

Introduction

The purpose of this document is to establish a vision and general management direction for Hentzell Park Natural Area. It includes a description of the area, recommendations for designation and types of use, and guidelines for both restoring native plant communities and controlling noxious weeds.

Vision and Goals

Hentzell Park is a remnant of the native ecosystem that historically occurred in eastern Colorado and has the potential to provide a combination of several ecosystems that include a shallow intermittent lake, wetlands and sand prairie.

The goals for this Natural Area are to:

- Restore native plant species diversity using native vegetation
- Preserve, strengthen and protect the wildlife habitat
- Develop educational programs and neighborhood involvement in its stewardship

Proposed Designation

Hentzell Park Natural Area is being recommended for designation as a conservation restoration natural area. It is recommended that Hentzell Park be designated as a Conservation and Restoration Area with intentions of protecting and providing recognition of the importance of this area and its wildlife. The Conservation and Restoration classification is designated in areas that have significant natural features or the potential to restore significant natural features. Activity in these areas is geared toward the appreciation of the natural features in the area. The goal of this designation is to ensure that the area remains in a natural state and those restorative improvements will be developed or allowed to occur naturally. Activities in the area are limited to those that will have little impact to the area.

Hentzell Park has many native plants that provide food for wildlife. It is a large parcel of land within the Cherry Creek corridor and serves as a refuge for animals migrating along the corridor. The majority of park users see Hentzell Park as a corridor which limits their use to on-trail activities. The low-impact use allows for native plant and animal species to remain relatively undisturbed and allows them the ability to move throughout the area without human interference. Hentzell Park can serve as a sanctuary for wildlife and a place where people can experience and learn about nature.

Portions of Hentzell Park are in poor condition because of heavy infestation of weeds. To ensure that the area be restored and managed in a natural state, restorative efforts will occur to improve and protect these natural resources. Activities in this area will focus on the appreciation of its natural amenities.

In addition to the general rules and regulations for Parks and Recreation, Hentzell Park will be managed to protect the area by limiting activities to those that will protect the public and have little impact on the park and its wildlife.

Allowed activities include:

- Providing opportunities for environmental educational and scientific uses.

- Low-impact recreational activities such as walking, jogging, bicycling, wildlife viewing, sight seeing and photography.

Disallowed activities include:

- No intensive, high impact, recreational activities, such as ball games, soccer and frisbee.
- Pets must remain on leash and under direct control at all times in designated areas. No pets off leash at anytime along bird viewing areas. During mating and nesting seasons, pets will not be permitted into the park.
- No removal and disturbance of native plants, animals and natural features.
- No fishing or wading in Cherry Creek.
- No consumptive activities including hunting, trapping, plant/rock/firewood removal.
- No motorized vehicles allowed within Hentzell Park.

Park Overview

Location in Region

Hentzell Park is located in southeast Denver City and County. It is found in the Fort Logan quadrangle of the United States Geological Survey 7.5' topographic map series within the northern half of Section 34, Township 4 south, Range 67 west of the 6th principle meridian. More specifically, Hentzell Park is described as being located in the west half of the northeast quarter of the northeast quarter (W ½ NE ¼ NE ¼), the north half of the southeast quarter of the northeast quarter (N ½ SE ¼ NE ¼), the north half of the southwest quarter of the northeast quarter (N ½ SW ¼ NE ¼) and that portion of the north half of the southeast quarter of the northwest quarter (N ½ SE ¼ NW ¼) more particularly described as beginning at the northeast corner of said north half of the southeast quarter of the northwest quarter (N ½ SW ¼ NW ¼) of said Section 34; thence South 53° 24' West a distance of 1095.57 feet to a point on the south line of said north half of the southeast quarter of the northwest quarter (N ½ SE ¼ NW ¼); thence South 89° 33' 30" East along said south line a distance of 873.41 feet



Figure 1: Regional Map

to a point on the north-south centerline of said Section 34; thence North 0° 32' East along said north-south centerline a distance of 660.0 feet more or less to the point of beginning.

Local landmarks include Cherry Creek Reservoir and Kennedy Golf Course to the southeast, Babi-Yar Park to the north, and the confluence of Highline Canal and Cherry Creek to the west.

Access

Regional access is provided by State Highway 30 (Havana Street) to the east. Primary street access is provided via Parker Road to the north and Quebec Street to the West. The northern semi-restricted portion of Hentzell Park can be accessed via East Yale Ave. The larger, more active use area is accessed via Girard Avenue.

Pedestrian and bicycle access is provided via the Cherry Creek Trail, Highline Canal Trail and through Hampden Park.



Figure 2: Local Map

Hentzell Park is bounded on the east by State Highway 30 (Havana Street), and on the north by East Yale Avenue, and by Provenance townhomes on the west, and Hampden Heights subdivision on the south.

History

In 1975 through the Board of Water Commissioners, the City and County of Denver acquired the 64.23 acres that encompassing the current Hentzell Park. Since then, the northern portion of Hentzell Park has been restricted to public access and use in an effort to keep visitors off the golf course and away from the storage yard. In the 1970's, various utility right-of-ways were granted for telephone and electric lines, storm sewers and waterlines crossing the park. In 1982, a water-theme park was proposed for the site and the city conducted a feasibility study to look at this issue. Due to opposition from surrounding neighborhoods and a change in Denver Parks and Recreation administration, this idea was dropped with the intentions of preserving the valuable open space. In September 1994, Kennedy Golf Course obtained a large portion of Hentzell Park to the northeast of Cherry Creek for four of 18 new holes. This easement limited access to the northern portion of Hentzell Park from the Cherry Creek Trail System, thus allowing more wildlife to inhabit the area without much human interference. Golf courses are proving to be valuable to the Natural Areas Program because use hours are from sun-up to sundown. This gives nocturnal species unrestricted use during the evening. Also, the majority of the land within golf courses is considered "out of play" which, allows for the possibility of creating and/or maintaining native plant species in these areas.

Hentzell Park was initially referred to as the Havana/Cherry Creek Park. In 1981, the park was officially named the Paul A. Hentzell Park after a Denver Councilman from District 4.

General Description

Hentzell Park encompasses 64.23 acres including Cherry Creek and four holes of Kennedy Golf Course's Creek Course. Therefore the park has both developed areas with turf grass as well as natural and naturalized areas. Hentzell Park is located along the southern stretch of the Cherry Creek Trail, which extends from Cherry Creek Reservoir in the southeast to the South Platte River in the north.

The northeastern part of Hentzell Park, approximately 41.5 acres, begins at East Yale Avenue and extends west to the Provenance Townhomes, south to Cherry Creek and west to several car dealerships and then to Havana Street. This portion of the park contains Denver Parks and Recreation Southeast District Headquarters and an acre of storage ground. Kentucky bluegrass and irrigation have been installed by Provenance Townhome owners along the west side of this portion of the park (just over one-acre). Four holes of the Creek Course of Kennedy Golf Course (roughly 31.5 acres) are contained within the northeastern part of Hentzell Park. Of the 31.5 acres of the Golf Course, 22 acres are maintained and irrigated, while 9.5 acres left to naturally exist. Six and one-half acres of natural areas straddle a Cherry Creek tributary that flows through Babi-Yar from Parker Road to the north. This portion of the park contains the greatest topographic relief within the entire park. A 50-foot change in elevation occurs within the northeast part of the northeast section of Hentzell Park.

The southern part of Hentzell Park, roughly 25.5 acres, begins at the confluence of Cherry Creek and Highline Canal and extends to the Hampden Heights Subdivision to the southwest. This portion contains two tributaries. Girard Tributary flows from the south where it originates near Girard and Havana. Several drop structures have been installed along this tributary to prevent erosion. The second tributary flows from the southwest through the center of Hampden Heights Subdivision. Within the park it creates a riparian zone that runs perpendicular to Cherry Creek. Several hard trails begin within this area and a series of braided soft trails exist within this portion of Hentzell Park. Accessibility is limited to foot or bicycle users. Within the 25.5 acres, there is a gradual change in grade of ten feet. No restroom facilities or other recreational facilities exist within Hentzell Park.

Historically, the Cherokee Trail (1849 -) cut through Hentzell Park. This Trail was the wagon road to Colorado City. The Wells Fargo Express Stageline also ran through the Park. Both of these trails eventually led to the Smoky Hill Middle Trail. It is also possibly that settlers mined for gold along this portion of Cherry Creek, since it is on the creek that gold was first discovered in Colorado.

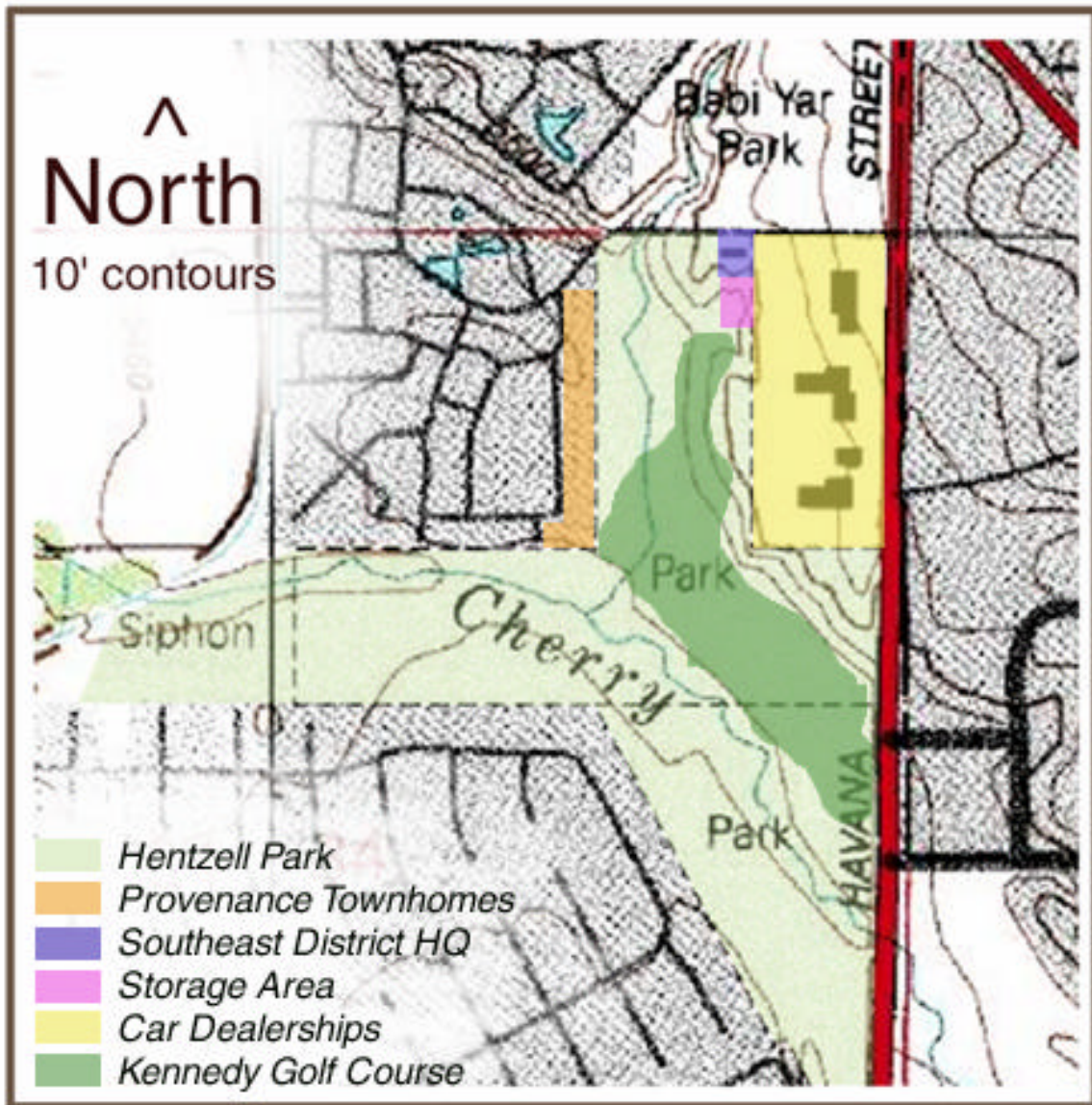


Figure 3: Topographic Relief and Surrounding Land Uses

Surrounding Land Uses and Impacts

The park is located in a heavily urbanized area, surrounded by retail, light commercial, and residential uses. This is significant because of untreated stormwater runoff into Cherry Creek.

Specifically, surrounding land uses include.

1. Babi-Yar Park to the north, across Yale Avenue. Babi-Yar Park and Hentzell Park are connected not only by their proximity and similar ecosystems, but also by a water

tributary that drains into Cherry Creek. Babi-Yar Park is currently open to the public as a memorial.

2. Denver Parks and Recreation southeast district Headquarters was built on the northeast corner of Hentzell Park in 1984. Materials, such as soils and chemicals, are stored in the storage yard in this area, as well.
3. Car dealerships. To the east of the park lie several car dealerships that front Havana Street. The service road to the dealerships serves as the boundary between them and Hentzell Park. A chainlink fence separates the two uses.
4. Townhomes. The northwest adjacent land uses consist primarily of townhome developments. In the past many issues have been addressed between the Parks Department and the developers. Oxford Homes, Incorporated, the developers of the Provenance Townhomes, had a construction access road through Hentzell Park during the construction of the townhomes. This road and the resultant heavy use for construction caused significant damage to the existing natural site conditions. Upon completion of the townhomes, grading and reseeding had to be completed. Along the townhome boundary Kentucky Bluegrass was to be planted 20 feet from property line and irrigation installed to maintain this area. A native, dry-land grass mix was to be planted throughout the remaining disturbed area. The townhome's residents and developers manage the western edge of the northern portion of Hentzell Park, but this section is still considered part of the park.

User Characteristics

Current

The Park's three areas – developed golf course, active use natural area and passive use natural area – have distinct user groups. The developed golf course attracts a very specific user group: golfers.

The Natural Area is divided into two separate areas: active use and low impact use. The southern portion is considered the active use area. Bicyclists, runners, walkers, and roller bladers are the principle users. Many of the users live in the neighboring communities because of proximity. Very few users know that the natural area is known as Hentzell Park because no signs exist within this large portion of the park.

The northern portion of the park is considered the low impact use natural area. People avoid entering this area due to the "Keep Out" signs. There are no distinct trail systems within this area and shortly after entering the park the golf course begins. The Provenance Townhome neighbors have encroached onto park property with Kentucky bluegrass and irrigation systems. In 1987, the townhome community was given an easement for planting a Ponderosa and Austrian Pine buffer strip and irrigation system at property line. A turf-type grass seed was planted the length of the property for a distance of about 20 feet from the Provenance Townhome property line, with the remainder of the disturbed grass area to be seeded with a low growing dryland grass mix. Presently there are hardscape patio surfaces, trees planted by residents and ornamental flowers within the park property, along with irrigation systems extending beyond the buffer strip easement. The majority of the encroachment is occurring at the northern end of Hentzell Park and is approaching the wetland created by the Cherry Creek Tributary.

Opportunities

Restorative Place

The Park's rural setting can provide the quiet fascination that characterizes restorative places essential to people's everyday lives. People living in an urban environment have been trying to achieve peace of mind by seeking refuge within a park since the 1800's. Frederick Law Olmsted struggled with creating a park that accommodated a diversity of users, those seeking a pastoral setting and ones seeking a more active setting. Today, a struggle still exists, because the pastoral setting is becoming harder to come by. Many of the parks in Denver offer areas for recreation, yet very few provide a place for a person to go and lose themselves amongst the plants and the wildlife. People exposed to natural settings on a regular basis seem to have better concentration abilities and are better able to tackle attention-demanding tasks. (Kaplan 1996) The Natural Areas program is giving people and animals a place to go to co-exist with one another in a neutral and restorative setting.

Educational

Hentzell Park is located within two miles of the following schools: Theodor Herzl Jewish Day School, Belleview Elementary School, Bradley Elementary, Eastridge Elementary School, Holm Elementary, Polton Elementary School, Ponderosa Elementary, Samuels Elementary, Village East Elementary School, Campus Middle School, Hamilton Middle School, Prairie Middle School, Thomas Jefferson Middle School, Cherry Creek High School, and Overland High School. The proximity of these schools can allow teachers to use Hentzell Park as an outdoor classroom in which children can learn about natural systems, native prairie vegetation and wildlife.

Figure 5: Schools within Two Miles

Neighborhood Facts

(Piton Organization, 2000)

Demographics

The neighborhood that surrounds Hentzell Park is referred to as the Hampden neighborhood. Population is 18,748, 3.8% of the total population of Denver.

The majority of residents are non-Latino whites (73%), 10 % Latinos, and 9.9% African Americans. Asians and Pacific Islanders account for 4.1% and 0.4% is American Indians.

Housing

Within Hampden neighborhood there are 9,956 housing units. Almost half (48.8%) of the housing units are owner occupied within the Hampden neighborhood. The average home sale price is \$186,889, which is above Denver's average, but prices seem to be leveling off in the Hampden neighborhood while continuing to rise throughout the Denver area.

Economics

There is a low percentage of Hampden residents on public assistance, 1.6%, compared to Denver's average of 4.6%. Throughout Denver, 17.1% of the population is considered to be living in poverty, in the Hampden neighborhood only 4.7% fall under this classification. The average household income in the Hampden neighborhood is \$57,439, which is considerably higher than Denver's average household income of \$42,426.

Education

Hampden neighborhood has 989 children enrolled in the Denver Public School system. Hampden students have a higher average for graduating from high school and a lower drop out rate than Denver students as a whole.

Crime

On average, Hampden has less than half the crime rate per 1,000 individuals than Denver, 35.7% compared to 79.4%. Although the burglary crimes and violent crimes are much lower than Denver's average, the percent of property crimes is higher in the Hampden area.

Major Features and Resources

Soils and Surface Geology

A portion of Hentzell Park is located within the floodplain of Cherry Creek. Hentzell Park Natural Area consists of sand deposited by an alluvial fan. Because of the sandy soils and multiple social trails, erosion along the banks of Cherry Creek and the Tributaries is a concern. The eroding of these banks creates unsafe and dangerous conditions, as well as detrimentally impacting the native vegetation.

The sandy soils are extremely beneficial for replenishing the level of the underground water table. Water can quickly penetrate sandy materials and the movement through the sand acts as a filter to the water.

Vegetation

Hentzell Park has four dominant types of vegetation associations: forest/grassland, woodland, grassland, and riparian. These result from drainage patterns created by landforms. Grassland is the dominant ecosystem within the Park.

Forest/grassland predominately occurs along Cherry Creek, and along Cherry Creek Tributary and the Tributary originating within Hampden Heights subdivision. Dominant tree species in these areas include Plains Cottonwood (*Populus deltoides*) and various Willow (*Salix spp.*). A few Russian Olives (*Eleagnus angustifolia*) also occur throughout the site. Leafy spurge is considered a major problem at this area of the Park. Biological control in the form of flea beetles and goats is presently being used in an effort to control this weed.

Grassland, the dominant ecosystem type, is divided relatively evenly between exotic species and native species. Human activity, such as the Provenance Townhome residents and

Kennedy Golf Course, has introduced the exotic species. Throughout the grassland there are invasive herbaceous plant species intermixed among the native and exotic plants.

Wildlife

Mammals

Due to its location along Cherry Creek, the Park is part of a wildlife corridor that connects the South Platte River to southeast Denver. Species known to use the Cherry Creek Corridor include:

Coyote (*Canus latrans*)
Red fox (*Vulpes vulpes*)
Beaver (*Cartor canadensis*)
Muskrat (*Ondatra zipethicus*)
Skunk (*Mephitis mephitis*)
Raccoon (*Prodylon lotor*)
Mule deer (*Odocoileus hemionus*)

Birds

Hentzell Park Natural Area provides habitat for many bird species, most of which use a lowland riparian habitat. Employees of Parks & Recreation and Kennedy Golf Course have seen Golden Eagles (), Great Blue Herons (), Hawks (), Pigeons (), Pinyon Jays (), and Mallards (). During recent fires in New Mexico, a bobwhite quail (), seeking refuge, was seen within Hentzell Park.

Although the area appears to have a diverse bird population, it could be even more diverse and abundant in the Natural Area if the grasslands were to be restored to native plant communities. This is because mat forming Kentucky Bluegrass and Smooth Brome do not provide the correct habitat for ground nesting birds. These birds require spaces left between clump grasses for nesting, cover, hunting, and foraging. Native grasses attract a wider array and greater amount of insects, which in turn attract a wider array of both ground nesting and tree nesting birds. It is important to limit social trails throughout the bird viewing areas, because trails disturb the habitat for all birds within the Natural Area. This is a particular problem during the fledging season, when chicks occupy the ground for a couple of weeks before learning to fly. Dogs off leash can predate these chicks, and cause great agitation in the bird community. The mere presence of a dog can cause a stress reaction in a bird, even if predation is not an issue. This stress can cause an increased heart rate, as well as behavioral and psychological changes.

Insects

Re-organizational Plan

Hentzell Park is a large park along the Cherry Creek Trail system, and should be used to educate the users of the area without attracting additional active users. The passive user

and the local education system are the intended focus for the re-organizational plan. By enhancing the wildlife habitat and increasing signage, the Park could become more of a destination place for focus groups.

Information Area

A map should be posted at each major entrance the path structures that exist throughout the park and how they are incorporated into the regional trail system. These maps can explain the significance of the Natural Area, the types of things one might see during a visit, and talk about current projects. Also, information regarding the rules of the Park and the reasons behind them should be posted in these locations. The major entrances to the Natural Area are the Cherry Creek Trail system, the corridor through Hampden Heights subdivision and along the Girard Tributary.

Rustic Resting Areas

The Natural Area lacks places to rest, which could be instrumental in encouraging quiet fascination offered by the Park by providing places to notice nature. For example, a rustic resting place at the water's edge could allow visitors to quietly observe the habitat created by beaver activity. Also, resting areas provide a method for drawing people to areas that are less sensitive to damage from use, and observe wildlife in sensitive areas from afar.

The resting places should mimic the natural features of the area they are surrounded by. They should not be obtrusive to the eye, and should be made of natural materials. Perhaps, the Russian Olives along the riparian zone, once removed, could be used as the materials for the construction of resting places.

Signs

In addition to the information centers, interpretive signs should be installed for each major feature and interesting place throughout the Park. These signs would explain natural processes, talk about wildlife present in the Park, discuss the impacts of urbanization on non-human systems, and provide history about the Park and its ecosystems. The signs should include information on the biological control that is happening within the Park (Leafy spurge/flea beetles), as well as educational information on symbiotic relationships that exist between plants, animals and insects within the park, i.e. Yucca/moth. The signs should also take the opportunity to inform visitors about the positive aspects of Beaver and golf courses. Along the buffer zone near Provenance Townhomes, a sign should inform visitors of the difference between turf-grass and prairie grass, and the amount of water required for each. Signs should be user friendly, use recognizable symbols, avoid technical language, avoid being too wordy, incorporate humor whenever possible, and tell stories with concrete imagery.

Restoration/Rehabilitation Plan

Restoring and maintaining native plant species to Hentzell Park Natural Area will have the added benefit of strengthening wildlife habitat. This is because many of the plant species present along the riparian zone within the park provide little habitat value and have crowded out species thereby decreasing diversity necessary for wildlife. Hentzell Park has many native plants, but the areas that have been invaded with weeds will take considerable

amount of time and resources to reclaim these areas. A phased approach to weed management and plant revegetation is recommended.

Goals – Short Term

- Eliminate small patches of noxious weeds.
- Control heavy infestations of noxious weeds, to prevent them from spreading to other areas of the park.
- Reduce Kentucky bluegrass colonies along the Provenance Townhome encroachment zone while reestablishing native grasses in this area.

Goals- Long Term

- Establish the majority of Hentzell Park as Open Space.
- Eliminate heavy infestations of noxious weeds, and revegetate with appropriate native species.
- Re-create an intermittent pond at the low point that could provide habitat for a more diverse group of wildlife, while diminishing the erosion along natural flow lines.
- Eliminate all exotic plant species and hardscape within the encroachment area adjacent to Provenance Townhomes.
- Audubon Sanctuary Certification of Kennedy Golf Course.
- Redesigning of Parks and Recreation Southeast Headquarter's Storage Area.

Specific Objectives

Re-designation of Zoning

Currently Hentzell Park is zoned as low-density residential (R-1). This zoning is necessary for Southeast District Headquarters to remain as is and to allow for any expansion that might be necessary for future growth.

Denver has grown tremendously in the last decade and is only going to continue to grow. Hentzell Park is an extremely large natural area and plays a vital role for wildlife migrating along the Cherry Creek corridor. It is recommended that the area be partially re-zoned to Open Space to guarantee a habitat for wildlife in years to come while accommodating the district's future maintenance needs. The northeast corner of the park should continue to be zoned as R-1, but the rest of Hentzell Park should be considered for re-zoning into Open Space.

Audubon Sanctuary Certification

Audubon International is the leading environmental organization providing comprehensive environmental education and conservation assistance to golf course superintendents and industry professionals. Golf Courses provide significant open spaces and opportunities to provide needed wildlife habitat in increasingly urbanized communities around the world. At the same time, golf courses are asked to address environmental concerns related to the

potential and actual impacts of water consumption and chemical use on local water sources, wildlife species, and native habitats. The Audubon Cooperative Sanctuary Program (ACSP) for Golf Courses seeks to address golf's environmental concerns while maximizing the opportunities to provide open space benefits. This highly regarded education and assistance program promotes participation in comprehensive environmental management, enhancement and protection of existing wildlife habitats, and recognition for those who are engaged in environmentally responsible projects. The ACSP is designed to help a golf course recognize their environmental resources and any potential problems, and then develop a plan that fits its unique setting, goals, staff, budget and available time. Audubon International believes that by working cooperatively with course maintenance staff, club personnel, golfers, and industry associations, they can help golf courses integrate sound environmental management practices and make a valuable contribution to conservation. The ultimate goal is to enhance the game of golf while improving the quality of the environment through stewardship action.

Native plants and animals, as well as many invasive weeds occupy a portion of land currently operated by Kennedy Golf Course. The Natural Areas program and Audubon International would like to restore what is currently infested with weeds back into native habitat for wildlife.

What would it take to make these changes? Kennedy Golf Course would be required to pay a \$100 membership fee and complete a strenuous, six-part program to become certified. The certification program begins with the resource inventory. From that, the Audubon Society writes a report on environmental planning specific to the golf course. Next a workbook is provided to the golf course, with five segments: water quality management, water conservation, integrated pest management, wildlife and habitat management, and outreach and education. Full certification may take one to three years depending on the environmental condition of the golf course when it begins. The golf course can do all five at once or one or two at a time. Once the workbook is complete, the ACSP reviews it and, if all is satisfactory, accept it for full certification. The first step in the process can be extremely time consuming, at least 100 man-hours, so approaching local universities' Environmental Studies or Environmental Planning programs is encouraged. An efficient and effective manner for completing this process is to divide the students into teams for photography, property/adjoining land use, plant inventory, wildlife inventory and superintendent information. By working in teams – each with a leader and several members—the group can complete the resource assessment in a day. See Appendix _ for a list of possible contacts.

Why make the changes? There are great economical benefits from planting prairie plants. A study was conducted comparing the economic cost of maintaining a turfgrass rough with that of a prairie grass rough. For all three of the courses studied, the conversion of turfgrass rough to prairie plants would pay for itself in reduced maintenance cost with the first two years, even using the highest priced prairie seed. In addition to making game more affordable, these areas would provide tremendous opportunities for wildlife habitat and a decrease in chemical, fertilizer, and water usage. These will be important characteristics of future golf courses as maintenance costs and political pressures continue to rise.

The certification of Kennedy Golf Course could benefit many different groups within Denver. A possible education/outreach for local children's organizations could construct birdhouses to be installed throughout the golf course. Interpretative signs could be placed throughout the golf course explaining the purpose and function of the new wildlife habitat.

Education on Encroachment

According to the American Heritage Dictionary, encroaching is the act of taking another's possessions or rights gradually or stealthily. Residents of the Provenance Townhomes are illegally encroaching on Denver Parks and Recreation's property. In 1983, an easement was granted from Parks and Recreation to create a friendlier buffer between the new townhomes and Hentzell Park. This buffer has been enlarged drastically by the residents of the townhomes, and instead of being a 20-foot buffer, it is now a 120-foot lawn extension. An original townhome resident provided insight into the illegal action. "It was a friendly competition among neighbors." After original construction, Hentzell Park just beyond the Provenance property line was a 'waste land' littered with construction debris and weeds that stood taller than the 7-foot fence. The easement for the buffer zone of Kentucky Bluegrass and Austrian Pines seemed to inspire the residents to make this area beyond their property more inviting. The residents have acknowledged that they are encroaching onto government property, but most do not know whose property it is.

The Provenance Townhome residents have invested a lot of money into the ornamental plants they have installed on Hentzell property, therefore the Natural Areas program will come up against a strong force if a plan is not tactfully prepared and thoroughly followed through with. The first step in resolving the encroachment issue is to ensure support of the Natural Area Program's efforts by the appropriate councilperson. It will be beneficial to educate the Provenance residents of Hentzell Park's boundaries in relation to the townhome's property line. Explaining the mission of the Natural Areas program is essential to gaining a mutual understanding between the two parties involved. A gradual re-introduction of native grasses abutting the riparian zone would be the second step in reclaiming the park property as natural area. There will be a need to maintain this property line to prevent the overtaking of the area by invasive weeds such as Canada Thistle, and encourage the cooperation of Provenance Townhome residents. The sensitive issue will be next step of action. The northern most residents are the most active in the "friendly competition." One of the townhome owners has installed hardscape engulfed by exotic plants onto park property. A temporary method of dealing with this issue in particular could be to invite the public onto this area of park property, as a way of displaying public ownership and activity within the park property. Installation of signage stating this area is a portion of Hentzell Park and is attempting to re-establish native plants and wildlife should be installed at the north-western border of the park and extended along the easement to educate visitors and residents of the area. The long-term goal is to re-establish all of this area into native grasses and wildflowers up to the 20-foot easement zone.

It is necessary to treat all the encroachment in the same fairness, no matter what amount of time, money and energy have been put into the encroaching. At the same time, the Natural Areas program will not benefit from negative press and grudges held by citizens of Denver. It is therefore in our best interest to work with the encroaching neighborhood to establish a win-win outcome for both parties.

The long-term goal for this area is to eradicate all items considered to be associated with the encroachment. Upon the removal of all such items, it is essential for the Natural Areas Program to maintain constant upkeep on this area.

Storage Area Design

Denver Parks and Recreation's different districts usually occupy a space of land on which they store excess materials for use within the parks throughout their districts. These materials change constantly and constructed storage facilities are not always an option for feasibility. The Southeast District's storage area is within Hentzell Park. Several storage stalls are being used on the property, but a lot of material is stored in piles. Storing in piles is the common method of storage within all of the districts throughout Denver. A unique problem faced in the southeast district deals with water flow. The maintenance road and golf course cart paths were built in a natural flowline that originates north of Babi-Yar and that has historically ended into a small seasonal lake with Hentzell Park. Because of this orientation, the alluvial sands native to this area regularly wash out the cart path. The routine maintenance of the problem by the golf course is to bulldoze the sands from the path onto the native grass area. This problem is escalated by the piles of storage materials sitting within another flowline that eventually leads to the same area via a culvert.

Storage facilities that accommodate the constantly changing types and amounts of materials are needed to efficiently control the amount of material lost from erosion along the flowlines and to maximize the areas for potential native plants. A constructed facility for this storage area could benefit the views of golfers at the Creek Course's Sixth hole tee box by shading the materials from visibility. The design for the storage area could also be effective in securing the city materials being stored on the site. Using the movable divider storage facility (Figure 7) as the boundaries for the storage area on three sides and fencing the remaining portion of perimeter, allowing for locking gate

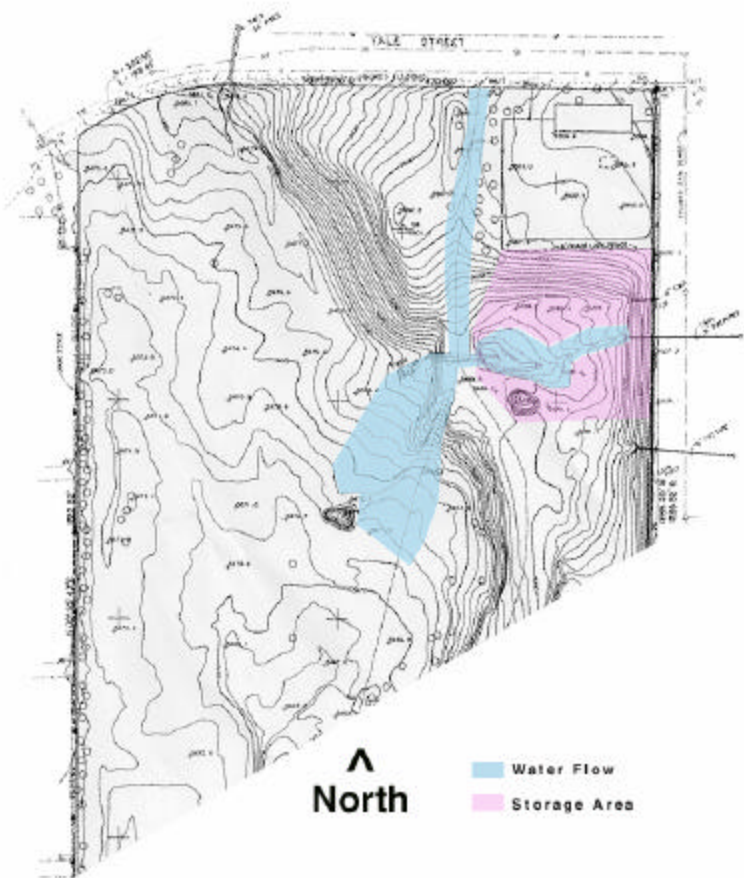


Figure 5: Topographic Relief Demonstrating Water Flow

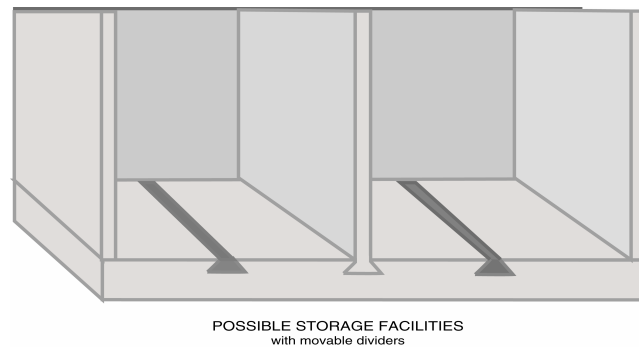


Figure 6: Structure Design

entrances, could solve the problems associated with aesthetics and functionality (Figure 8). The foundation for the storage facility should be made of concrete to discourage weed infiltrating the materials from below, while the dividers should be made of wood in an effort to maintain lightness necessary for mobility.

Weed Management

Managing small, scattered weed patches with light infestations yields the greatest reward for effort, because this prevents light infestations from becoming heavy. This also prevents the establishing of seed banks that ultimately spread to other areas.

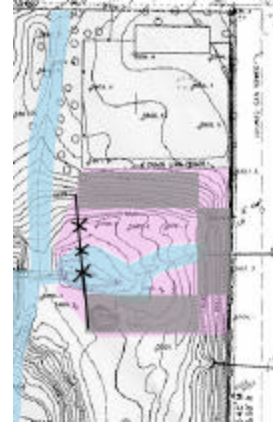
The best control for these areas is to hand pull/dig. Heavy infestations are best handled with biological control. If this method of control is not feasible, a combination of mowing and herbicides tailored to specific weed species being managed is required.

Weed species are classified into two groups, high and low priority, depending on their ability to grow and spread within a specific location. In Hentzell Park, the priority species are Leafy Spurge, Canada Thistle, Curly Dock, Alfalfa, Kentucky Bluegrass and Cultivated Rye. Locations of these high priority weeds, as of Summer 2001, are included in Appendix B.

General weed management goals for the Natural Area are:

- Control high priority noxious weeds and eradicate them wherever possible.
- Gradual removal of invasive grasses and revegetate with native species.
- Continue to map flea beetles over the next few years and record the effectiveness on the Leafy Spurge.

Management objectives and tasks for each high priority weed follow.



**Figure 7: Plan
View of
Storage Area**

High Priority Weed – Leafy Spurge (Euphorbia esula)

Description:

A creeping perennial introduced from Europe. It reproduces by seed and extensive creeping roots. The roots can extend as deep as 30 feet and are extremely wide-spreading. The shoots grow erect, 1 to 3 feet high, are pale green and unbranched except for flower clusters. Leaves are alternate, narrowly linear with smooth margins, about ¼ inch wide, and 1 to 4 inches long. A pair of yellowish-green, heart-shaped bracts encloses the small yellow-green flowers. The bracts have the appearance of flowers. The pods are three-seeded. The plant, including the root, has milky latex that is damaging to eyes and sensitive skin. Leafy spurge is adapted to a wide variety of habitats in Colorado and is very competitive with other plant species. Once it becomes established, it may exclude all other vegetation due to its competitive nature. It is an extremely difficult plant to control because of its extensive sprouting root system therefore eradication is the ultimate goal for managing this plant. Sheep and goats eat leafy spurge impacting the energy required by the plant to reestablish its shoots. Flea beetles bore into the extensive roots, leaving them susceptible to other forms of invasions, thus weakening the plant.



Management Objective:

- Eradicate stands along Cherry Creek.
- Remove smaller isolated infestations.

Keys to Control:

-

Monitoring

Actions

Late Winter --
Spring
Summer
Ongoing

High Priority Weed – Canada Thistle (Cirsium arvense)

Description:

Colony-forming perennial with both horizontal and vertical roots. The horizontal roots produce numerous shoots which allow it to reproduce; these can grow as much as 18 feet in one season. Vertical roots store water and nutrients in their many small branches. Mature plants are 3 to 5 feet tall, simple and branched at the top with leaf shape varying widely from oblong to lance-shaped. The leaves are set close on the stem, slightly clasping, and dark green. Sharp spines are numerous on the outer edges of the leaves and on the branches and main stem of plant. The flowers are small and compact; about $\frac{3}{4}$ inch or less in diameter, and light pink to rose-purple in color. The seeds are oblong, flattened, dark brown, and approximately $\frac{1}{8}$ inch long. Canada Thistle emerges in April or May and flowers between June and October, with seed produced from July to October. Although each plant produces about 1,500 seeds, Canada thistle reproduces mainly through shoots emerging from its horizontal root system, with every piece of root able to form a new plant. Although Canada thistle mainly invades disturbed areas, it does invade native plant communities, open meadows, and wetlands. Most Canada thistle patches spread at a rate of three to six feet a year, crowding out more desirable species and creating thistle monocultures.



Management Objective:

- Eliminate seed production in heavily infested areas.
- Eliminate stands smaller than 10 feet in diameter, and along pathways.

Keys to Control:

- Eliminate seed production.
- Reduce the plant's nutrient reserves through persistent management.

Monitoring:

- Walk the park once each month in June, July, and August – checking for flowering Canada thistle.
- Locate and map location and size of stands.

Actions

Summer -- Clip seedheads on small stands. Mow large stands once a month. *Timeframe:* Ongoing.

Fall -- About one month after last clipping or mowing, spray small stands with Curtail. *Timeframe* 3 years.

High Priority Weed – Curly Dock (Rumex crispus)

Description:

A robust, perennial herb that grows 50 – 150 cm tall and has narrowly oblong and blunt-tipped leaves, with wedge-shaped bases and strongly curled and wavy edges. It's flower stalks are jointed near the middle, thus distinguishing curly dock from western dock. Curly dock was introduced from Europe and has spread across North America. It grows in moist, often disturbed sites. Flowers are reddish and 3-8 mm long with 3 small sepals below 3 heart-shaped, net-veined scales (valves). The flowers hang grouped on slender stalks, forming dense, narrow clusters (panicles) 20 – 50 cm long. Curly Dock flowers from June until August. The fruits are smooth, chestnut-brown achenes, 4 mm long and are covered by the valves.



Management Objective:

-

Keys to Control:

-

Monitoring

Actions

Late Winter --

Spring

Summer

Ongoing



High Priority Weed – Kentucky Bluegrass (Poa pratensis)

Description:

A slender, perennial grass that often forms a sod from its rapidly spreading rhizomes. The leaves are mainly basal, soft, flat or folded, with prow-like tips. The ligules are about 1 – 1.5 mm long. The flowers are green or purplish-tinged that grow in pyramid-shaped clusters. Kentucky bluegrass flowers from June to August. It is often found in dry to moist, open sites, often in disturbed areas. This grass is a native of Kentucky, therefore it requires high amounts of water to survive. This plant is considered to be an exotic species that is usually introduced by man.



Management Objective:

-

Keys to Control:

-

Monitoring

Actions

Late Winter --
Spring
Summer
Ongoing

High Priority Weed – Cultivated Rye (Secale cereale)

Description:

Volunteer rye, also called common or annual rye, is mostly an annual that is believed to be derived from *S. Montanum* a perennial native in the mountains of southwestern Asia. The first blade is tall, narrow, and vertical. Blades are covered with short hair and have prominent veins above and a midrib below. Sheaths are covered with short hairs. The spikes are 4 to 6 inches long, slender, and long-bearded.



Management Objective:

-

Keys to Control:

-

Monitoring

Actions

Late Winter --
Spring
Summer
Ongoing

High Priority Weed – Alfalfa (Medicago sativa)

Description:

Alfalfa is a common agricultural crop that escapes to invade natural areas. Their leaves are alternate, divided into 3 sharply toothed on the upper half, elliptic to oblong leaflets which are 2 – 3 cm long. The flowers are less than 5 mm long with deep purple to bluish flowers are clustered at the apex. The flowers are easily recognized as belonging to the Fabaceae family and can be seen May through September. The most distinctive characteristic is its fruits, which are tightly coiled (more than 1 complete turn), round, spiral pods. The plant can be an annual or a biennial herb and has very strong taproots. Because alfalfa is customarily an agricultural crop, grazing to reduce the plant is ineffective.



Management Objective:

- Eliminate seed production in heavily infested areas.
- Remove isolated individual plants

Keys to Control:

- Eliminate seed production and exhaust the soil seed bank.
- Several insects could be used to weaken and eventually eradicate the plant.
 - The pea aphid, blue aphid, spotted alfalfa aphid, and alfalfa weevil (*Hypera postica*) are considered the most important economic pests of alfalfa. Therefore these insects may be effective in areas where alfalfa is considered a weed.

Monitoring:

- Walk the park from May – September; map locations with heavy infestations.

Actions:

Spring – Distribute aphids or alfalfa weevils onto areas of high infestation.

Summer – Monitor progress of biocontrol and hand dig isolated individual plants.

Ongoing – If biological control proves to be ineffective, hand digging and hand application of herbicides are recommended. Herbicides should be applied when plant is not in flower in an effort to prevent killing of honeybees that feed on alfalfa.

Appendix A

Plants found on the Sand Prairie at Hentzell Park

*Indicates plants native to the prairie

Grasses:

- *Big bluestem (*Andropogon gerardii*)
- *Blue grama (*Chonrosom gracile*)
- *Buffalo grass (*Buchloe dactyloides*)
- Cheatgrass brome (*Bromus tectorum*)
- Crabgrass (*Digitaria sanguinalis*)
- Crested wheatgrass (*Agropyron cristatum*)
- Cultivated rye (*Secale cereale*)
- Foxtail barley (*Hordeum jubatum*)
- *Indian grass (*Sorghastrum avenaceum*)
- Intermediate wheatgrass (*Elytrigia intermedia*)
- Japanese brome (*Bromus japonicus*)
- Jointed goatgrass (*Aegilops cylindrica*)
- *Junegrass (*Koeleria cristata*)
- Kentucky bluegrass (*Poa pratensis*)
- *Little bluestem (*Schizachrium spp.*)
- Needle and thread grass (*Stipa comata*)
- *Needlegrass (*Stipa spartea*)
- *Prairie cordgrass (*Spartina pectinata*)
- *Prairie dropseed (*Sporobolus heterolepis*)
- *Purple three awn (*Aristida purpurea*)
- Quackgrass (*Elytrigia repens*)
- *Side oats grama (*Bouteloua curtipendula*)
- Smooth brome (*Bromus inermis*)
- *Switchgrass (*Panicum virgatum*)
- *Western wheatgrass (*Pascopylum spp.*)
- Witchgrass (*Panicum capillare*)

Perennials:

- Annual pricklepoppy (*Argemone polyanthemus*)
- Big bush morningglory (*Ipomoea leptophylla*)
- Black-eyed Susan (*Rudbeckia serotina*)
- *Blazing star (*Liatris punctata*)
- *Blue verbena (*Verbena hastata*)
- *Bracted spiderwork (*Tradescantia bracteata*)
- *Breadroot scurfpea (*Psoralea esculenta*)
- Bull thistle (*Cirsium vulgare*)
- *Bush morning-glory (*Ipomoea leptophylla*)
- *Butterfly milkweed (*Asclepias amplexicaulis*)
- Canada goldenrod (*Solidago canadensis*)
- Canadian thistle (*Cirsium arvense*)
- Catnip (*Nepeta cataria*)
- *Columnar prairie coneflower (*Ratibida columnifera*)
- Common cattail (*Typha latifolia*)
- *Common goldenrod (*Solidago missouriensis*)
- Common lupine (*Lupinus argenteus*)
- *Common milkweed (*Asclepias syriaca*)
- Common mullein (*Verbascum thapsus*)
- *Common prickly pear (*Opuntia macrorhiza*)
- Common sagewort (*Artemisia campestris*)
- *Common sunflower (*Helianthus annuus*)
- Common vetch (*Vicia sativa*)
- *Common yarrow (*Achillea millefolium*)
- Cow parsnip (*Heracleum lanatum*)
- *Creeping whitlow grass (*Draba reptans*)
- Curly dock (*Rumex crispus*)
- Diffuse knapweed (*Centaurea diffusa*)
- Dotted gayfeather (*Liatris punctata*)
- *Ellisia (*Ellisia nyctelea*)
- Eveningstar (*Mentzelia decapetala*)
- Field alyssum (*Alyssum alyssoides*)
- Field bindweed (*Convolvulus arvensis*)
- *Flax (*Linum*)
- *Fleabane (*Erigeron spp*)
- Flixweed (*Descurainia sophia*)
- *Four o'clock (*Mirabilis nyctaginea*)
- *Gaura (*Gaura coccinea*)
- Goathead (*Tribulus terrestris*)
- Hairy goldenaster (*Heterotheca villosa*)
- *Heath aster (*Aster ericoides*)
- Hemp dogbane (*Apocynum cannabinum*)
- Horseweed (*Conyza canadensis*)
- *Leadplant (*Amorpha canescens*)
- Leafy spurge (*Euphorbia esula*)
- *Low poppy mallow (*Callirhoe involucrata*)
- Meadow blazingstar (*Liatris ligulistylis*)
- *Milk-vetch (*Astragalus spp.*)
- *Mugwort wormwood (*Artemisia ludoviciana*)
- Musk thistle (*Carduus nutans*)

Narrowleaf cattail (*Typha angustifolia*)
 *Pale ragweed (*Amrosia artemisiifolia*)
 Pasture sage (*Artemisia frigida*)
 *Payless thelesperma (*Thelesperma megapotamicum*)
 *Pricklypear, plains (*Opuntia polyacantha*)
 Poison hemlock (*Conium maculatum*)
 *Poppy mallow (*Callirhoe involucreto*)
 Prairie coneflower (*Ratibida columnifera*)
 Prairie larkspur (*Delphinium virescens*)
 Prairie rose (*Rosa arkansana*)
 Prairie sage (*Artemisia ludoviciana*)
 *Prairie spiderwort (*Tradescantia occidentalis*)
 *Prairie Stiff Sandreed (*Panuum virgatum*)
 *Prairie sunflower (*Helianthus petiolaris*)
 *Purple prairie clover (*Petalostemon purpurea*)
 *Rose (*Rosa spp.*)
 *Rush skeleton plant (*Lygodesmia juncea*)
 Russian knapweed (*Centaurea repens*)
 *Scarlet gaura (*Gaura coccinea*)
 *Scarlet globemallow (*Sphaeralcea coccinea*)
 *Scurfpea (*Psoralea tenuiflora*)
 *Spiderwort (*Tradescantia virginiana*)

Shrubs and Trees:

*Big sagebrush (*Artemisia tridentata*)
 *Coyote willow (*Salix exidua*)
 *Golden currant (*Ribes aureum*)
 *Gray rabbitbrush (*Chrysothamnus nauseosus*)
 *Narrowleaf cottonwood (*Populus angustifolia*)

Showy Milkweed (*Asclepias speciosa*)
 Sidebells penstemon (*Penstemon secundiflorus*)
 *Silverleaf scurfpea (*Psoralea agrophylla*)
 Skeleton weed (*Lygodesmia juncea*)
 *Slimflower scurfpea (*Psoralea tenuiflora*)
 *Small soapweed (or yucca) (*Yucca glauca*)
 Spotted knapweed (*Centaurea maculosa*)
 Sunflower (*Helianthus rigidus*)
 Swamp milkweed (*Asclepias incarnata*)
 *Tall eupatorium (*Eupatorium altissimum*)
 *Toothleaf evening primrose (*Oenothera serrulata*)
 Verbena venosa (*Verbena rigida*)
 Wavyleaf thistle (*Cirsium undulatum*)
 Western whorled milkweed (*Asclepias subverticillate*)
 Western ragweed (*Ambrosia psilostachya*)
 Western salsify (*Tragopogon dubius*)
 Western yarrow (*Achillea lanulosa*)
 *White prairie clover (*Dalea candida*)
 White sweet clover (*Melilotus alba*)
 Wild licorice (*Glycyrrhiza lepidota*)
 Yellow evening primrose (*Oenothera villosa*)
 Yellow sweet clover (*Melilotus officinalis*)

*Peached-leaved willow (*Salix amygdaloides*)
 *Plains cottonwood (*Populus deltoides*)
 Russian Olive (*Eleagnus angustifolia*)
 *Western chokecherry (*Prunus virginiana x. melanocarpa*)

Appendix B

Educational Assistance for Inventory for ACSP

Appendix C

Conceptual Reorganization Plan

Appendix D

Map of locations for high priority weeds.

Leafy Spurge
Canada Thistle
Cultivated Rye
Smooth Brome
Kentucky Bluegrass

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<http://www.innsbrook-resort.com/audubon.htm>

www.audubonintl.org

<http://www.audubonintl.org/institute/rsrch-wildlifelinks.htm> good source for programs/grants offered to golf courses

<http://www.audubonintl.org/resources/casestudies/> this is a good source for how to get involved in the ACSS and why.

<http://www.audubonintl.org/resources/casestudies/ccwisconsin.htm>

<http://www.audubonintl.org/programs/acss/index.htm> tells about the ACSS and how to get involved

<http://www.audubonintl.org/programs/acss/golf.htm>

<http://www.naturegolf.com/partners.htm> great listing of partners associated with "green golf"

<http://www.naturegolf.com/index.html> good resource for green golf

http://www.usga.org/green/turfgrass/research_summary/best_management_practices/best_manage_kuiper.html

<http://twri.tamu.edu/watertalk/archive/1997-May/May-5.2.html> might be able to use one of the nearby colleges for the initial resource inventories.

<http://www.napa.ufl.edu/99news/golf.htm>

http://www.willjohnston.com/articles/12_28_97ngcgpoltb.html

<http://denver.bcentral.com/denver/stories/1997/04/07/focus1.html>

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