BALCONES CANYONLANDS PRESERVE
LAND MANAGEMENT PLAN

TIER III

THE COMMITTEE FOR WILD BASIN WILDERNESS
WILD BASIN PRESERVE
WEST AUSTIN MACROSITE

August 2007

TABLE OF CONTENTS

1.0 BACKGROUND INFORMATION ON WILD BASIN PRESERVE 1
1.1 Description of tract 1
1.1.1 Location of Tract 1
1.1.2 Tract Features 1
1.1.3 Land Status 2
1.2 Physical Characteristics 4
1.2.1 Geology 4
1.2.2 Hydrology 5
1.2.3 Soils 6
1.2.4 Caves and subsurface features 6
1.3 Biological Characteristics 6
1.3.1 Vegetation currently on tract 6
1.3.2 Animal species currently on tract 7
1.3.3 Endangered species and species of concern 7
1.4 Land Uses 9
1.4.1 Pre-historic 9
1.4.2 Historic 9
1.4.3 Current 10
2.0 MANAGEMENT PROGRAM 10
2.1 Plan Administration 10
2.2 Management Goals 10
2.2.1 Primary Management Goals 11
2.2.2 Secondary Management Goals 11
2.3 Issues 12
2.4 Management Objectives 12

2.4.1 Vegetation Management: ***13***
2.4.3 Animal Management: ***13***
2.4.4 Physical and Cultural Management: ***13***
2.4.5 Access Management and Public Education: ***13***
2.5 Specific Implementation Strategies **14**
2.5.1 Vegetation management procedures ***14***
2.5.2 Animal Management Procedures ***15***
2.5.3 Physical and Cultural Management Procedures ***16***
2.5.4 Access Management and Public Education ***17***
3.0 MANAGEMENT PROGRAM MONITORING **18**
4.0 LITERATURE CITED **19**

List of Tables

Table 1. Soil Types by Depth **6**
Table 2. Golden-cheeked Warbler Survey Results **8**

List of figures

Figure 1. Wild Basin Preserve Location Map **3**

1.0 BACKGROUND INFORMATION ON WILD BASIN PRESERVE

Travis County's 227 acre (92 ha) Wild Basin Wilderness Preserve is in the West Austin macrosite, and is contiguous with the City of Austin's comparably-sized Vireo Research Area. Wild Basin Preserve is owned by Travis County and managed through a contractual agreement with the Committee for Wild Basin Wilderness, Inc. (a non profit entity hereinafter referred to as the Committee). Within the County's preserve is a 63-acre strip owned by the Committee, providing the only designated access to the preserve and supporting the Committee's interpretive building.

In the 1970's, the people of the Austin metropolitan area, under the direction of a citizens' committee for Wild Basin, raised funds to acquire the land that comprises Wild Basin. These funds were made available to Travis County. Travis County then applied to the federal Bureau of Outdoor Recreation for additional funds to finance the preserve acquisition. The Committee for Wild Basin Wilderness Preserve was incorporated in Travis County in 1979.

Wild Basin was included as part of the Balcones Canyonlands Preserve (BCP) in 1996. The BCP is an assemblage of properties in western Travis County established to protect federally-listed endangered species and numerous other species of concern. The BCP was created by U.S. Fish and Wildlife Service (USFWS) permit PRT-788841 issued under Section 10(a)1(B) of the Endangered Species Act, issued May 2, 1996. The City of Austin and Travis County share responsibility as joint Permit Holders for compliance with the terms and conditions of the federal permit referred to as the Balcones Canyonlands Conservation Plan (BCCP).

1.1 Description of tract

1.1.1 Location of Tract

The preserve is located on the east side of Loop 360, 1.5 miles north of Bee Cave Road and 3.5 miles south of RR 2222, at 805 N. Capital of Texas Highway (Loop 360). The preserve is within the Bee Creek drainage basin, in an area that is becoming increasingly urbanized (see Figure 1).

1.1.2 Tract Features

Human-made features

Human-made features include the following:

- a gravel entrance road from Loop 360 to the interpretive center and parking area;
- a gravel road from the parking lot to the center, for wheelchair access to the trails and building;

- an interpretive center with offices, meeting rooms, caretaker's quarters, kitchen, and restroom with composting toilets;
- various information signs at three trailheads;
- 2.5 miles of nature trails, including a 0.25 mile easy access trail; several benches along the trails;
- two portable toilets in the parking area; and
- a one-room storage facility in the parking area.
- A bus turn-around

1.1.3 Land Status

1.1.3.1 Rights-of-Way and Easements

Travis County maintains a file with Wild Basin Preserve information including Deed Records, information about rights-of-way and easements. The following easement is known to exist: W.R. Morian, C.J. Robertson, Jr., L.R. Roach, C.R. Hochner, and A.R. Baumann granted a conservation easement on 12.20 acres to the Committee for Wild Basin Wilderness, Inc. LCRA also granted a road easement in 1983.

1.1.3.2 In-Holdings

There are no in-holdings within the preserve.

1.1.3.3 Boundary Disputes

There are no known boundary disputes.

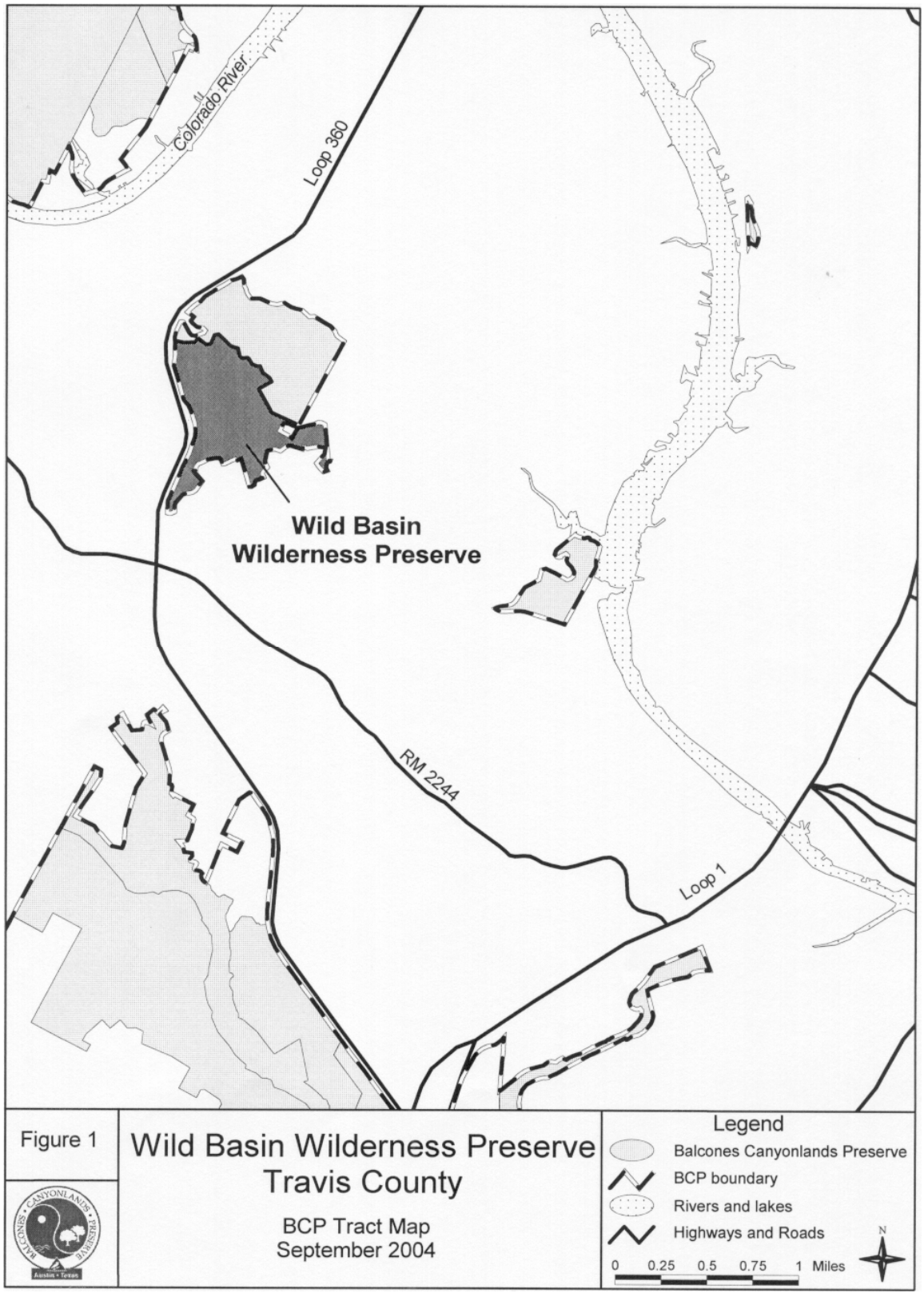
1.1.3.4 Regulatory Requirements

Travis County Parks and Natural Resources rules and regulations apply, as do rules approved by the County specifically for the Committee. Regulatory requirements of the BCCP are covered in Tier II-B Plan Administration.

1.1.3.5 Deed Restrictions

Most of the pieces of land that make up Wild Basin Wilderness Preserve were sold to Travis County with the restriction that the land be used for wilderness park purposes only, left in its natural state, and improvements limited to restroom facilities, a nature center, a roadside park, and nature trails through the property. This restriction is effective for 20 years, and thereafter is automatically extended for successive periods of 10 years. Travis County will further research existing deed restrictions and will append to this document at a future date any restrictions that may directly impact land management.

Figure 1. Wild Basin Preserve Location Map



1.1.3.6 Special Agreements

The County contracts with the Committee for management services at Wild Basin Preserve. Under the terms of the contract, the Committee is licensed for "non-exclusive use of the preserve for environmental education programs, tours, studies, and other activities consistent with preservation of the (preserve) as a wilderness area" (Travis County Contract 1992). The Committee is responsible for managing, maintaining and monitoring the preserve, including trail upkeep, boundary surveys, water quality monitoring, and endangered species monitoring and protection. The contract will be revised to more clearly define responsibilities relative to the three-tiered land management plan for the BCP, including this document.

1.1.3.7 Mineral Rights

Oil, gas, sulphur and other mineral rights (but not rights of ingress and egress for purposes of exploring, developing, mining, or drilling for same) are reserved by seller on 6.457 acres (6131/1008). Travis County will conduct further research on mineral rights and will append to this document at a future date any mineral rights that may directly impact land management.

1.1.3.8 Legal Issues

The Committee manages the preserve under a management contract with the County and is bound to the terms and conditions therein. Legal issues relating to BCCP requirements are treated elsewhere in this document; see Regulatory Requirements section, above.

1.1.3.9 Financial Issues

The County budgets a management fee to be paid to the Committee in exchange for management of the preserve. There are no debts or other outstanding financial obligations associated with this property.

1.2 Physical Characteristics

Wild Basin is located in the foothills of the Edwards Plateau, within the Bee Creek drainage basin. Bee Creek is one of the largest tributaries of the Colorado River in the Hill Country adjacent to Austin.

1.2.1 Geology

The geologic history of Wild Basin can be characterized in the following manner. During the Cretaceous Period (135-70 million years ago), the area was covered by a warm shallow sea. Fossils of dinosaur bones and marine organisms are incorporated into the rocks of this period. During the Tertiary Period (70 - 1 million years ago), sand and clay eroded from the existing landscape were deposited on the coastal plain to the south and southeast. The

Balcones Fault was formed when large amounts of sediments caused flexing and rupture of the earth's crust. The Edwards Plateau consists of hard limestone northwest of the fault. The Hill Country was formed when erosion caused by rivers flowing across the fault scarp dissected the area skirting the plateau (Garner undated). The preserve straddles the Balcones Faultline, and preserves a portion of the Texas Hill Country.

Elevation in the preserve ranges from about 920 feet near the north and south boundaries, to about 660 feet along Bee Creek. The preserve is almost entirely underlain by Glen Rose Limestone (Members 3, 4, and 5), with Walnut (Bull Creek and Bee Cave Members) and Edwards (Member 1) Formations capping the ridges on the north, west, and south edges of the property (Garner undated). The land consists of a central ridge surrounded on three sides by canyons, and on the fourth (west) side by Loop 360. The property also includes slopes on the far sides of the canyons. The preserve is covered by the Austin West quadrangle map (U.S. Geological 7.5 minute survey topographic map).

1.2.2 Hydrology

1.2.2.1 Surface water

Wild Basin is in the Bee Creek watershed, and water flows eastward to the Colorado River. Bee Creek runs through the property, in a canyon south of the central ridge. It is perennial and flows through a grotto before continuing eastward. An ephemeral creek runs roughly southeast through North Hollow to a containment pond. This creek empties into Bee Creek about 500 ft below the pond. Another ephemeral creek runs southeast through Northwest Hollow, and joins Bee Creek at the grotto. A third ephemeral creek joins Bee Creek from Brown's Hollow in the south central part of the preserve.

1.2.2.2 Water quality

Because some of the land in the Bee Creek watershed has only a thin cover of vegetation, and because of the proximity to Loop 360, overland run-off can easily carry sediments and pollutants directly into Bee Creek. In addition, upstream development includes residential and commercial development. Therefore, the water in the creek is extremely vulnerable to degradation, especially after intense rainfall.

1.2.2.3 Sub-surface water

Dolomitic units of the Glen Rose Formation function as minor aquifers which feed hillside springs after periods of rain. Because the thin soils of this area cannot purify fluids before they seep into the ground, these aquifers (and thus the springs and streams they feed) are very susceptible to contamination from septic systems and other sources of pollution (Garner undated).

1.2.3 Soils

According to the State of Texas Well Report, appendix dated 11-14-89, by the Associated Drilling Company, Wild Basin Preserve has the soil types as listed in Table 1.

Soils of the preserve are mapped on sheet 52 of the Travis County soil survey (Soil Conservation Service 1974). The soils at the top of the central ridge are mapped as Brackett soils, rolling. Brackett soils are shallow, well drained soils of limestone uplands. The surface layer is light brownish-gray gravelly clay loam or gravelly loam about 4 inches thick; the next layer, about 10 inches thick, is pale-brown clay loam. These soils are calcareous, moderately alkaline, Typic Ustochrepts, assigned to the Adobe range site. Soils on the rest of the preserve are mapped as Brackett soils, rock outcrop, steep, and are assigned to the Steep Adobe range site.

Table 1. Soil Types by Depth

From (ft.)	To (ft.)	Soil Type
0	2	Topsoil/Limestone
2	40	Yellow Limestone
40	440	Gray Limestone/Shale Layers
440	460	Yellow Limestone
460	470	Gray Limestone
470	480	Tan Limestone

1.2.4 Caves and subsurface features

No caves are known to occur on this preserve, however a karst feature has been reported (more information is available from the staff at Wild Basin). The site has been identified by Veni (1991) as an area that does not support endangered cave fauna (Zone 4).

1.3 Biological Characteristics

1.3.1 Vegetation currently on tract

The upper slopes of the hills support an open juniper woodland/grassland. The tree canopy which was open now covers much more of the preserve, and the shrub layer has given way to woody plants in many areas. There are still some open spaces that are dominated by grasses. The lower slopes are covered by dense juniper-oak woodland, dominated by Ashe juniper and Texas oaks, with plateau live oaks of secondary importance (Williams 1977). The woodland composition is typical of the Hill Country, with a few Texas madrones occurring

in a couple of areas within the preserve. The canopy is nearly continuously closed. There is a dense understory of tree seedlings, vines and cacti, and groundcover is sparse. Along the streams the trees are much larger than elsewhere in the preserve, and the oak-juniper woodland is replaced by the usual Central Texas riparian habitat (Williams 1977).

Of twelve vegetation cover types, primary successional communities predominate. Secondary successional patterns present are pre-settlement, climax conditions. These communities include combinations of Ashe juniper, live oak, Texas oak, shin oak, evergreen sumac, Texas persimmon, Texas kidneywood, and elbowbush. The understory is well-developed with waferash, cedar elm, American beautyberry, and red buckeye. Typical grasses (graminoids) include threeawns, Lindheimer muhly, sideoats grama, sedges, Texas grama, white tridens, hairy tridens, buffalograss, little bluestem, Texas wintergrass, and silver bluestem. Flowers (forbs) include zexmania, senna, Indian blanket, prairie bluets, bluebonnets, bull nettle, blackfoot daisy and Texas broomweed (Williams 1977). Lists of herbaceous and vascular plant species at the preserve are available at the interpretive center at Wild Basin.

1.3.2 Animal species currently on tract

The fauna found in Wild Basin is typical of the Edwards Plateau. The following is a list of representative species for each of four habitat types. Within the mixed wood ravines (occupied by Texas oaks and Ashe junipers) are green anole, ground skink, white-eyed vireo, golden-cheeked warbler (GCWA), and the ringtail. In the hardwood bottoms (among cedar elm trees and large Texas oak trees) are the yellow-billed cuckoo, the yellow-breasted chat, the blue jay, and the raccoon. The grassy meadows and savannas in the lowlands are important feeding areas for some woodland birds and other vertebrates. The juniper slopes of the uplands provide habitat for Texas spiny lizard, western scrub jay and rufous-crowned sparrow. In the hilly savannas Great Plains snakes (*Sonora episcopa*) can be found. Black-capped vireos used to breed on the northern ridgetop. Field sparrows and hispid cotton rats also occur in these areas (Oliver 1977). Lists of animal species at the preserve are available at the interpretive center at Wild Basin.

1.3.3 Endangered species and species of concern

1.3.3.1 Golden-cheeked Warbler

Nesting habitat for GCWA exists in the canyons along Bee Creek and in North Hollow. These areas contain large, mature junipers and hardwoods in a closed-canopy woodland. In addition, GCWA use the more open slope areas for foraging. Thus, much of the preserve should be considered habitat for GCWA.

Survey results are shown in Table 2 below. Most observations were located in the canyons. Surveys were conducted by preserve volunteers, DLS Associates, Travis County Natural Resources staff, Druid, and PBS&J.

Table 2. Golden-cheeked Warbler Survey Results

Year	Surveyor	No. of Territories	No. of Other Males
1981	R. Farmer	13	0
1983	C. Thompson	6	0
1987	DLS	3 to 5	0
1988	DLS	1	0
1992	DLS	1	0
1993	DLS	1	2
1997	L. Gass	0	1 or 2
1999	Druid	1 female	6 males
2000	Druid	2 pairs	?
2001	Druid	2 pairs	?
2002	Druid		3 or 4 males
2003	PBS&J		7 males heard some are same bird
2004	PBS&J		8 males heard some are same bird

1.3.3.2 Black-capped Vireo

No longer found on the preserve.

1.3.3.3 Karst species

No endangered karst species covered by the regional permit (BCCP) are known to occur on this tract.

1.3.3.4 Plant species

Heller's marbleseed (*Onosmodium helleri*), Buckley tridens (*Tridens buckleyanus*), and Glass Mountains coral-root (*Hexalectris nitida*) are globally rare, and occur at Wild Basin (Carr 1996).

Locally rare species found at Wild Basin include naked broom-rape (*Orobanche uniflora*), Louisiana broom-rape (*Orobanche ludoviciana*), and shooting-star (*Dodecatheon meadia*) (Carr 1996). There are plans to do a second study of the vegetation to find out what changes have taken place since John Williams survey in 1977.

1.3.3.5 Other species of concern

Though not protected as part of the regional permit, the Texas Salamander may occur on the preserve. The Texas Salamander is an undescribed species of *Eurycea* salamander, occurring southwest of the Colorado River. They are comparatively more surface-dwelling than the Barton Springs Salamander (believed to be mostly an underground species). Previously, this species was considered to be part of the broad *Eurycea neotenes* species group. However, it may be genetically and geographically distinct from populations elsewhere and may merit specific status (Chippendale et al. 1994).

1.4 Land Uses

1.4.1 Pre-historic

In a recent study by (Godwin 1998), two previously described sites were relocated and enlarged, and intact activity features, including prehistoric middens, were identified. The County and the Committee intend to protect these sites from damage through restricted public access within the preserve and careful land management.

1.4.2 Historic

Evidence of use in the late 19th and early 20th centuries includes some evidence of stone shelters located on the Westbank peninsula, dating from the post Civil War period (Poage 1989).

In the late 1930s, Ms. Osceola Heard Davenport, the widow of an oilman, bought the land from the Walsh brothers. Ms. Davenport wanted to have a cattle ranch, but was advised to have no more than a single head of cattle per hundred acres because the land was so thickly vegetated. She was determined to increase this ratio and proceeded to cut and stack trees for burning in April of 1961. The resulting fire spread to about 4,000 acres (Poage 1989). Two additional vegetational disturbances that affected Wild Basin were (1) the cedar and other timber that was cut in 1865-1890, causing erosion of upper slopes, and (2) cattle and goat grazing (ranching) in the 1940s (Poage 1989).

In the 1940s, North Hollow was a dump site used by a garbage collector who was contracted by the City of Austin (Poage 1989). The dump was stabilized in the mid 1980s with grant funding from the City.

At one time there was a dedicated County access road through Wild Basin, known as Wild Basin Ledge Road. This road has since been vacated and revegetation efforts have been implemented.

1.4.3 Current

1.4.3.1 On-site land use

While providing habitat for the GCWA and representative diversity of Central Texas plants and animals, the preserve is used as an outdoor living laboratory for educational programs for all ages. In addition, the general public is encouraged to visit the preserve and hike the 2.5 miles of trails. Individual visitors, grade school groups, college/university field trips, summer camps, adult education groups, scouts, Indian guides, church groups, day care centers, and outdoor training programs all make use of the preserve.

1.4.3.2 Adjacent land use

Land uses on adjacent tracts include the following: residential development to the south and east, the City of Austin Vireo Research Area to the north, and the Capital of Texas Highway (Loop 360) to the west. On the other side of the highway are the headwaters of Bee Creek and North Hollow with residential development and commercial office complexes.

2.0 MANAGEMENT PROGRAM

2.1 Plan Administration

See Tier II-B Plan Administration for the description of Travis County as a managing entity, the Committee as a managing entity, and various detail about the two entities including: staffing levels, equipment inventories, budgets, and annual reports as they pertain to management of BCP lands. The County assumes full responsibility for compliance with the BCCP regional permit and the BCP land management plans, delegating some management responsibilities to the Committee through a management contract. Specific management duties assigned to the Committee are defined in the management contract between the County and the Committee. Any changes to the preserve trails, facilities, access plan, and management program will be coordinated through Travis County.

2.2 Management Goals

Wild Basin Preserve was purchased to protect a representative piece of the Hill Country, to be managed as an environmental education laboratory for schoolchildren, teachers, researchers, and the general public. Balancing natural resource protection with visitor access requires continual monitoring and re-assessment, to which Travis County and the Committee are committed.

2.2.1 Primary Management Goals

- Maintain or improve vegetation quality and coverage to provide habitat area for the GCWAA.
- Manage the preserve with in accordance with an education program that illustrates and interprets BCP flora and fauna.
- Participate in the development and implementation of the BCP long-term biological monitoring program in conjunction with other preserves within the macrosite; in particular, with the management of the City of Austin's Vireo Research Area, which is adjacent to Wild Basin.
- Manage the preserve in accordance with applicable BCP Land Management Plans and the management contract between Travis County and the Committee.

2.2.1.1 Golden-cheeked Warbler

Protection of the preserve's GCWA habitat will include limiting human disturbance of GCWA habitat, and maintaining or improving existing habitat. Surveys for GCWA will be conducted on a yearly basis to measure the success of management activities.

2.2.1.2 Black-capped Vireo

None are known to occur on this tract at this time. The possibility of creating habitat will be discussed in the future.

2.2.1.3 Federally listed karst species

None are known to occur on this tract.

2.2.1.4 Species of concern

None of the species of concern listed in the BCCP permit are known to occur in the preserve. The following species, however, will be monitored: Heller's marbleseed (*Onosmodium helleri*), Buckley tridens (*Tridens buckleyanus*), Glass Mountains coral-root (*Hexalectris nitida*), naked broom-rape (*Orobanche uniflora*), Louisiana broom-rape (*Orobanche ludoviciana*), and shooting-star (*Dodecatheon meadia*). The Texas salamander (*Eurycea neotenes*) may occur in the preserve (Oliver 1977); if it is found, the population will be monitored.

2.2.2 Secondary Management Goals

Secondary management goals include active management and public education/outreach about: watershed protection, habitat restoration, erosion controls where needed, control of invasive species, and balancing the educational program for the visiting public with habitat protection. Providing education and guidelines for all the above is part of a backyard

awareness strategy which can be made available to members and neighbors of Wild Basin and other BCP sites. Additionally, fire management education programs will be developed by the Committee and the County (with other partners) to benefit the preserve, endangered species habitat, contiguous neighbors and other members/neighbors of BCP sites.

2.3 Issues

Public access and continuing urban development are the greatest potential conflicts with managing for endangered species at the preserve. To minimize impacts, visitors are restricted to a network of trails descending from the parking lot into the Bee Creek canyon. Preserve access is only allowed during daylight hours except for guided programs. The greatest visitation occurs during the school year from school classes, and special events are predominantly held in the fall.

The preserve is subjected to chemical pollutants and run-off from vehicles on Loop 360, as well as nutrients that collect in Bee Creek from upstream/upslope development. Also, there is noise from traffic, light pollution, and occasional trespass intrusion from areas surrounding the preserve.

Threats and damage to habitat include trash dumping, clearing, burning, vehicles and run-off from residential and commercial development (which surrounds the habitat on the east, south and west). Threats to species include wild dogs, horseback riding, motorcycles, lights, noise, poaching and fumes from traffic.

Due to its proximity to several school districts and the center of the Austin metropolitan area, Wild Basin Preserve remains a critical location for environmental education programming that can reach masses of people. The interpretive center is a convenient location for BCP related workshops.

2.4 Management Objectives

The main objectives for this macrosite (West Austin Macrosite) are, in the order of priority:
1. Protection of endangered species and species of concern, the land and water;
2. Management of endangered species and species of concern and their habitats;
3. Public education and outreach about endangered species and species of concern and their habitats;
4. Monitoring of the habitats for endangered species and species of concern; and
5. Enhancement of the habitats for endangered species and species of concern.

The macrosite land management plan provides more detail as to how activities are grouped under the above priority objectives (see Tier II-C West Austin Macrosite). Following are the four categories with associated activities.

2.4.1 Vegetation Management:

(a) Implement monitoring plan for rare plants to assess habitat needs.
(b) Monitor oaks for oak wilt and regeneration to assess action needed.
(c) Maintain and enhance GCWA habitat in the canyons and the uplands.
(d) Monitor encroachment of non-native and invasive species throughout the preserve and control as needed.
(e) Continue inventory of plants in the preserve.
(f) Map vegetation zones and significant occurrences.
(g) Develop fire management plan that addresses use of prescribed fire as well as prevention of and response to wildfire.
(h) Monitor changes in vegetation over time to the extent possible.
(i) Expand herbarium for Travis County and supplement UT's herbarium when possible.
(j) Coordinate with regional colleges and universities to conduct needed research.

2.4.3 Animal Management:

(a) Continue to monitor GCWA nesting territories and habitat use within the preserve.
(b) Monitor other species impacts on GCWA to assess action needed.
(c) Continue inventory of other animals in the preserve.
(d) Coordinate with regional colleges and universities to conduct needed research.

2.4.4 Physical and Cultural Management:

(a) Periodically sample the creek for fecal coliform and other parameters, which may include total suspended solids, biological oxygen demand, nitrogen and phosphate levels, and pH.
(b) Monitor erosion and sedimentation sources and stabilize/restore as needed.
(c) Conduct archeological assessments as needed.

2.4.5 Access Management and Public Education:

(a) Monitor the boundary at least quarterly for signs of fence damage or trespass, and take appropriate action.
(b) Develop access plan which defines all types of access and associated restrictions; restrict public access to daytime hours and designated trails. Modify plan as needed.
(c) Monitor visitor impacts to the preserve and public use relative to rules compliance.
(d) Modify rules and methods for achieving compliance as needed.

(e) Increase public awareness of BCP through use of brochures, interpretive displays and signs.
(f) Include BCP information in public and private tours.
(g) Advertise events regularly with other BCP managers to increase public awareness of BCP and inform of BCP access opportunities.
(h) Pro-actively develop educational materials and workshops for BCP neighbors and the general public.
(i) Join with macrosite BCP neighbor Vireo Research Area to conduct joint tours, workshops, etc. when possible.

2.5 Specific Implementation Strategies

(See Tier II-A Chapters for more detailed guidance and applicable strategies and constraints.)

2.5.1 Vegetation management procedures

2.5.1.1 Control methods

Invasive and non-native vegetation is controlled with hand tools, digging or, in rare cases, occasional herbicide applications. Other methods such as mowing and drill seeding may be used to boost native species' competitive edge against King Ranch bluestem and Johnsongrass.

2.5.1.2 Oak wilt

Wild Basin Preserve has not had a noticeable problem with oak wilt; however, the Vireo Research Area, just north of Wild Basin, removed Texas oaks with oak wilt in 1995, 1996, and 1997. Wild Basin will be monitored for oak wilt. Should any oak wilt be discovered, appropriate action will be taken to minimize chance of spread.

2.5.1.3 Prescribed fire and wildfires

At this time, prescribed burns are not proposed. However, the use of fire is considered an applicable management tool under prescribed conditions, and may be utilized as such in the future, possibly in cooperation with the Vireo Research Area management. Any prescribed use of fire will conform with guidelines in the BCP Tier II-A Management Handbook and will involve neighbor contacts. A fire management plan will be developed to address management strategies to minimize the chance of wildfire, and response guidelines in the event that one should occur.

2.5.1.4 Restoration and protection efforts

The trail system will be maintained to a level that does not encourage any off-trail use; any signs of off-trail use will be restored immediately to avoid cumulative impacts off-trails. Restoration and protection needs will be assessed regularly.

2.5.1.5 Protection efforts for species of concern

None of the species of concern listed in the BCCP permit occur in the preserve. The rare plants and animals will be protected to the greatest extent possible by buffering habitat areas from the public trails and monitoring those areas for management needs. Should habitat manipulation be suggested through monitoring program, appropriate action will be taken and documented.

2.5.2 Animal Management Procedures

2.5.2.1 Golden-cheeked Warbler

- Surveys/censuses (nesting and foraging areas) will be limited to no more than once every five days; time spent in territories searching for nest/females/young will be limited; the number of people searching in territories will be limited to one or two at a time; territories will be mapped.
- Public access will be limited to designated trails and daytime hours except for Wild Basin programs..
- Aerial photographs, GPS/GIS, and ground-truthing will be used to map territories.
- A closed-canopy woodland will be maintained in canyons, and trees will be permitted to grow in upland areas adjacent to canyons.

2.5.2.2 Black-capped Vireo

None are known to occur on this tract.

2.5.2.3Karst Invertebrates

None are known to occur on this tract.

2.5.2.4 Browsing animals

Deer populations and regeneration of woody species will be monitored. Removal of deer may be considered if necessary and feasible. Areas may be secured from deer where possible.

2.5.2.5 Feral animals

Feral animal behavior is monitored when possible for removal from the preserve.

2.5.2.6 Predation and parasitism

The preserve is not known to have a predation and parasitism problem at this time.

- The cowbird population will be monitored and any GCWAs feeding cowbirds will be noted; action will be taken if there is an increase in the cowbird population or the rate of parasitism.
- Red imported fire ants will be monitored and controlled with approved methods as necessary.

2.5.3 Physical and Cultural Management Procedures

2.5.3.1 Hydrology & water quality

Water quality monitoring of Bee Creek and North Hollow for both runoff and nutrient values, will be re-initiated as both a precautionary practice and also to document causes of the presence of excessive algae which has been observed in the watershed. Highway runoff and silt should be monitored monthly, assessing erosion control and restoration needs; appropriate action will be taken. Information about the quality of the water for human contact will be provided to all preserve visitors via signs.

2.5.3.2 Geology

If any caves or other karst features are found on the preserve, surveys will be conducted for endangered species and the area will be protected from fire ants and contaminated run-off.

There is an educational effort underway to point out geological features, while at the same time conserving them. This approach to geological resources is both encouraged through educational materials, and in some of the tours.

2.5.3.3 Soils

With intensive use of the trails and periodic creek flooding, erosion problems should be constantly evaluated and corrected. Trails will be stabilized as needed, utilizing only locally native materials. Stream banks and creek crossings will be maintained to minimize erosion and impacts to streamside vegetation and creek flow.

2.5.3.4 Cultural resource protection

Cultural resources will be protected through careful management, project planning and monitoring. The Texas Historical Commission will be consulted prior to taking any action that might impact archeological or historical resources.

2.5.4 Access Management and Public Education

2.5.4.1 Access Control

Access to the preserve is during daylight hours, 7 days a week, and after dark with guided tours. Visitors are restricted to designated trails. Preserve staff orient visitors to the rules through use of signs and brochures available at the trailheads. Visitor use and rules compliance should be monitored daily through staff patrols.

2.5.4.2 Individual or independent group use

Non-commercial use

Visitors are encouraged to sign our registry and pick up a map for either self-guided or guided walks and tours. The Committee's interpretive center has a gift shop. The preserve has accessible trails of several degrees and an outreach presence via telephone, fax and personal presence of staff. Informational brochures and interpretive displays on the trail kiosk are available to interested visitors. Occasionally, research projects are conducted by individuals or groups from local colleges and universities including geography, botany, zoology, and architecture studies.

Educational programs include introductory programs for primary grades; topical programs for secondary school students and adults; teacher orientations and workshops; field studies in geology, biology, and environmental and cultural resources for college students; and programs for special needs students and groups. The Committee has also formed educational partnerships with several corporations, and participates in city, county, state and federal monitoring and regulatory programs. The weekday education program involves about 2,500 schoolchildren each year. Total visitation is about 17,000 people per year.

Commercial use

Commercial use of the Committee's interpretive building includes occupation by Texas Parks and Wildlife Department, and the building is available for parties, seminars and events.

2.5.4.3 User/resource conflicts

Off-trail use, though infrequent, is of some concern. See 2.3 Issues for other potential conflicts between visitors to the preserve, and protection of endangered species and species of concern.

3.0 MANAGEMENT PROGRAM MONITORING

The County will monitor and evaluate habitat management in accordance with applicable biological monitoring procedures as defined in Tier II-A Management Handbook. Evaluation and reporting procedures will comply with applicable portions of the Tier II-B Plan Administration.

4.0 LITERATURE CITED

Carr, W.R. 1996. Rare plant survey and general plant inventory of Travis County Parks west of the Balcones Escarpment, Summer 1996. Travis County Natural Resources, unpublished report.

Chippendale *et al* 1994. (Unable to locate literature information before printing this draft)

Dibble, D.S. 1986. An archeological reconnaissance of two proposed tract enlargements of the Wild Basin Wilderness Preserve, Travis County, Texas. Unpublished report, submitted to the Texas Historical Commission and the Committee for Wild Basin Wilderness.

DLS Associates. 1989. Final report: black-capped vireo monitoring program, Travis County, Texas and vicinity. Unpublished report submitted to the Nature Conservancy of Texas, Inc. and the Executive Committee, Austin Regional Habitat Conservation Plan.

DLS Associates. 1990. Final report: black-capped vireo monitoring program, Travis County, Texas. Unpublished report submitted to the Nature Conservancy of Texas, Inc. and the Executive Committee, Balcones Canyonlands Habitat Conservation Plan.

DLS Associates. 1994. Endangered species monitoring and biological assessments, Travis County parks and natural areas, Travis County, Texas. Unpublished report submitted to Travis County Commissioners.

Godwin, M.F, W.J. Weaver, and J. Henderson 1998. An archeological survey and site assessment of the middle Bee Creek drainage in the Wild Basin Preserve and Balcones Canyonland Preserve, Austin, Travis County, Texas.

Grzybowski, J.A. 1988. Report: black-capped vireo investigations - 1986-87. Part 1: population and nesting ecology. Unpublished report, submitted to the Office of Endangered Species, USFWS, Albuquerque, NM.

Grzybowski, J.A. 1985. Final report: population and nesting ecology of the black-capped vireo (*Vireo atricapillus*). Part II: nesting ecology of the balck-capped vireo. Unpublished report, submitted to the Office of Endangered Species, USFWS, Albuquerque, NM.

Grzybowski, J.A. 1989. Interim report: black-capped vireo investigations: population and nesting ecology. Unpublished report, submitted to the Office of Endangered Species, USFWS, Albuquerque, NM.

Oliver, G.V. 1977. Land use planning for the Wild Basin, from the perspective of an animal ecologist. A second interim report submitted to the Wild Basin Committee. Unpublished report.

Poage, J. 1989. Wild Basin of Bee Creek. Earth Science, Spring: 14-17.

Ralph, R.W. 1977. A preliminary reconnaissance of the Wild Basin Wilderness. Unpublished report, submitted to the Committee for Wild Basin Wilderness.

Soil Conservation Service (USDA). 1974. Soil Survey of Travis County Texas. U.S. Government Printing Office, Washington D.C.

Travis County 1992. Management agreement between Travis County and the Committee for Wild Basin Wilderness, Inc.

Veni, G. 1991. Geologic controls on cave development and the distribution of cave fauna in the Austin, Texas region. Unpublished report, submitted to U.S. Fish and Wildlife Service.

Williams, J.E. 1977. The vegetation of Wild Basin. Unpublished report, submitted to the Committee for Wild Basin Wilderness.