrigation, and the residual effects of many years of contaminated hay being left in the field for the previous owner's cow-calf operation which consistently had high numbers of animals residing on the limited range. Essentially, these open areas in the flood plain appeared to be used as low-tech feed lot.

By early March, the winter grasses were 6-12" tall in the KR Field. We made an attempt on March 12 to cut off the green fruiting heads in one half of the area. We cut only the tops of the grasses, as some wildflowers were beginning to appear and we did not want to remove them. However, this proved to be a waste of time, as the grasses continued to grow through the spring only to set seed later.

KR Field May 2008: King Ranch bluestem and coneflower dominate the display
Drying cool-season grasses not as noticeable

brome, wild oats, and western wheat grass take over KR Field March 2009

KR Field May 2009: cool season grasses hide wildflowers

## Chimney Meadow: Germination Report

One significant difference between the Chimney Meadow and the KR Field was the fact that a thin layer (less than 1") of Dillo-dirt™ (composted sewage-sludge from the City of Austin) had been spread throughout the Chimney Meadow in the summer of 2008, followed by a distribution of the huge stockpile of juniper mulch generated by the woodland clearing conducted earlier that year. In some parts of the meadow, the mulch lay as deep as 7 inches. During the summer of 2008, the Bermuda grass and silver-leaf nightshade (*Solanum eleagnifolium)* really thrived in the compost/mulch layer in the Chimney Meadow, staying green and lush despite the drought. By spring of 2009, the soil surface level of the Chimney Meadow was significantly darker and more friable, a sign that the combination of Dillo-dirt™ and mulch had provided more organic material to the soil as it began to decay. Compared to layers of juniper mulch in other areas of the ranch, it was obvious that the Dillo-dirt had markedly hastened absorption of the mulch. As spring progressed, our worries about those pockets in the field where the mulch had remained thick did not seem to have caused germination to fail, or to result in thin spots. Growth over all seemed uniform.

Chimney Meadow May 2008: thick mulch throughout and thick mat of Western ragweed on left

Later in the winter we observed that although the Chimney Meadow was irrigated in the same intervals as the KR Field, the cool season grasses did not appear in as dense stands as the KR Field just across the road. We can only speculate as to whether the soil micro-environment shifted in the Chimney Meadow due to the application of Dillo-dirt and mulch, and thus "burned up" the annual seeds, or if some other mechanism of nutrients, seed-bank, and residual plants were present. Prior to sowing, soil tests revealed that the Chimney Meadow registered high to very high levels of phosphorous, potassium and sulfur, and high levels of magnesium and nitrate. In contrast, the KR meadow registered very low levels of nitrate, phosphorus and sodium, and high levels of calcium, potassium and magnesium. If we had chosen to plant an improved grazing hay mix, we would have had to fertilize with 15 lbs/acre of nitrate and 40 lbs/acre of phosphorous in the KR Field, whereas, no additional soil amendments were recommended for the Chimney Meadow. What effect these differences in soil nutrients had on germination of both introduced seed and the residual seed bank is not known.

Buff Creek Ranch

Upper Field - Wildflower Seed Costs
Project acreage 5

| | | Native American | | | Banner 10 lb mix | | Turner Seed | | | | | Project Order | Order |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $/lb | Rec. seed lbs./ac | Prorate lbs./ac | $/lb | Rec. seed lbs./ac | $/lb | Rec. seed lbs./ac | Prorate lbs./ac | Rec. seed $/ac | Prorate $/ac | (lbs) | ($) |
| Gaillardia | Gaillardia pulchella | $85.00 | | | | | $10.00 | 8 | 10.00 | $138.00 | $160.00 | 80.00 | $800.00 |
| Goldenwave | Coreopsis tinctoria | $49.00 | 1 | 1.13 | | | | | | $349.00 | $55.47 | 3.66 | $237.36 |
| Plains Coreopsis | Coreopsis lanceolata | $18.00 | | | | | $18.00 | 3 | 3.75 | $24.00 | $8.06 | 8.77 | $45.26 |
| Lemon Mint | Monarda citriodora | $20.00 | 3 | | | | $18.00 | 3 | 3.16 | $84.00 | $31.70 | 8.66 | $158.48 |
| Bergamot | Monarda fistulosa | | | | | | | | | | | | |
| Huisache Daisy | Amblyolepis setigera | $39.00 | | | | | $16.00 | 3 | 1.89 | $85.00 | $32.28 | 8.43 | $352.94 |
| Partridge Pea | Cassia fasciculata | $24.00 | | | $12.00 | | $10.00 | 154 | 5.06 | $134.00 | $50.53 | 25.28 | $252.83 |
| Maximilian Sunflower | Helianthus maximiliani | $45.00 | 8 | | $27.00 | 4 | $22.00 | 3 | 1.93 | $66.00 | $24.91 | 5.65 | $124.53 |
| Illinois Bundleflower seed | Desmanthus illinoensis | $24.00 | 25 | | | | $15.00 | 110 | 8.38 | $204.00 | $76.98 | 25.48 | $384.93 |
| Blue Wild Indigo | Baptisia australis | $59.00 | 6 | | | | $45.00 | 6 | 2.26 | $270.00 | $101.89 | 31.32 | $569.43 |
| Purple Prairie Clover | Dalea purpurea | $33.00 | 9 | 3.91 | | | $14.00 | 3 | | $180.00 | $49.91 | 7.95 | $249.06 |
| | | | 7 | 2.64 | | | | 54 | 27.36 | $1,269.00 | $550.53 | 142.43 | $2,952.83 |
| | | Total Rec. Seed (lbs) | | 61 | | | | | | | | | |
| | | Order (lbs/ac) | | 30 | | | | | | | | | |
| | | Prorate multiplier | | 1.38 | | | | | | | | | |

Upper Field - Native Grass Seed Costs
Project acreage 5

| | | Native American | | | Banner 10 lb mix | | Turner Seed | | | | | Project Order | Order |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | $/lb | Rec. seed lbs./ac | Prorate lbs./ac | $/lb | Rec. seed lbs./ac | $/lb | Rec. seed lbs./ac | Prorate lbs./ac | Rec. seed $/ac | Prorate $/ac | (lbs) | ($) |
| Western Alfa | Early Successionals | $39.00 | 10 | 10 | | | | | | $350.00 | $390.00 | 50 | $1,950.00 |
| Prairie Wild Rye | Elymus canadensis | $15.00 | 10 | 2.50 | | | | | | $150.00 | $37.50 | 12.5 | $187.50 |
| Blue Grama | Bouteloua gracilis | $12.85 | 10 | 2.86 | | | $7.00 | 13 | | $128.50 | $82.18 | 22.9 | $163.65 |
| Big Bluestem - Earl | Andropogon gerardii | | | | | | $12.00 | 6 | 1.5 | $72.00 | $18.00 | 7.5 | $90.00 |
| Indian Grass - Lometa | Sorghastrum nutans | | | | | | $12.00 | 43 | 1.125 | $54.00 | $13.50 | 5.625 | $67.50 |
| Little Bluestem - Camby | Schizachyrium scoparium | | | | | | $9.00 | 45 | 3.325 | $405.00 | $101.13 | 5.625 | $50.63 |
| Side Oats Grama - Haskell | Bouteloua curtipendula | $12.51 | 7 | 1.75 | $12.00 | 45 | | | | $122.71 | $30.66 | 8.75 | $133.33 |
| | | | 33 | 16.73 | | 45 | | 19 | 3.75 | $957.71 | $331.53 | 103.8 | $2,659.64 |
| | | Total Rec. Seed (lbs) | | 62 | | | | | | | | | |
| | | Order (lbs/ac) | | 30 | | | | | | | | | |
| | | Prorate multiplier | | 1.25 | | | | | | | | | |

Jill Nokes + Associates 9/25/2008

Seed List for fall 2008 planting in KR Field and Chimney Meadow

By March 25th, bluebonnets and phlox were starting to show throughout the Chimney Meadow, and in noticeable, though not as heavy numbers, in the KR Field.

While cool season grasses were the main pest in the KR Field, Malta star-thistle (*Centaurea melitensis*), an Old-World noxious weed commonly transported in hay and feed, began to dominate certain areas of the Chimney Meadow, particularly around the edges near the roads. Much of the Malta star-thistle was removed by hand by mid-May, before it could set seed. On one edge, a large mat of Western ragweed (*Ambrosia psilostachya*) was also out-competing germination, even though a portion of it was removed last fall. The large colony of western ragweed spreads by interconnected roots.

Gaillardia follows phlox and bluebonnets in Chimney Meadow in April

Malta star-thistle (*Centaurea melitensis)* takes over the edges of the Chimney Meadow Coneflower, though disked under, makes a comeback in lesser numbers

By February, with germination established, cooler temperatures and some rainfall, we reduced the irrigation cycle to once every two weeks.

**Mala Mujer Meadows:**

In the upper Mala Mujer Meadow, germination of yucchi clover was poor and uneven. Part of this could be due to the difficulty of sowing it uniformly. Our initial attempts to use a broadcast spreader tended to dump the seed too heavily in some areas. We abandoned that method and sowed the rest by hand-broadcasting, but overall this field had spotty distribution. Strangely too, the clover was chlorotic and anemic, and never seemed to take off. Residual bur clover, however, was robust and dark green.

In the lower Mala Mujer Meadow, the cereal rye began to emerge in early December, and cover was good and fairly uniform. It seemed to thrive despite the fact that soil testing in this area revealed extremely low nitrate and phosphorous levels.

Chlorotic yucchi clover in foreground, dense cereal rye in background

By March 25, the cover crops of yucchi clover and cereal rye had been disked under to prepare the way for the next round of sowing in the Mala Mujer Meadows.

Our strategy for this round of sowing was to direct sow the upper Mala Mujer Meadow in the same mix of native grass seed as used in the Chimney Meadow and KR Fields. For an area of roughly two and a half acres, we handbroacast the following on April 15, 20009

6 lbs of Green Sprangletop
8 lbs of Yellow Indian grass ('Lometa')
8 lbs. of little bluestem
9 lbs of Haskell side oats grama
7 lbs. of "Midway Mix" (from Native American Seed)

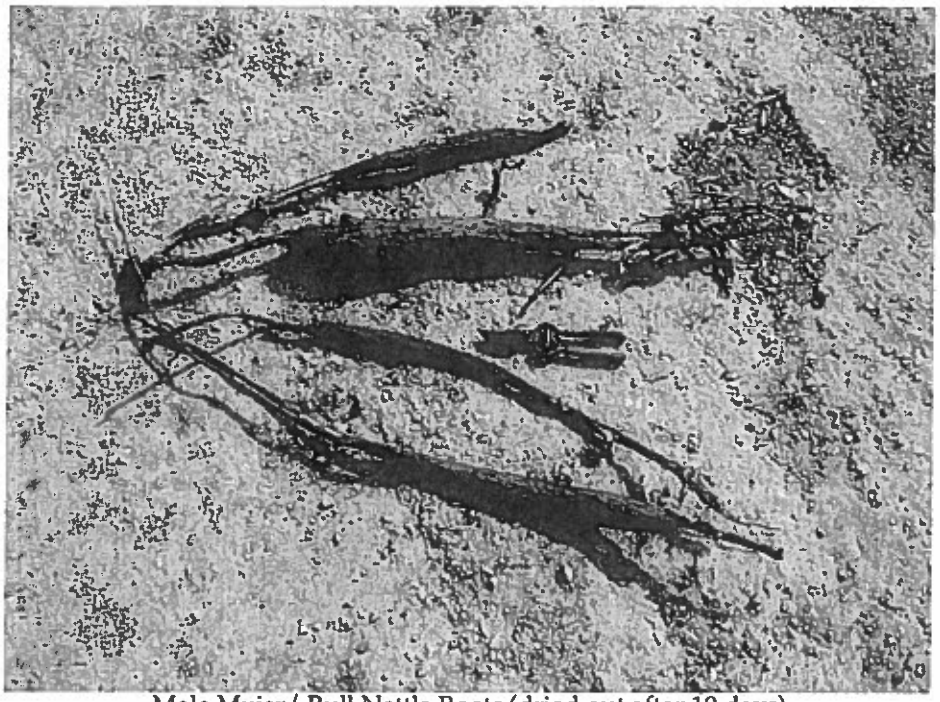
| | |
|---|---|
| buffalo grass | purple three-awn |
| curly mesquite | red grama |
| green sprangletop | side oats grama |

hairy tridens
Hall's panicum
seep muhly
slim tridens
Texas grama
Texas wintergrass

In the in the lower MM meadow, we planted a summer cover crop of Peredovick black oil sunflowers. Initially we had considered using a hybrid form of sorghum-sudan ("Haymaster") as our summer cover crop, but soil tests had revealed that we would need to apply ammonium nitrate to insure a good crop. Our reluctance to heavily fertilize so close to the shores of Lake Austin, along with our understanding that fertilizer would tend to favor the weeds over our eventual stand of native grasses, led us to choose sunflowers over the improved sorghum.

We wanted to learn if tall sunflowers would help prepare this field for the eventual establishment of native grasses by shading out the persistent noxious weeds (Bermuda grass, cockle-bur, trompillo, horsenettle, doveweed and others), while also providing food for birds. Sunflowers also have an alleopathic property that can inhibit plants around them. By planting sunflowers we hoped to suppress the competing low-value early succession plants, so that fall-sown native grass seed would have a more receptive situation.

Mala Mujer/Bull Nettle (*Cnidoscolus texanus*)



Mala Mujer/ Bull Nettle Roots (dried out after 10 days)

Disking under the winter cover crops also cut off the emerging stalks of our old nemesis, bull nettle or mala mujer (*Cnidoscolus texanus*). But by March 21st, they were starting to appear again. When we attempted to hand-dig a few plants in the grass verge surrounding the field, we discovered that the roots were in fact large, fleshy and inter-connected tubers up to 4 feet long, and six feet deep. We realized that no amount of plowing or over-planting could out-compete such vicious survivors. A peek across the fence at the hammered Mueller pasture gave us a hint of the density of mala mujer nettles that could be expected on our side, many of which had been tucked away from view among the other weeds and Johnson grass of last summer.

Bull nettles in neighbor's pasture March 2009

Mala Mujer Meadow June 2008: grasses hide the nettles

The spring calendar dictated that we sow the sunflowers without delay, although we knew we would have to spot-treat the nettles when they re-emerged. Sunflower sowing was complete by the first week of April. Seeds were hand-sowed at 7 inch intervals in rows approximately 36 inches apart, and germination was strong. Plants

had their second set of leaves by April 30th. Sunflowers were thinned to 15 inches apart in the rows by May 5th.

preparing to plant sunflowers the first week of April 2009

sunflowers germinating in lower MM meadow April 15, 2009

We pressed the seed into the roughly disked areas by driving over it several times with a bobcat. Some areas where old hay was deep were hand-raked. By May 21st, germination was well on its way. However, herbicide drift applied by a careless technician left large dead zones around the nettles, so the over all coverage will be spotty.

Upper Mala Mujer Meadow:grasses germinating but with dead zones due to over-spray

**Mala Mujer Nettle Eradication Program:**

On May 5, we began our first round of herbicide treatment of nettles. Initially we had placed an irrigation flag by each emerging nettle, but gave this up after using over 200 flags. Although the sunflowers had germinated, they were still small enough to make spotting the nettles fairly simple.

First round of spraying. Flags mark some nettles.

We contacted Jerry Pulley of the Austin Tree Clinic for assistance, for we knew we would have to use a licensed herbicide to be effective. We were also told that herbicide would only be effective as the nettles were emerging and setting flowers.

Due to the proximity of Lake Austin, we wanted to be careful about the use of herbicide. We used an aquatic formula of Imazapyr E Pro 2, and VM, a herbicide formulated for use near water sources, that also goes by the brand name of "Habitat". This was applied in a 5% solution, stained with a blue dye or tracer, intended to make it more obvious as to which plants had been treated in a large field. A technician walked up and down the rows in the field, spot-treating each nettle. Unfortunately, due to carelessness and perhaps the setting of the sprayer that allowed a finer mist, plants near the nettles were also affected. In the second round of treatment which targeted both missed plants and newly emerging ones, a "cone" was attached to the sprayer and the droplet size was adjusted so that little or no spray came in contact with nearby plants.

The label on Habitat advises: "Chlorosis and tissue necrosis may not be apparent in some plant species until two weeks after application. Complete kill of plants may not occur for several weeks." This was borne out in our observation. For the first week, the nettles showed no sign of distress or yellowing, but by the second week, we began to notice yellowing and curling of the leaves, and die back.

Mala Mujer nettles two weeks after herbicide treatment

We assume that die-back will continue for the next month or so. We anticipate that the herbicide will be drawn down into the robust tubers and kill many of the plants. Still, nettles continued to emerge after treatment, and it was also impossible to catch every plant.

Jerry Pulley did not feel it was advantageous to have follow- up treatment, due to both the slow systemic absorption, and also the limit of the herbicide's effectiveness to the spring and flowering season. What we hope is for a minimum 50% die off, and we expect to follow up next spring with a second round of treatment. To avoid cutting and thus distributing some of the nettle roots which may lead to more sprouting of new plants, we will not disk this area again, but instead, shallowly scarify the soil after the sunflowers are cut down and before we sow in the fall.

upper MM meadow with germinating grasses and dead zones. sunflower field in background

**June 2009 Observations:**

By June first, the black oil sunflowers were beginning to form flower heads on multi-side branches. At this time, the sunflowers did not seem to inhibit the growth of the weeds below. We decided to continue to irrigate until the flower heads have set seed, and then let the field naturally dry out and discover if under normal seasonal drought conditions, the shade from the sunflowers and the oil from fallen seeds will impact the weeds.

Our next task will be to determine the best time for high-shredding the KR Field and the Chimney Meadow so as to make way for the emerging grass seedlings. Normal succession in new fields follows a pattern of heavy wildflowers and forbs being the first to appear, but gradually diminishing as grasses become established. So if we are successful in establishing a robust and varied stand of native grasses, we will see fewer wildflowers over time. The status of our grasses will be apparent after the third season.

We will have to decide in the fall if we need to over-seed any areas with more wildflowers. At the moment I am inclined to cut off irrigation in the fall entirely and see what grasses emerge that can out pace the cool season grasses that thrive in moister conditions, and also what wildflowers appear on their own next year. We may harvest some of the wildflower mulch from the Chimney Meadow and re-distribute it in areas that were not as successful.

During this first season after fall sowing, a handful of wildflowers out of the total species list dominated the display. These were: gaillardia or firewheel (*Gaillardia pulchella)*, Plains coreopsis (*Coreopsis tinctoria*), Golden-wave (*Coreopsis basalis*),

bluebonnets (*Lupinus texensis*), Lemon mint or horse mint (*Monarda citriodora*), and Drummond phlox (*Phlox drummondii*). We intentionally over-seeded extra gaillardia and horsemint, knowing them to be staunch competitors of noxious weeds, so their strong showing was to be expected. In early spring we saw evidence of large numbers of standing cypress seedlings, but they were either shaded or crowded out, or perhaps will have their stronger showing next year as a biennial rather than annual flower, as they sometimes due according to field conditions. It is likely that the missing wildflower species will make their appearance in subsequent seasons, unless the fields completely revert to the aggressive weedy species we are trying to eradicate.

Finally, early next spring we can evaluate whether over-seeding in certain area with more native grasses is necessary and will hasten a stable establishment of perennial species.

**Summary:**

In summary, the results of our grassland rehabilitation efforts continue to unfold, with a few certain short-term outcomes:

- outstanding first year wildflower display in Chimney Meadow
- substantial but less visible wildflower display in KR Meadow, but also less presence of flowering KR bluestem in the spring
- good grass germination in Upper Mala Mujer meadow, but with gaps due to herbicide drift. Ultimate numbers and outcome still to be determined.
- sunflowers proved easy to grow. May be more effective in the future, and certainly easier to just broadcast the seed rather than trying to keep in rows.
- if strong wildflower displays are desired every year, over-seeding in some areas may be necessary, as native grasses take hold.
- without a doubt, there is a marked increase in bird and wildlife activity in all fields. Even wild turkey were spotted this spring!

# Permit to Construct Access Driveway Facilities on Highway Right of Way

Form 1058
(Rev. 9/2004)
(GSD-EPC)



TO: BULL CREEK MANAGEMENT
4925 RM 2222
AUSTIN , TX 78731

Highway: RM2222
Control: 2100-01
Phone: (512) 433-6363

Permit #: 01t - t0 - 32385 - DP
Section:
35216

The Texas Department of Transportation, hereinafter called the State, hereby authorizes **BULL CREEK MANAGEMENT** hereinafter called the Permitee, to ☐ construct / ☒ reconstruct a **24' PRIVATE RESIDENTIAL** (residential, conveience store, retail mall, farm, etc.) access driveway on the highway right of way abutting Highway number **RM2222** in **Travis** County, located **4909 RM 2222, SOUTH ROW, LAT/LON 30.34978 -097.78549, TRM 534 - 9,027' or TRM 532 + 1,534'**

Subject to the following:

1. The Permitee is responsible for all costs associated with the construction of this access driveway.
2. Design of facilities shall be as follows and/or as shown on sketch and is subject to conditions stated below:
   **RE-CONSTRUCT EXISTING 12' ACCESS TO A 24' PRIVATE RESIDENTIAL ACCESS DRIVEWAY. DRIVE MUST PROVIDE 6:1 SIDE SLOPES WITHIN TxDOT RIGHT OF WAY. A CULVERT IS NOT REQUIRED. RADII 25'.**

   ALL construction and materials shall be subject to inspection and approved by the State.
3. Maintenance of facilities constructed hereunder shall be the responsibility of the Permitee, and the State reserves the right to require any changes, maintenance or repairs as may be necessary to provide protection of life or property on or adjacent to the highway. Changes in design will be made only with approval of the State.
4. The Permitee shall hold harmless the State and its duly appointed agents and employees against any action for personal injury or property damage sustained by reason of the exercise of this permit.
5. Except for regulatory and guide signs at county roads and city streets, the Permitee shall not erect any sign on or extending over any portion of the highway right of way, and vehicle service fixtures such as fuel pumps, vendor stands, or tanks shall be located at least 3.6 meters (12 feet) from the right of way line to ensure that any vehicle services from these fixtures will be off the highway right of way.
6. The State reserves the right to require a new access driveway permit in the event of a land use change or change in driveway traffic volume or vehicle types.
7. This permit will become null and void if the above-referenced driveway facilities are not constructed within six (6) months from the issuance date of this permit.
8. The Permitee will contact the State's representative, **SAM HOLGUIN** , telephone **(512) 331-5361** , at least twenty-four (24) hours prior to beginning the work authorized by this permit.

Tuesday, March 30, 2010
Date of Issuance

Gary Morris
Texas Department of Transportation
Authorized Representative

The undersigned hereby agrees to comply with the terms and conditions set forth in this permit for construction of an access driveway on the highway right-of-way.

**TRAFFIC CONTROL ACCORDING TO TXMUTCD MUST BE IN PLACE PRIOR TO WORKING IN THE TXDOT ROW.**

Signed: **ORIGINAL SIGNED BY APPLICANT**
(Property owner or owner's representitive)

Texas Department of Transportation

Form 1058
(Rev. 9/2004)
(GSD-EPC)
Page 1 of 2

# Permit to Construct Access Driveway Facilities on Highway Right of Way

To: Bull Creek Management (Name) Hwy. RM 2222 Permit No. _____

4925 Ranch Road 2222 (Address) Control C 2100 - 1 - 3 Section _____

Austin, TX 78731 (City, State, Zip) (512) 433-6363 (Phone No.)

The Texas Department of Transportation, hereinafter called the State, hereby authorizes Bull Creek Management, hereinafter called the Permittee, to ☐ construct / ☒ reconstruct a RESIDENTIAL (residential, convenience store, retail mall, farm, etc.) access driveway on the highway right of way abutting highway number RM 2222 in Travis County, located between Station 331+80.90 and Station 340+91.00.

Subject to the following:

1. The Permittee is responsible for all costs associated with the construction of this access driveway.
2. Design of facilities shall be as follows and/or as shown on sketch and is subject to conditions stated below:
   *See the attached Exhibits for specific access information*

   All construction and materials shall be subject to inspection and approved by the State.
3. Maintenance of facilities constructed hereunder shall be the responsibility of the Permittee, and the State reserves the right to require any changes, maintenance or repairs as may be necessary to provide protection of life or property on or adjacent to the highway. Changes in design will be made only with approval of the State.
4. The Permittee shall hold harmless the State and its duly appointed agents and employees against any action for personal injury or property damage sustained by reason of the exercise of this permit.
5. Except for regulatory and guide signs at county roads and city streets, the Permittee shall not erect any sign on or extending over any portion of the highway right of way, and vehicle service fixtures such as fuel pumps, vendor stands, or tanks shall be located at least 12 feet from the right of way line to ensure that any vehicle services from these fixtures will be off the highway right of way.
6. The State reserves the right to require a new access driveway permit in the event of a land use change or change in driveway traffic volume or vehicle types.
7. This permit will become null and void if the above-referenced driveway facilities are not constructed within six (6) months from the issuance date of this permit.
8. The Permittee will contact the State's representative _____ telephone, (____) _____, at least twenty-four (24) hours prior to beginning the work authorized by this permit.

Texas Department of Transportation

_____ Date of issuance

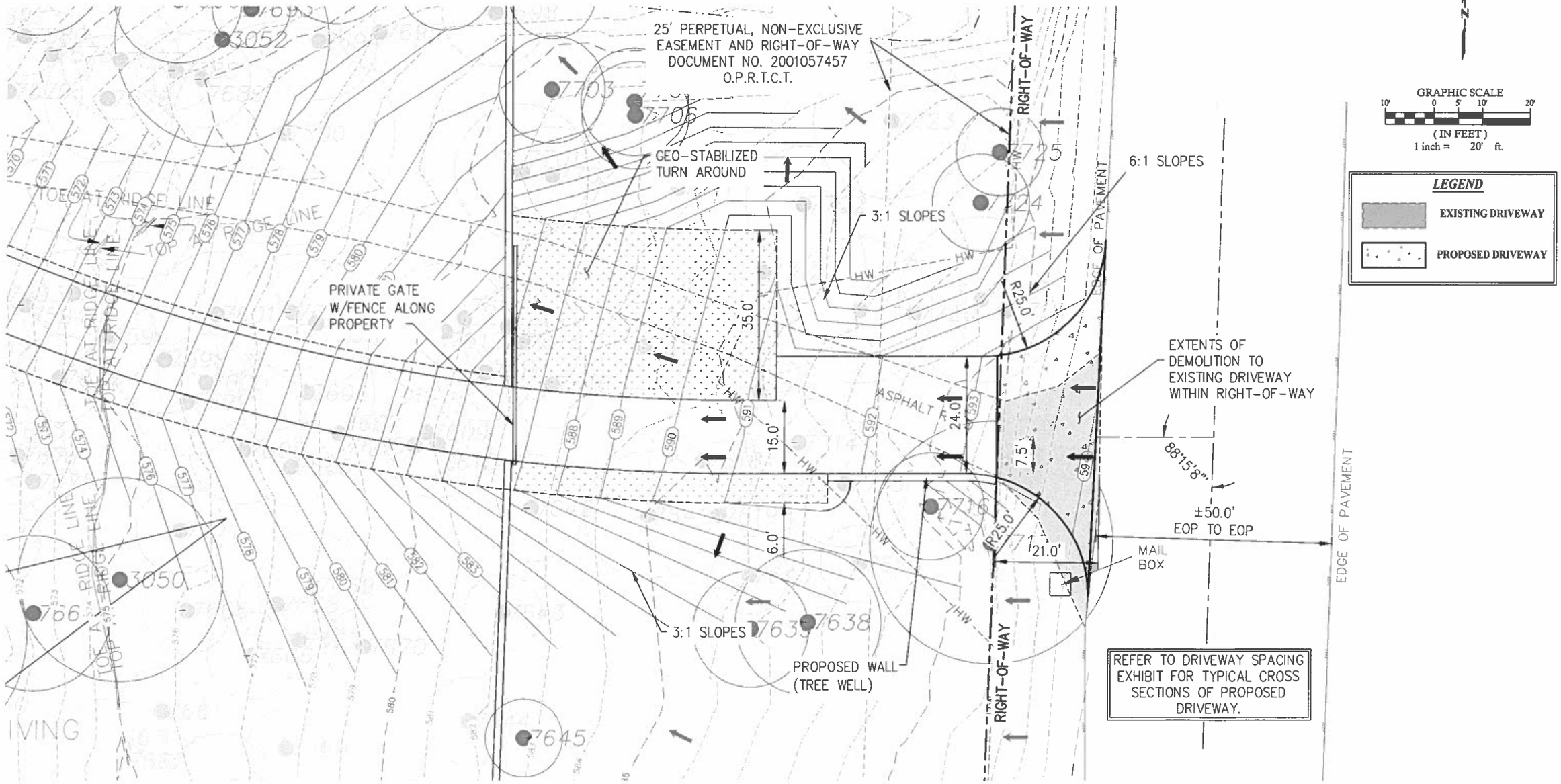
_____ Authorized Representative

The undersigned hereby agrees to comply with the terms and conditions set forth in this permit for construction of an access driveway on the highway right of way.

Date: 1-26-10

Signed: Randy Hagman
(Property owner or owner's representative)

# BULL CREEK RANCH

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GRAPHIC SCALE
10' 0 5' 10' 20'
( IN FEET )
1 inch = 20' ft.

**LEGEND**

EXISTING DRIVEWAY

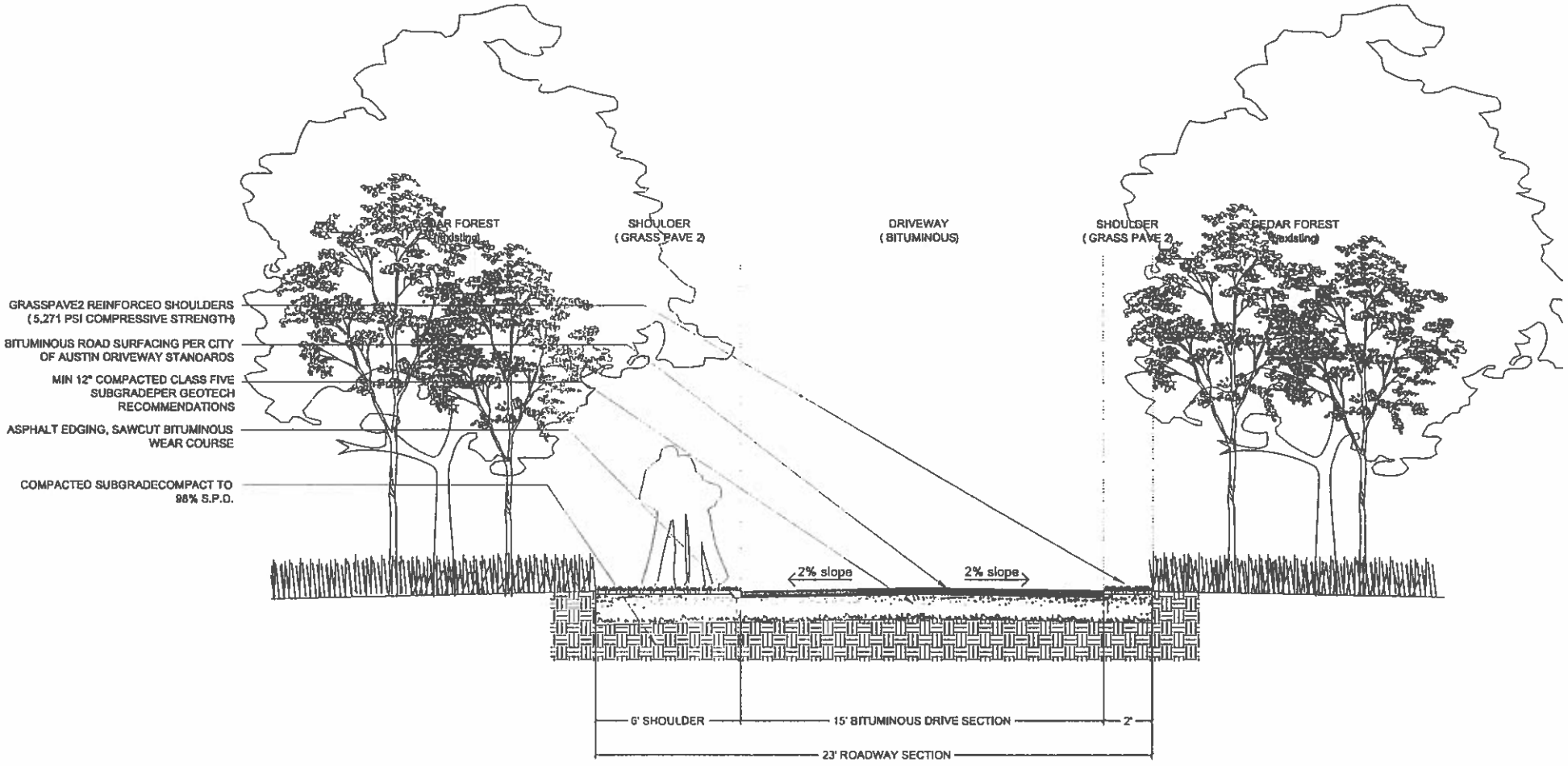
PROPOSED DRIVEWAY

# DRIVEWAY DIMENSION EXHIBIT


Cunningham | Allen, Inc.
Engineers • Surveyors
Tel: (512) 327-2946
www.cunningham-allen.com
TBPE REG. NO. F-284




Drawing Path: E:\4540.01_Drawings\Exhibits\014-Driveway Dimension Plan.dwg Plotted By: Paul Barnes Date: 2/23/2010 7:43:43 AM Layout: C1=8.5x36




1 BITUMINOUS DRIVEWAY SECTION - TYP.

SCALE: 1/4"=1'-0"



EXHIBIT M DRIVEWAY DETAILS | 1/4" = 1'-0" 03-31-2010

**MEMORANDUM**

**TO:** Mary Gay Maxwell, Chairperson and Members of the Environmental Board

**FROM:** Jim Dymkowski, Environmental Review Specialist Senior Planning and Development Review Department

**DATE:** June 2, 2010

**SUBJECT:** Summary of Environmental Exceptions Requested by the Bull Creek PUD - C814-2009-0139

This summary is being provided to the Environmental Board as a supplement to the overall Planning and Development Review recommendations for the Bull Creek PUD. The following is a description of the environmental aspects and considerations that have been addressed during Environmental Review of the proposed PUD, including proposed exceptions to the environmental code requirements that have been requested. These recommendations are to be considered in the overall context of the Planning and Development Review recommendations for this project.

**Description of Project**

The Bull Creek PUD proposes one single family residence with accessory structures located on 53.8741 acres of land in the City's Full Purpose jurisdiction. Additional structures with proposed accessory uses will include: a guest house, family recreation building, security/storage building, barn, skyspace art piece, cabana, and pool. In addition, an olive orchard, gardens, multiple deck areas, terraces, boardwalks, a constructed habitat for migratory birds, native prairie and forest restoration areas, and pedestrian trails are proposed on the site. Currently there is one single family structure, a stone terrace area along Bull Creek, swimming area, and three boat docks all to remain. The project is located on the south side of RM 2222, approximately one mile east of the intersection of Capitol of Texas Highway, (360) and RM 2222, in the Drinking Water Protection Zone.

**Description of Property**

The proposed Bull Creek PUD is located in the Bull Creek and Lake Austin Watersheds; both are classified as water supply suburban. The PUD includes six tracts of land with only one currently developed with a single family structure and pool located on it. The remaining five tracts are relatively undeveloped with the exception of two boat docks and an existing swim area boardwalk along the

Bull Creek outfall into Lake Austin. Bull Creek is adjacent to the west portion of the property, while Lake Austin is adjacent to the south portion of the property.

Prior to the submittal of the Bull Creek PUD, a 19 lot preliminary subdivision plat and a four dwelling unit condominium zoning site plan had been approved on two of the tracts. Three existing land status determinations would have allowed three residences on the remaining respective lots. In addition to the existing single family residence, all of these prior entitlements would have allowed 27 total residences on the site. The subdivision plat has been withdrawn and the condominium zoning site plan has been deleted. The Bull Creek PUD will consist of one single family residence with accessory structures.

**Existing Topography/Soil Characteristics/Vegetation**

The site elevation ranges from 492 to 600 feet above mean sea level. The topography is characterized by moderate sloping hillside mainly from east to west across the property. The topography flattens as there is a transition from the hillside hardwood area into the current grassland riparian area and wetland fringe along Lake Austin. There are two areas of steeper slopes up to and greater than 35%. One is along the Bull Creek side of the project where the two rimrock CEF features are located while the other is within the center of the property and stretches to the south property line.

The soils on the property are predominantly clay loam in nature with only one of the five soils, the Lincoln soils as loamy sand. The remaining four soils include: Bergstrom soils and Urban land, Brackett soils and Urban land, Urban land and Brackett soils, and Volente soils and urban land.

The TPWD lists this project site as located in the Live oak-Ashe juniper woods vegetation region. For many years now, a large portion of the approximately 53 acres has sat dormant allowing the Ashe juniper to dominate the over story vegetation. The property has also been used as rangeland for livestock. There is a mixed section of native/non-native riparian grassland along the west side of the property adjacent to Lake Austin, with a strip of riparian woodland, primarily Bald Cypress and some Pecan directly along Lake Austin.

**Critical Environmental Features/Endangered Species**

There are 3 wetland and 2 geological critical environmental features that have been identified within the project boundaries. All of the features are proposed for preservation. Fifty foot buffers are proposed for the two rimrock CEF's along the north side of the property. A full 150 foot buffer is proposed around the emergent wetland CEF in the southwest corner of the site adjacent to the proposed migratory bird habitat. No additional CEF buffers are proposed along the two sections of Cypress fringe wetland bordering Lake Austin and mouth of Bull Creek sections of the site. These areas are already protected within the CWQZ setback for Lake Austin.

**Water/Wastewater**

Water service is currently provided by the City of Austin. There is no wastewater services proposed form the City, therefore the site will be served by septic systems.

**Environmental Exception Request**

The eight environmental exceptions requested for this project are:

- **LDC 25-8-64 (Impervious Cover Calculations)**
  Allow impervious cover to be calculated over the entire property and not on a lot by lot basis. This proposed exemption is justified as the applicant has agreed to limit the proposed impervious cover for the PUD to 14% of the net site area of the entire property. Staff has determined that the proposal does not increase the overall impervious cover for the project and results in less impervious cover than could be developed with current City code. Also, both previously approved developments for this property were both proposed at greater than 20% allowable impervious cover.

- **LDC 25-8-261(C) (Critical Water Quality Zone Development – Along Lake Travis, Lake Austin, or Town Lake)**
  Allow a proposed migratory bird habitat, birdbath facilities, decks, levees, trails, sidewalks, boardwalks, remnant foundation, terraces, skyspace structure, security equipment, wiring, swimming area, and related facilities to be located within the CWQZ, as shown in Exhibit C. Also, allows the remodel of the existing swimming area, boat docks, walkways, and terraces. The proposed exception is justified as many of those items are existing and were constructed prior to the City's adoption of environmental regulations. Also, a majority of what is being requested will be associated with the construction of the migratory bird habitat with pedestrian access to that area. As this is to be only one single family residence the potential impact to these areas by future development is also lessened.

- **LDC 25-8- 281(B) (Critical Environmental Features)**
  Allow CEF's to be located on a residential lot. The proposed exception is justified, as no features were ever identified and therefore not required any form of protection on any of the previously approved plans mentioned early for development on this site. Access and impacts to these areas will be limited due to the use of the property as one single family residence. Also, the PUD's proposed ongoing ecological restoration and preservation efforts improving the stabilization and water quality of the site has demonstrated to staff that the proposed measures preserve all characteristics of the critical environmental features.

- **LDC 25-8- 281(C) (Critical Environmental Features)**
  Allow for a reduction in the 150 foot standard buffer to a 50 foot buffer for Rimrocks 1 and 2. Allow for the reduction of the 150 standard buffer to zero, for the two sections of narrow Cypress fringe wetland bordering Lake Austin and the mouth of Bull Creek. These areas will be protected within the 75 foot CWQZ setback for Lake Austin. Within the emergent wetland CEF 150 buffer, to allow the following items: pedestrian trails, an existing retaining wall, proposed trees, stone stairs, re-graded slope, migratory bird habitat, raised wood boardwalk, native plant garden, security equipment, wiring, and related facilities. The proposed exception is justified as many of these items are existing and were constructed prior to the City's adoption of environmental regulations.

Also, a majority of what is being request will be associated with the construction of the migratory bird habitat with pedestrian access to that area. The applicant has demonstrated to staff that the proposed measures are being taken to preserve all characteristics of the critical environmental features.

- **LDC 25-8-302(A)(1), (A)(2), (B), and (B)(2) (Construction of a building or parking area)**
  Allow small portions of the guest house building and parking area to be constructed on slopes greater than 25 percent as shown on Exhibit K. To allow terracing on the uphill and downhill sides of these slopes for the portion of these slopes that will not be directly constructed on, but merely spanned by the guest house building, similar to a bridge structure. The proposed exception is justified since the guest house will not be directly constructed on or into these slopes but will span over them limiting any disturbance of the hillside.

- **LDC 25-8-321 (Clearing of Vegetation)**
  Allow for the clearing of vegetation and the clearing of trees under 19 inches in diameter for the planting of an olive orchard approximately four acres in size as shown approximately on Exhibit C. The proposed exception is justified as this proposed clearing is being done in conjunction with an accessory use for a single family residence and is in accordance with the standard required for a single family residential development.

- **LDC 25-8-341 (Cut Requirements)**
  Allow cut to exceed four feet, not to exceed 16.402 feet in depth at the following locations: around the main house, for the driveway to the main house, adjacent to the guest house, adjacent to the skyspace structure, and at the entry to the recreation building as shown in Exhibit J. This exception is justified in that the proposed cuts are the minimum departure required for the proposed construction. They allow for a reduction in the overall site disturbance buy reducing the potential footprint of the proposed construction while allowing the development to maximize the use of impervious cover and help to minimize the profile of the buildings within the existing landscape. The applicant has also agreed to include environmental staff through either administrative site plans or through the building permit process the opportunity to review and inspect development within the PUD to assure that these cut limits are being maintained and that adequate erosion control measures are designed and maintained per the current ECM standards. This will also allow for tracking of proposed development within the PUD in a manner superior to that of standard single family residence.

- **LDC 25-8-342 (Fill Requirements)**
  Allow fill to exceed four feet, not to exceed 11.551 feet in depth at the following locations: adjacent to the skyspace structure, around the main house, for portions of the driveway and culvert, adjacent to the guest house, and at the entry to the recreation building as shown in Exhibit J.

This exception is justified in that the proposed fill is the minimum departure required for the proposed construction. It allows for a reduction in the overall site disturbance and helps to minimize the profile of the structures within the existing landscape. In addition, in order to provide for a better site distance for vehicles at the driveway turning onto Ranch Road 2222, additional fill must be added to create a gentler slope for the driveway. The applicant has also agreed to include environmental staff through either administrative site plans or through the building permit process, the opportunity to review and inspect development within the PUD to assure that these cut limits are being maintained and that adequate erosion control measures are designed and maintained per the current ECM standards. This will also allow for tracking of proposed development within the PUD in a manner superior to that of standard single family residence.

**Recommendations**

Staff from the Planning and Development Review department has worked with the applicant to provide additional benefits in site development as support for the proposed PUD:

- The Bull Creek PUD significantly reduces the overall allowable density for the site. Previously, approximately 23 single family residences and four condo units had been approved on a portion of this site. This project seeks to construct one single family residence with accessory structures on the 53.8741 acres.
- Impervious cover for the entire PUD development will be limited to 14 percent of the net site area. This is significantly less than the 30% allowable impervious cover under current code.
- An ecological preservation and conservation plan has been included as guidance for the removal of invasive species. To allow for a landscape recover effort to transform the land back into a more diverse woodland, prairie/wildflower meadow and riparian/stream bank plant community. The following efforts have already started and will continue:
    1. Meadow rehabilitation
    2. Removal of invasive tree species
    3. Native hardwood tree planting – Over the last year, 188 trees have been planted. Additional trees are proposed over the next several years.
    4. Slope stabilization to control areas of erosion.
    5. Organic fertilization and inoculation of micro-organisms.
    6. Construction of wildlife water features to provide water during drought periods.
    7. Ongoing consultation with the U.S. Fish and Wildlife Service, the Ladybird Johnson Wildflower Center, Texas A&M range ecologists, and the Natural Resource and Conservation Service on restoration projects for the property.
    8. Annual bird and mammal surveys to assess the health and wildlife population.

- A seasonal habitat for migratory birds has been proposed for approximately three acres bordering Bull Creek and Lake Austin. This will consist of two shallow basins that will allow each area to be filled to provide forage area for these migratory birds. Installation of this constructed habitat is contingent upon obtaining the appropriate permits from all applicable jurisdictions, as well as the results of ongoing studies that the size, location, and depth will have a positive impact on migratory birds.
- The project currently proposes to comply with the Austin Energy PUD Green Building Program in effect when the PUD application was submitted. Item presently being studied, include but are not limited to, the following:

A. Water Conservation

1. Reuse of gray water – Pending permitting and feasibility issues, the project intends to incorporate reuse water systems into the building design.

2. Irrigation from Lake Austin – The owners currently have a permit to draw water for irrigation onsite. The overall percentage of the site that is covered with vegetation which requires irrigation is relatively low ~~and the dominant planting strategy involves using drought tolerant native~~ plant material.

3. Water conservation, low flow fixtures – Water efficient plumbing fixtures are planned to be used wherever possible in the project.

B. Energy Use

1. Green roof- A portion of the main house roof will incorporate a green roof with vegetation.

2. Photovoltaic's – Subject to appropriate metering, the roof of the barn is planned to be covered with solar PV panels to generate electricity. The applicant envisions the barn as an energy center with panels consolidated for power generation across the site to all buildings.

3. Commissioning – A commissioning agent has been retained to ensure that the building systems are running at their intended design criteria.

4. Green energy subscription – The Owners will purchase Green Energy through Austin Energy, as needed.
5. Geothermal – The proposed geothermal heat exchange system is a central plant system.
6. Reduced lighting loads - A building management system will be installed to allow for lights to be dimmed and controlled from any point in house.
7. Energy use efficiency through glass performance - High performance glazing will be used throughout the project to achieve energy-efficient envelope design.
8. Maximize vegetated areas - The majority of the site will remain vegetated, thus reducing the site's contribution to an urban "heat island" effect.

C. Environmental Impact

1. Storm water runoff and water quality for watershed protection - Roof and area drainage will be collected and redistributed on site via non-erosive devices.

2. Reduced site disturbance - The guesthouse design is a free span over a natural ravine to reduce site disturbance.
3. Recycling storage - Each building will have facilities for recycling.
4. Bicycle storage for staff - The barn will have bicycle racks for house staff and grounds crew.
5. Certified wood - Certified wood will be used wherever possible on interior finishes and millwork.
6. Construction waste management – The contractor will recycle waste materials and excavated dirt as part of Austin Energy's Green Building program.
7. Utilizing existing site features – Re-grading of the site is minimal. It is primarily limited to building and parking areas.
8. Restore or protect open areas - Much of the site has been impacted by overgrazing. At project completion there will be more plant material per acre than currently.
9. An integrated pest management plan shall be established.

- The project presently proposes to incorporate at least two art installations which may be seen from Lake Austin or Bull Creek.

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If you need further details, please contact Jim Dymkowski at 974-2707.

Jim Dymkowski, Environmental Review Specialist Senior
Planning and Development Review

Environmental Program Coordinator: _____
Ingrid McDonald

Environmental Officer: _____
Pat Murphy

**NAVIGATION COMMITTEE**
**FEBRUARY 8, 2010 – 5:00 PM**
**PARKS AND RECREATION DEPARTMENT**
**CONFERENCE ROOM**
**200 S LAMAR BLVD**
**AUSTIN, TEXAS**

**CURRENT BOARD MEMBERS:**

**Sara Marler, Chair**
**Carol Lee**
**Jeff Francell**

**Linda Guerrero, ex-officio**

# AGENDA

## A. CALL TO ORDER

## B. CITIZEN COMMUNICATION: GENERAL

The first 10 speakers signed up prior to the meeting being called to order will each be allowed a three-minute allotment to address their concerns regarding items not posted on the agenda.

## C. DISCUSSION AND ACTION ITEMS

**1. Action Item** **Make a recommendation to the Board regarding Bull Creek PUD**
Applicant: Lynn Ann Carley, Armbrust & Brown, L.L.P.
Location: 4909 FM 2222
Case #: C814-2009-0139
Request: Approval of code modifications, Section 25-2-1173 and 25-5-2(B)(1)

**2. Action Item** **Make a recommendation to the Board regarding Waller Creek Boat House**

Applicant: Gary Jackson, Public Works
Location: 74 Trinity Street
Case #: SPC-2009-0362C
Request: Extending beyond 30 feet from the shoreline.

## D. ITEMS FROM BOARD MEMBERS

## E. STAFF BRIEFINGS

## F. FUTURE AGENDA ITEMS

## G. ADJOURNMENT

The City of Austin is committed to compliance with the American with Disabilities Act. Reasonable modifications and equal access to communications will be provided upon request. Meeting locations are planned with wheelchair access. If requiring Sign Language Interpreters or alternative formats, please give notice at least 4 days before the meeting date. Please call Chris Yanez at the Parks and Recreation Department, at 974-9455, for additional information; TTY users route through Relay Texas at 711.

For more information on the Navigation Committee, please contact Chris Yanez at Chris.Yanez@ci.austin.tx.us or by phone at 974-9455.