WILDLIFE AND NATURAL RESOURCE MANAGEMENT PLAN FOR OPEN SPACE PROPERTIES

Mountain View Open Space

WESTMINSTER

November 22, 2010

Westminster Hills Open Space

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A. THE PURPOSE OF A WILDLIFE AND NATURAL RESOURCE MANAGEMENT PLAN

In the 1980's, the City of Westminster initiated their Open Space program. Backed by a dedicated sales tax voted in by the residents, this was only the second open space program existing in the state at the time. With the goal of preserving 15% of the city's land mass in open space, the City of Westminster today has close to 3,000 acres of open space that have been acquired under this program. These acres are preserved as natural ecosystems and give the City of Westminster the character that sets it apart. This management plan will provide an overview of management guidelines that will be followed to protect and enhance these natural environments.

As the ecosystem on City open space properties change, either through natural or man made events, portions of this plan may also be altered by City Council to insure that these properties are kept in the best possible condition and preserved as they were intended. Such an event occurred at the Westminster Hills Open Space (Colorado Hills) in 2009 when plague eliminated 90% of the prairie dog population which had severely impacted the short and tall prairie grassland. After this natural event City

Council designated Westminster Hills as a natural grassland area and directed staff to actively work to keep the prairie dog population in this area to a minimum.

City of Westminster Open Space policy statement: **"*The objective of this open space program is to promote the quality of life for citizens of Westminster through the preservation and protection of the quality of the natural environment which has given Westminster much of its character.*** *This natural environment includes many spectacular views to the foothills and mountains, which can be enjoyed from the hills and sloping sites that make up the City's predominant land form. The natural streams and man-made canals and ponds and related plant and animal communities complement the scenic vistas and remind us of the area's early history. These natural areas, water bodies, tremendous vistas and panoramas, characteristic terrains and native flora and fauna are intended to be preserved and protected for the enjoyment of this and future generations by the judicious use of those sales tax dollars designated for the Open Space Program."*

As the City progressed through land purchases for open space some of the names for the sites changed and may not be accurately reflected in management plans as they were originally adopted by Council. **This is especially true for the Prairie Dog Management Plan which was approve by Council in 2005 and contains several site designations that have since been changed.** An example of this is Colorado Hills, now called Westminster Hills Open Space, and North Pointe, which is now known as Big Dry Creek Open Space. As funding allows updates to each individual plan will be scheduled on a periodic basis for updates and/or a new study as directed by Staff and Council.

B. WILDLIFE MANAGEMENT

The City of Westminster is fortunate to have all the amenities of an urban municipality along with an active open space program that currently has 13% of the City's land mass preserved in natural habitat. This natural habitat serves as home to a wide diversity of wildlife. Animals ranging from prairie dogs and Canadian geese to coyotes and bald eagles all make Westminster open space their home.

With wildlife and people living in close proximity to each other in Westminster, it is important to recognize that conflicts are bound to occur. These conflicts have already led to the implementation of management plans for coyotes, beavers, and prairie dogs. With public safety as the top priority, these management plans aim at co-existence between wildlife and humans and rely heavily on public education. This wildlife management plan follows that same approach and identifies:

1. *Possible "conflict" species that live within Westminster.*
2. *Issues that may arise with them.*
3. *Steps that can be taken to prevent and mitigate potential human/wildlife conflict.*

Wildlife Species and Potential Conflicts

Some wildlife species, by their very nature, can potentially create conflicts between humans and themselves. These wildlife species can be beautiful and entertaining yet through their raucous cries, flocking, vegetation decimation, house intrusions, disease implications, or general annoyance can cause issues with humans.

These animals are following their instincts with no intention of harm and it is important that humans learn to live with wildlife. These animals are our neighbors and share our world. Since wildlife species are unlikely to change their innate behavior, humans can change their own habits and environment to mitigate and discourage wildlife/human conflicts. To have the benefit of wildlife in Westminster, residents must learn to co-exist through understanding, mitigating, and adapting. Just as we learn to live with our human neighbors, we can live with our wildlife neighbors.

The wildlife descriptions provide some general information about the animals, as well as potential conflicts that may arise, followed by a listing of recommended preventative measures and management recommendations to reduce conflict.

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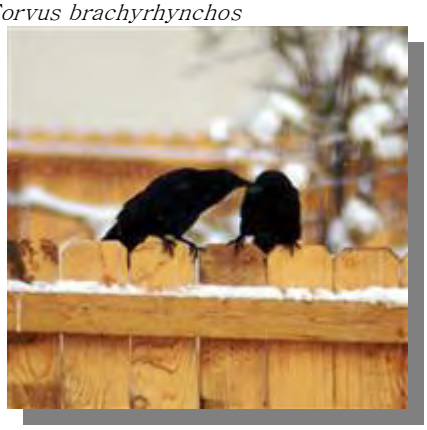
American Crow

Corvus brachyrhynchos



Background Information: Crows are black with metallic violet gloss on the body and blue-violet and blue-green gloss on the wings. The eyes of adult birds are brown, whereas juveniles have blue ones. Crows are 17-21 inches in length and have a wingspread of 33-40 inches. Male crows weigh about one to one and a half pounds, while females are slightly smaller. Crows are often confused with ravens, which are larger and have wedge-shaped tails.

Crows are found throughout much of Colorado and reside in riparian, agricultural and urban areas. They are year-round residents and form large flocks during fall and winter. Nests are built 10 to 75 feet above the ground by both males and females, and are constructed out of sticks and coarse weed stalks that are plastered together with mud or clay. Nests are lined with feathers, fibrous roots, beard lichen and fur of other animals. Most of crows' diets consists of vegetable foods including cultivated grains, seeds, wild and cultivated fruits, and nuts. However, they also eat insects, snails, spiders, small reptiles, frogs, small mammals, eggs and nestlings of other birds.

Potential Conflicts: Crows forage in residential gardens and unsecure trash cans. Their audible "cah-ing" can become irritating. Accumulations of crow feces around residences can cause strong odors and be aesthetically displeasing. Droppings can cause histoplasmosis fungus to grow in the soil. When disturbed, spores can become airborne. However, most people have no apparent ill effects when exposed to histoplasmosis. Lastly, crows will raid bird feeders and compete with other backyard birds.

Management Recommendations:

- Secure trash cans. Simply putting lids on bins will keep crows out of garbage.
- Noisemakers have been effective at encouraging large crow roosts to relocate.
- Selective pruning of trees will cause crows to seek shelter elsewhere
- In gardens, drape bird netting over plants or suspend it from a framework built around the plants. Protect seedlings with fabric row covers.
- Use bird feeders that exclude large birds.

Big Brown Bat

Eptesicus fuscus

Background Information: While there are several species of bats in Colorado, the one that is most common in urban areas is the big brown bat. Big brown bats have medium-sized, rounded ears and long, powerful wings that range from 12-14 inches in length. The length of their bodies is around 4-5 inches and they usually weigh about ½ ounce. The color of their fur is usually some shade of brown, while their ears, wings, feet, and face are darkish brown to black. Big brown bats' diets are generally composed of insects, such as beetles, moths, mosquitoes, and wasps. These creatures are greatly important in keeping urban insect populations under control and they eat insects that can be harmful to humans.

Potential Conflicts: Bats can become problems for people, especially in the summer and at night, when they take up residence in attics, window shutters, barns, eaves, and old buildings. A low percentage of bats also carry rabies, which can be spread to pets and humans if they come into contact with an infected bat's saliva. However, most bats that do carry rabies become paralyzed and are therefore, unable to fly.

Management Recommendations:

- Secure any potential openings in buildings that bats may use as entrance points before they emerge from hibernation.
- Make sure pet's rabies vaccinations are current.
- Do not handle a bat that appears to be sick and/or has fallen to the ground.
- Haze roosting bats through the use of bright lights and/or noisemaking devices.
- Locate exit points and then seal them when it is determined all bats have left.
- Release captured bat outside in an appropriate setting, such as against a tree.
- Hire a wildlife control company experienced in bat removal.

Canada Goose

Branta canadensis

Background Information: Canada geese can reside year-round in Colorado, including Westminster. Canada geese are very adaptable and it is not uncommon to see flocks of hundreds of birds. These large numbers of Canada geese feed on grass and are attracted to large grassy areas such as parks and golf courses.

Possible Conflicts: Large numbers of birds often congregate in an area, fouling the area with feces and damaging the vegetation and landscaping.

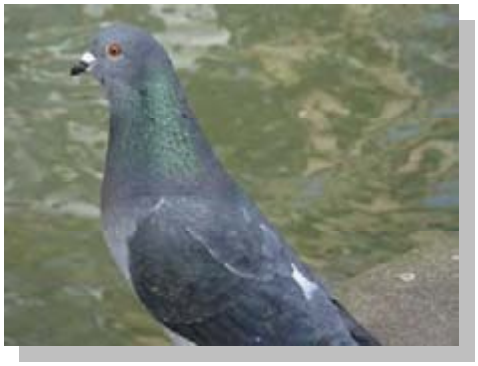
Management Recommendations: *Canada geese are protected by federal and state laws and can only be affected by n*on-lethal control activities.

- Do not feed geese at any time.
- Apply commercial repellants to grassy areas.
- Modify the landscape with trees and shrubs to discourage geese from using the area.
- Use barriers or exclusions to keep geese out of areas.
- Practice hazing activities to scare and repel geese away from your property. (trained dogs, scarecrows, or noise machines).
- Use egg and nest control methods under DOW guidelines.

The Colorado Division of Wildlife (DOW) has been issued a special statewide permit by the U.S. Fish and Wildlife Service that allows the DOW to destroy eggs and nests of breeding Canada geese. In most cases, eggs are 'oiled'—100% corn oil is applied to eggs in the nest. The oil prevents the eggs from developing and hatching. The DOW allows landowners and land managers to conduct egg control activities under the statewide permit and provides training and technical assistance to sub-permittees.

Common Pigeon

Columba livia



Background Information: The common (feral) pigeon, frequently seen in urban areas, are domesticated rock doves that have returned to living in wild/semi-wild environments. The average size of these birds is 29-33 cm and they have a 60-68 cm wingspan. The color of the common pigeon ranges from grey to brownish-red. All species have iridescent feathers on their necks that shine pink and green in the sunlight. Pigeons living in urban areas will eat almost anything discarded by humans, such as meat, vegetables, and bread. The common pigeon has been highly successful adapting to living in urban areas because stoops and ledges of buildings act as good surrogates for the cliffs they use for roosting in the wild and humans provide them an ample food supply.

Possible conflicts: Pigeon droppings are aesthetically displeasing, as they deface buildings, make benches undesirable to sit on, and leave unsightly blotches on cars. Removal of pigeon waste can sometimes be an expensive endeavor. Pigeon excrement can contain histoplasmosis, a fungal disease, which can be contracted by humans when cleaning up their droppings. Common pigeons are often the carriers of diseases like pigeon ornithosis (psittacosis) encephalitis, newcastle disease, toxoplasmosis, and salmonella. Mites, ticks, fleas, and other bugs often use pigeons as hosts.

Management Recommendations: To reduce conflicts with pigeons, several management techniques can be employed. These include:

- Reducing food supply by securing trash and cleaning up litter.
- Discouraging the feeding of pigeons in public places.
- Removing nests.
- Eliminating pools of standing water that pigeons use for drinking.
- Blocking access to indoor roosting sites by securing openings to steeples, lofts, vents, and eaves.
- Placing mesh wire on ledges of buildings.

Cottontail

Genus sylvilagus

Background Information: Colorado is home to three different species of cottontail rabbits; the mountain cotton tail, the desert cottontail, and the eastern cottontail. Almost everyone recognizes rabbits with their distinctive hopping gait and long ears. They are about 16 inches long and weigh about two pounds. The species of cottontails differ mostly by color and are difficult or impossible to distinguish in the field, except by habitat and geographic location.

Cottontails mostly live in brushy country. They spend the day in a shallow depression in the shelter of a thicket. They eat vegetation, both herbaceous and woody, feeding early morning and late afternoon throughout the year.

Females give birth to two to six litters of four to seven blind, pink young after a gestation period of about four weeks. Such high birth rates obviously must be balanced by high death rates or ecosystems would be overwhelmed by cottontails. Coyotes, foxes, hawks, and owls eat adults. Weasels and rattlesnakes prey on the young, and disease and parasites take a toll on all age groups. Life span in the wild is no more than about a year.

Possible Conflicts: Cottontail browsing can cause damage to tree saplings, ornamental plants, and vegetable gardens.

Management Recommendations:

- Erect three-foot tall fence with 2" X 2" mesh, with some of the fence buried.
- Wrap trees and shrubs with plastic tubing or one-half inch mesh, extending below ground about four inches.
- Apply chemical or odor repellents. These have limited success and must be re-applied often.

European Starling

Stumas Vulgaris

Background Information: The European starling was first introduced into the United States in the 1890s. One hundred starlings were introduced in Central Park in hono of Shakespeare. By 1942 they had spread the width of th United States to California. While starlings are useful in that they consume vast quantities of insects, agricultural damage and human health and safety concerns have ensured the bird's reputation as primarily that of a pest.

Starlings are stocky black/iridescent birds, with long beaks and short tails. Their pointed wings make them look like a star in flight (giving them their name). These birds make a raucous sound, and can mimic the sounds of other birds and animals, as well as machinery.

Possible conflicts: Starlings form communal roosts that can be home to 10,000 or more birds. The combined weight of large numbers of birds may break small branches and new shoots of trees. The accumulation of droppings is toxic to plants and can kill mature trees. Filth, noise, and odors from roosts near urban areas may disturb nearby residents. Starling depredations impact numerous garden crops. Individual starlings, which weigh approximately 3 ounces, can each eat up to 1 ounce of food per day. Diseases such as the transmissible gastroenteritis virus (TGE) may be spread by starlings.

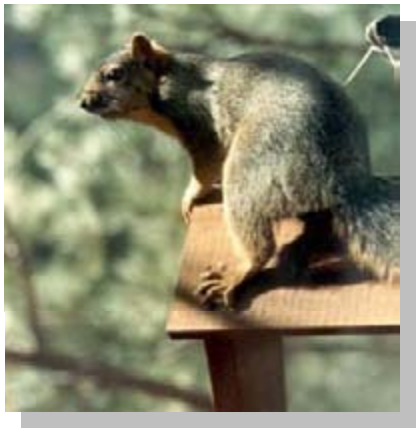
Finally, starlings compete with native cavity-nesting birds such as bluebirds, flickers, and other woodpeckers for nesting space, causing a decline in numbers for these species.

Management Recommendations: Control of starling damage includes:

- Hazing techniques such as noise machines, lights, and pyrotechnics.
- Using repellants, toxicants, and pesticides.

Fox Squirrel

Genus sciurus



Background Information:

The fox squirrel is one of three squirrels found in Colorado. This species grows to be 20 inches long, and weighs around 2 pounds.

Fox squirrels commonly reside near streams and in urban woodlands, building nests made of leaves or needles. Fox squirrels are preyed on by coyotes and foxes when they are on the ground. In turn, magpies, hawks and snakes eat nestlings in trees. Fox squirrel diets are composed of fruit, nuts and buds, and they will cache nuts for winter by burying them in the ground. These animals reproduce twice per year - each litter yielding two to five young. One litter is produced in the spring, while the other occurs in early summer.

Possible Conflicts:

- Fox squirrels have been known to remove wooden shingles from roofs and enter attics.
- They often chew on and remove bark from deciduous trees
- They are attracted to bird feeders.

Management Recommendations

- Use squirrel-proof bird feeders or elevate and move them from trees
- Place cone-shaped tree guards or 2 foot tall cylinders of tin around trunks of isolated trees.
- Remove tree branches that provide access to roofs.
- Squirrel-proof all access points into buildings by placing covers over them.
- Moth balls (5 pounds per 2,000 cubic feet of air space) may temporarily discourage squirrels from entering attics and other enclosed spaces.
- Fox squirrels can be captured with 18x7x7 inch or larger live traps. They can be dispatched or released 5 or more miles away with permission of the landowner and a permit from DOW.
- No toxicants or fumigants are registered for fox squirrels in Colorado.

Mule Deer

Genus odocoileus

Background Information: Mule deer have rope-like tails, evenly forked antlers, and large ears. They bound with a stiff-legged gait, unlike whitetails, which move with a graceful lope.

Mule deer are four to six feet long and stand three feet or more tall at the shoulder. Bucks can weigh over 400 pounds, while females are around half that weight. Adult males begin to grow antlers in spring, which are then used in clashes for dominance and breeding rights in autumn. The antlers are subsequently shed in winter.

Mule deer are abundant statewide, including suburban residential areas. They feed on woody vegetation, including twigs and leaves of shrubs and trees. Mountain lions, coyotes and man are their biggest predators. Hunters take 50,000 to 80,000 deer (mule and whitetail) annually in the state from an estimated population of 700,000 animals statewide.

Possible Conflicts: In densely populated areas inhabited by mule deer, they can become hazards for cars. Annually, about 7,000 deer collide with automobiles in Colorado creating over $3,000,000 in damage. Mule deer can also come into conflict with humans when they cause damage to trees and shrubs and ornamental plantings and by feeding on haystacks, corn, and vegetable crops.

Management Recommendations:

- Install 8 ft. tall solid or net-wire fencing and 1 to 5 wire electric fencing to exclude deer from areas where they are unwanted.
- Circular wire or Vexar plastic mesh tree protectors can be used to protect individual plants from being foraged on by deer.
- Repellents can be used on small plantings, in areas where fencing is too costly or aesthetically unpleasing, and where deer and elk pressure is low to moderate.
- Certain plants are considered to be “deer-resistant” (plants deer find unappealing). When food supplies are low, deer browse on most type of plants.

Muskrat

Ondatra zibethicus

Background Information: Muskrats are overgrown, semi-aquatic voles with waterproof fur. They have webbed-feet and ankles that are rotated out causing the hind feet to work like paddles. The tails of muskrats are flattened side-to-side and serve as rudders. The animals are dark brown in color, about 26 inches in length, and weigh about two pounds.

Muskrats live statewide in marshes, ponds and slow streams. Their lodges are made mostly of cattails and other aquatic plants. Muskrats are safe from predators when inside their lodges. Coyotes, foxes and owls prey on muskrats when they go on land because they move awkwardly out of water. Floods and fluctuating water levels can also kill muskrats. Muskrats are herbivores, eating mostly grasses, cattails, and marsh plants.

Females breed in spring and summer and produce two or three litters of one to ten young. They quickly acquire the muskrat's proper flattened tail and swim and dive at two weeks old.

Possible Conflicts: Burrowing done by muskrats can weaken ditch banks and levees. Muskrats can also undermine retaining walls that shore up homes, bridges, and other structures. In addition, their feeding behavior can destroy existing root mats that bind and secure a wetland together, which causes severe erosion and flooding.

Preventative Measures/Management Recommendations:

- Install fences that are at least 2 ft. high and extend 12 in. underground to exclude muskrats from entering an area where they are unwanted.
- Prevent slopes from becoming steeper than a 3:1 ratio since muskrats prefer to burrow in steeper slopes.
- Put in embankment barriers that extend 1 ft. above water and 3 ft. below
- Water-level manipulation can force muskrats to move to other suitable habitats.

Raccoon

Procyon lotor

Background Information: Raccoon adults are two to three feet in length (one third of that is tail) and weigh 8 to 22 pounds. They walk flat-footed and their tracks can be identified by an elongated hind foot and a hand-like forepaw. Raccoons live throughout Colorado and are indiscriminate eaters who will consume nearly anything including fruits, carrion, nestling birds and eggs, rodents, roosting bats, insects, crayfish and mollusks. They feed near water and rinse the food, perhaps to facilitate their ability to smell and taste.

Possible Conflicts: Raccoons are rather harmless, nocturnal creatures. However, they are known to carry a wide variety of diseases. While most of the diseases are not harmful to humans or raccoons, a few, such as distemper and rabies, can greatly diminish raccoon populations and cause harm to people and unvaccinated pets.

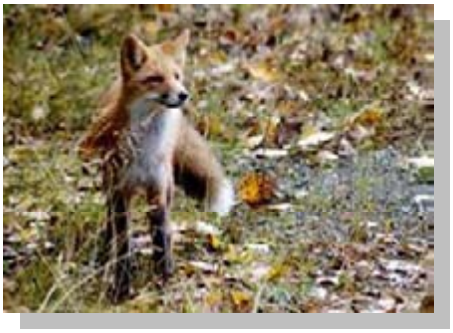
Raccoons at night will raid unsecure garbage cans, pet food that has been left out, and easily accessible gardens. There are also widespread incidences of raccoons that have been found in attics and chimney flues by crawling through broken windows, torn screens, unsecured chimney tops, or other openings in buildings. Raccoons find attics and especially chimney flues to be ideal nurseries.

Management Recommendations:

- Keep trash in a garbage can with a raccoon-proof lid.
- Do not leave pet food outdoors.
- Consider fencing garden areas if repeated digging occurs.
- Install screens over window, doors, and chimney flues to prevent entry.
- Caulk any openings or crevices that raccoons may crawl through.
- If raccoons are found in an attic, contact Animal Management.

Red Fox

Vulpes vulpes



Background Information: The red fox is a member of the canid family, which also includes wolves, coyotes, and domestic dogs. They have a very keen sense of smell, excellent hearing, and good vision. Adults weigh 8-15 pounds and are roughly 3-4 feet long including the tail. They have an elongated muzzle and pointed ears that are held erect. Despite the name, red fox are not always red. They have four recognized color phases: red, cross, silver and black. The red color phase is the most common observed in wild red fox, with all other phases being fairly rare. In all color phases, red fox have a characteristic white-tipped tail. Red fox are very vocal, especially during the breeding season. Red fox 's screeching yowls are often reported as a domestic cat fight or a mountain lion screaming. Barking and yipping are also common, especially if pups are present.

A typical home range for a red fox is 5-10 square miles depending on food availability. Males tend to travel farther than females, but juveniles dispersing from their parents will often travel the farthest. Adult red fox will typically stay within a mile of their den while they are raising pups. Red fox are most active at dawn and dusk.

Possible Conflicts: Red fox are opportunistic omnivores and are skilled predators and scavengers. They will kill a wide variety of birds, insects, amphibians, fish, and small mammals which may include pets.

Management Recommendations:

- Do not feed the wildlife.
- Cover compost piles and keeps garbage can lids tight.
- Do not leave small animals outside unattended.
- Pick up fallen fruit from trees.
- Remove bird feeders, or keep the area clean around the feeder.
- Install fencing at least 6 feet high, buried at least 1 foot underground.
- Use repellants, either commercial or homemade (mothballs, ammonia).

Skunk

Family *mephitidae*

Background Information: Four species of skunks are known in Colorado: striped, eastern- and western-spotted, and hog-nosed. Each species has the familiar warning colors of white on black. The striped skunk (24 to 32 inches long, nine pounds in weight) is the largest and most widespread. The hog-nosed skunk is about the same size as the striped skunk; however, this species of skunk might no longer live in Colorado, as no specimens have been reported in the last 50 years. The spotted skunk is the smallest (16 to 20 inches long) and has the most weasel-like movements. Skunks are omnivorous, eating carrion, mice (especially nestlings), fruit, insects, larvae, birds, and eggs. A common sign of skunks is a shallow, snout-sized "test-hole."

Possible conflicts: Skunks may dig holes under buildings or enter them through openings in the foundation. This is concerning because skunks are a major host of rabies and may release their foul smell when burrowed under structures. Skunks might also cause damage by digging in lawns, gardens, and golf courses while looking for food, which usually results in small 3- to 4-inch cone-shaped holes or patches of upturned earth.

Management Recommendations:

- Remove lumber and junk piles.
- Store garbage in tightly sealed cans.
- Clean up pet foods.
- Use insecticides to control grubs in turf.
- Install fencing that extends 1 to 2 feet below ground and seal foundation openings to prevent skunks from burrowing under buildings.
- If skunks are under a building, repellants (mothballs or ammonia-soaked cloths under the structure) will encourage it to leave.

Western Rattlesnake

Crotalus Viridis

Background Information: The Western Rattlesnake is the only venomous snake in Westminster. Snakes have scales and are ectothermic (they rely on external sources to control their body temperature). Rattlesnakes give birth in the autumn to live young. Because snakes are ectothermic, they avoid temperature extremes and prefer to hunt in mild conditions. They use their forked tongues and heat-sensitive facial pits to determine what exists in their environment and to acquire prey. Most snakes prey predominantly on rodents, although some also eat bird eggs, nestlings, lizards, and insects. They in turn are prey for eagles, hawks, and humans.

Possible conflicts: Snakes need cool, damp shelters and may take residence under and possibly inside buildings. This behavior may become more noticeable in the fall, when snakes seek areas to hibernate for the winter. Venomous snakes may cause health hazards by biting people, pets, and livestock.

Rattlesnakes are in open space areas, mainly in rock crevices or holes. Humans should use caution when climbing over rocky areas and should never put a hand in a burrow or hole. Encounters can be reduced by staying on established trails. If a snake is encountered, it is imperative to leave it alone and back away.

Management Recommendations:

- Eliminate cool, damp areas where snakes may hide.
- Control insect and rodent populations.
- To prevent snakes from entering basements and crawl spaces, seal all openings.
- In rattlesnake-infested areas, construct a snakeproof fence around the backyard or play area. The fence should be mesh wire, have a minimum height of 3 feet, and be buried 6 inches underground.
- Use repellents (commercial or homemade).

Woodpecker

Melanerpes erythrocphalus

Background Information: Spring is the season when the drumming sound of woodpeckers returns to Colorado. For hikers in the national forest, this sound may be music to their ears, but to homeowners, the sound can be bothersome. Woodpeckers are 7-15 inches long, have short legs, sharp-clawed toes and stiff tails. Most woodpeckers feed on wood-boring insects, insects on trees and the ground, vegetable matter, berries, or tree sap.

The birds especially like to hammer on wooden shingles, cedar or redwood siding, metal or plastic gutters, television antennas and light posts because these materials produce loud, hollow sounds. Drumming is most common during early morning and late afternoon, and usually ends by July 1.

Possible Conflicts: Woodpeckers can cause property damage by drilling holes in wood siding and eaves. During the early spring, woodpeckers hammer to attract mates, to establish and/or defend a territory, to excavate nesting or roosting sites, and to search for insects. The persistent drumming can be annoying, as well as the indicator of impending property damage.

All North American woodpeckers are primarily cavity nesters that excavate their own cavities, but some species occasionally use existing cavities or nest boxes.

Management Recommendations:

- Repairing holes right away to discourage further damage
- Using loud and sharp noises when woodpeckers are in the area
- Installing moving hawk mobiles or other free-moving items such as pie tins or ribbons
- Placing cavity-type nest boxes on buildings in the vicinity of northern flicker damage to decrease hammering activity
- Spraying nesting woodpeckers with a garden or high-pressured hose

WILDLIFE SPECIES FOUND IN WESTMINSTER, COLORADO

***highlighted animals have been identified as potential conflict species**

Common Name	Scientific Name	Possible Human/Wildlife Conflicts
MAMMALS		
Shrews		
Masked Shrew	*Sorex cinereus*	
Wandering Shrew	*S. vagrans*	
Water Shrew	*S. palustris*	
Merriam's Shrew	*S. merriami*	
Least Shrew	*Cryptotis parva*	
Bats		
Big Brown Bat	*Eptesicus fuscus*	Roosting in attics, shutters, etc. can be annoying and unsanitary. A small percentage of bats carry rabies.
Western Small-footed Myotis	*Myotis ciliolabrum*	
Little Brown Bat	*M. lucifugus*	
Red Bat	*Lasiurus borealis*	
Hoary Bat	*L. cinereus*	
Silvery-haired bat	*Lasionycteris noctivagans*	
Townsend's Big-eared Bat	*Plecotus townsendii*	
Rabbits and Hares		
Eastern Cottontail	*Sylvilagus floridanus*	Feeding causes damage to landscaping, flowers, shrubs, and trees
Desert Cottontail	*S. audubonii*	
White-tailed Jackrabbit	*Lepus townsendii*	
Black-tailed Jackrabbit	*L. californicus*	
Rodents		
Thirteen-lined Ground Squirrel	*Spermophilus tridecemlineatus*	Burrowing and feeding cause damage to emergent plants as well as negative aesthetic impact from devegetation.
Rock Squirrel	*S. variegates*	
Black-tailed Prairie Dog	*Cynomys ludovicianus*	Feeding and burrowing cause devegetation, resulting in loss of topsoil and beneficial flora, and drainage issues.
Fox Squirrel	*Sciurus niger*	Chewing and damaging shingles, as well as entering attics, result in property damage. Feeding at bird feeders discourages bird use. Chewing bark on trees causes damage and increases tree decline. Traveling power lines can short out transformers.

Plains Pocket Gopher	*Geomys bursarius*	
Olive-backed Pocket Mouse	*Perognathus fasciatus*	
Plains Pocket Mouse	*P. flavescens*	
Silky Pocket Mouse	*P. flavus*	
Hispid Pocket Mouse	*Chaetodipus hispidus*	
Ord's Kangaroo Rat	*Dipodomus ordii*	
Beaver	*Castor canadensis*	Chewing and felling trees results in deforestation and loss of tree benefits. Dams can cause undesirable flooding.
Plains Harvest Mouse	*Reithrodontomys montanus*	
Western Harvest Mouse	*R. megalotis*	
Deer Mouse	*Peromyscus maniculatus*	
Northern Grasshopper Mouse	*Onychomys leucogaster*	
Mexican Woodrat	*Neotoma mexicana*	
Meadow Vole	*Microtus pennsylvanicus*	
Long-tailed Vole	*M. longicaudus*	
Prairie Vole	*M. ochrogaster*	
Muskrat	*Ondatra zibethicus*	Hole-digging can undermine banks and dams, causing damage to irrigation canals and waterways. Feeding habits can damage turf and ornamental plants by destroying the root of the plant.
Meadow Jumping Mouse	*Zapus hudsonius*	
Porcupine	*Erethizon dorsatum*	
Carnivores		
Coyote	*Canis latrans*	Feeding habits can include small pets. Aggressiveness behavior can be seen during mating and birthing season.
Red Fox	*Vulpes vulpes*	Feeding habits can include small pets. Foxes can exhibit aggressive traits, and may be prone to rabies and distemper.
Swift Fox	*V. velox*	
Gray Fox	*Urocyon cinereoargenteus*	Feeding habits can include small pets. Foxes can exhibit aggressive traits, and may be prone to rabies and distemper.
Raccoon	*Procyon lotor*	Feeding habits include garbage cans, fruit trees, composts, etc. and cause damage to lawns and gardens. Hungry raccoons may try to enter homes through attic or basement windows, or dog doors. Diseases such as rabies are common.
Black Bear	*Ursus americanus*	
Long-tailed Weasel	*Mustela frenata*	
Badger	*Taxidea taxus*	
Striped Skunk	*Mephitis mephitis*	Digging and feeding can cause damage to plants and turf. Skunks may seek shelter

		under porches or sheds, and discharge a nauseating musk.
Bobcat	*Lynx rufus*	
Hoofed Mammals		
Mule Deer	*Odocoileus hemionus*	Feeding can cause damage to ornamental plants, trees, and shrubs. Deer/auto accidents can result in bodily/property damage.
White-tailed Deer	*O. virginianus*	
BIRDS		
Waterfowl and Related Species		
Common Loon	*Gavia immer*	
Horned Grebe	*Podiceps auritis*	
Eared Grebe	*P. nigricollis*	
Pied-billed Grebe	*Podilymbus podiceps*	
Clark's Grebe	*Aechmorphus clarkia*	
Western Grebe	*A. occidentalis*	
American White Pelican	*Pelecanus erythrorhynchus*	
Double-crested Cormorant	*Phalacrocorax auritus*	
Snow Goose	*Chen caerulescens*	
Canada Goose	*Branta canadensis*	Feeding habits cause damage to new-growth plants and grasses. Excrement is a problem on sidewalks, trails, and golf courses.
Wood Duck	*Aix sponsa*	
Mallard	*Anas platyrhynchos*	
Gadwall	*A. strepera*	
Green-winged Teal	*A. crecca*	
Blue-winged Teal	*A. discors*	
Cinnamon teal	*A. cyanoptera*	
American Wigeon	*A. americana*	
Northern Pintail	*A. acuta*	
Northern Shoveler	*A. clypeata*	
Canvasback	*Aythya valisneria*	
Redhead	*A. americana*	
Ring-necked Duck	*A. collaris*	
Greater Scaup	*A. marila*	
Barrow's Goldeneye	*Bucephala islandica*	
Common Goldeneye	*B. clangula*	
Bufflehead	*B. albeola*	
Common Merganser	*Mergus merganser*	
Red-breasted Merganser	*M. serrator*	
Hooded Merganser	*Lophodytes cucullatus*	
Ruddy Duck	*Oxyura jamaicensis*	
Lesser Scaup	*A. affinis*	

Least Bittern	*Ixobrychus exilis*	
American Bittern	*Botaurus lentiginosus*	
Black-crowned Night-Heron	*Nycticorax nycticorax*	
Snowy Egret	*Egretta thula*	
Great Egret	*Ardea alba*	
Great Blue Heron	*A. herodias*	
White-faced Ibis	*Plegadis chihi*	
Sandhill Crane	*Grus canadensis*	
Virginia Rail	*Rallus limicola*	
Sora	*Porazna carolina*	
American Coot	*Culica americana*	
American Golden-Plover	*Pluvialis dominica*	
Snowy Plover	*Charadrius alexandrinus*	
Mountain Plover	*C. montanus*	
Killdeer	*C. vociferus*	
American Avocet	*Recurvirostra americana*	
Black-necked Stilt	*Himantopus mexicanus*	
Willet	*Cataptrophorus semipalmatus*	
Greater Yellowlegs	*Tringa melanoleuca*	
Lesser Yellowlegs	*T. flavipes*	
Solitary Sandpiper	*T. solitaria*	
Spotted Sandpiper	*T. macularia*	
Marbled Godwit	*Limosa fedoa*	
Western Sandpiper	*Calidris mauri*	
Least Sandpiper	*C. minutilla*	
Pectoral Sandpiper	*C. melanotos*	
Stilt Sandpiper	*C. himantopus*	
Upland Sandpiper	*Bartramala longicauda*	
Short-billed Dowitcher	*Limnodromus griseus*	
Long-billed Dowithcer	*L. scolopaceus*	
Common Snipe	*Gallinago gallinago*	
Wilson's Phalarope	*Phalaropus tricolor*	
Red-necked Phalarope	*P. lobatus*	
Gulls and Terns		
Franklin's Gull	*Larus pipixcan*	
Bonaparte's Gull	*L. philadelphia*	
Ring-billed Gull	*L. delawarensis*	
California Gull	*L. californicus*	
Herring Gull	*L. argentatus*	
Caspian Tern	*Sterna caspia*	
Forster's Tern	*S. forsteri*	
Common Tern	*S. hirundo*	
Black Tern	*Chilodonius niger*	

Gallinaceous Birds (Upland Fowl)		
Ring-necked Pheasant	*Phasianus colchicus*	
Wild Turkey	*Meleagris gallopavo*	
Northern Bobwhite	*Colinus virginianus*	
Raptors		
Turkey Vulture	*Cathartes aura*	
Osprey	*Pandion haliaetus*	
Bald Eagle	*Haliaeetus leucocephalus*	
Golden Eagle	*Aquila chrysaetos*	
Northern Harrier	*Circus cyaneus*	
Sharp-shinned Hawk	*Accipter striatus*	
Cooper's Hawk	*A. cooperli*	
Red-tailed Hawk	*Buteo jamaicensis*	
Swainson's Hawk	*B. swainsoni*	
Ferruginous Hawk	*B. regalis*	
Rough-legged Hawk	*B. lagopus*	
American Kestrel	*Falco sparverius*	
Merlin	*F. columbarius*	
Prairie Falcon	*F. mexicanus*	
Peregrine Falcon	*F. peregrinus*	
Barn Owl	*Tyto alba*	
Eastern Screech-Owl	*Otus asio*	
Long-eared Owl	*Asio otus*	
Short-eared Owl	*A. flammeus*	
Great Horned Owl	*Bubo virginiana*	
Burrowing Owl	*Athene cunnicularia*	
Miscellaneous Non-Passerines		
Common Nighthawk	*Chordeiles minor*	
Chimney Swift	*Chaetura pelagica*	
Broad-tailed Hummingbird	*Selasphorus platycercus*	
Rock Dove (Pigeon)	*Columba livia*	Flocking in areas frequented by humans results in copious fecal droppings and annoyance issues.
Mourning Dove	*Zenaida macroura*	
Belted Kingfisher	*Ceryle alcyon*	
Northern Flicker	*Colaptes auratus*	Pecking and hammering can cause property damage and nuisance noise.
Red-headed Woodpecker	*Melanerpes erythrocphalus*	See above.
Lewis' Woodpecker	*M. lewis*	
Red-naped Sapsucker	*Sphyrapicus nuchalis*	
Downy Woodpecker	*Picoides pubescens*	
Hairy Woodpecker	*P. villosus*	
Passerines (Songbirds)		
Eastern Kingbird	*Tyrannus tyrannus*	

Western Kingbird	*T. verticalis*	
Western Wood-pewee	*Contopus sordidulus*	
Say's Phoebe	*Syornis saya*	
Cordilleran Flycatcher	*Empidonax difficilis*	
Horned Lark	*Eremophila alpestris*	
Tree Swallow	*Tachycineta bicolor*	
Violet-green Swallow	*T. thalassina*	
Bank Swallow	*Riparia riparia*	
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	
Cliff Swallow	*Hirundo pyrrhonota*	
Barn Swallow	*H. rustica*	
Western Scrub-jay	*Aphelocoma californica*	
Blue Jay	*Cyanocitta cristata*	
Steller's Jay	*C. stelleri*	
Black-billed Magpie	*Pica hudsonia*	
American Crow	*Corvus brachyrhynchos*	Harassing people and animals can occur during flocking season. Loud cawing can cause noise disturbance. Damage to gardens can occur. Droppings are high in bacteria and fungal agents.
Common Raven	*C. corax*	
Black-capped Chickadee	*Poecile atrocapillus*	
Moutain Chickadee	*P. gambelii*	
Brown Creeper	*Certhia familiaris*	
White-breasted Nuthatch	*Sitta carolinensis*	
Red-breasted Nuthatch	*S. canadensis*	
House Wren	*Troglodytes aedon*	
Marsh Wren	*Cistothorus palustris*	
Rock Wren	*Salpinctes obsoletus*	
Golden-crowned Kinglet	*Regulus satrapa*	
Ruby-crowned Kinglet	*R. calendula*	
Mountain Bluebird	*Sialia currucoides*	
Townsend's Solitaire	*Myadestes townsendi*	
American Robin	*Turdus migratorius*	
Loggerhead Shrike	*Lanius ludovicianus*	
Northern Shrike	*L. excubitor*	
Gray Catbird	*Dumetella carolinensis*	
Northern Mockingbird	*Mimus polyglottos*	
Brown Thrasher	*Toxostoma rufum*	
Sage Thrasher	*Oreoscoptes montanus*	
American Pipit	*Anthus rubescens*	
American Dipper	*Cinclus mexicanus*	
Bohemian Waxwing	*Bombycilla garrulus*	
Cedar Waxwing	*B. cedrorum*	
European Starling	*Sturnus vulgaris*	Flocking in large numbers results in copious fecal droppings, noise pollution,

		and often drives away other bird species.
Plumbeous Vireo	*Vireo plumbeus*	
Warbling Vireo	*V. gilvus*	
Orange-crowned Warbler	*Vermivora celata*	
Black-and-White Warbler	*Mniotilta varia*	
Northern Parula	*Parula americana*	
Blackburnian Warbler	*Dendroica fusca*	
Yellow-rumped Warbler	*D. coronata*	
Blackpoll Warbler	*D. striata*	
Yellow Warbler	*D. petechia*	
MacGillivray's Warbler	*Oporonis tolmiei*	
Hooded Warbler	*Wilsonia citrine*	
Ovenbird	*Seiurus aurocapillus*	
Northern Waterthrush	*S. novaboracensis*	
Common Yellowthroat	*Geothlypis trichas*	
American Redstart	*Steophaga ruticilla*	
Western Tanager	*Piranga ludoviciana*	
Spotted Towhee	*Pipilo maculate*	
Cassin's Sparrow	*Aimophila cassinii*	
American Tree Sparrow	*Spizella arborea*	
Chipping Sparrow	*S. passerina*	
Brewer's Sparrow	*S. breweri*	
Vesper Sparrow	*Poeecetes gramineus*	
Lark Sparrow	*Chondestes grammacus*	
Lark Bunting	*Calamospiza melanocorys*	
Savannah Sparrow	*Passerculus sandwichensis*	
Grasshopper Sparrow	*Ammodramus savannarum*	
Song Sparrow	*Melospiza melodia*	
White-crowned Sparrow	*Zonotrichia leucophrys*	
Dark-eyed Junco	*Junco hyemalis*	
McCowns' Longspur	*Calcarius mccownii*	
Chestnut-collared Longspur	*C. ornatus*	
Black-headed Grosbeak	*Pheucticus melanocephalus*	
Blue Grosbeak	*Guiraca caerulea*	
Lazuli Bunting	*Passerina amoena*	
Indigo Bunting	*P. cyanea*	
Bobolink	*Dolichonyx oryzivorus*	
Red-winged Blackbird	*Agelaius phoeniceus*	
Yellow-headed Blackbird	*Xanthocephalus xanthocepalus*	
Western Meadowlark	*Sturnella neglecta*	
Brewer's Blackbird	*Euphagus cyanocephalus*	
Common Grackle	*Quiscalus quiscula*	
Brown-headed Cowbird	*Molothrus ater*	
Orchard Oriole	*Icterus spurius*	
Bullock's Oriole	*I. bullockii*	
House Finch	*Carpodacus mexicanus*	

Pine Siskin	*Carduelis pinus*	
Lesser Goldfinch	*C. psaltria*	
American Goldfinch	*C. tristis*	
Evening Grosbeak	*Coccothraustes vespertinus*	
House Sparrow	*Passer domesticus*	
REPTILES		
Snapping Turtle	*Chelydra serpentina*	
Painted Turtle	*Chrysemys picta*	
Ornate Box Turtle	*Terrepene ornate*	
Spiny Softshell (Turtle)	*Trionyx spiniferus*	
Lesser Earless Lizard	*Holbrookia maculate*	
Short-horned Lizard	*Phyrnosoma hernandesi*	
Fence (Spiny) Lizard	*Sceloporus undulatus*	
Six-lined Racerunner	*Cnemidophorus sexlineatus*	
Many-lined Skink	*Eumeces multivirgatus*	
Yellow-bellied Racer	*Coluber constrictor*	
Western Hognose Snake	*Heterodon nasicus*	
Milk Snake	*Lampropeltis triangulum*	
Northern Water Snake	*Nerodia sipedon*	
Bullsnake/Gopher Snake	*Pituophis catenifer*	
Plains Black-headed Snake	*Tantilla nigriceps*	
Western Terrestrial Garter Snake	*Thamnophis elegans*	
Plains Garter Snake	*T. radix*	
Common Garter Snake	*T. sirtalis*	
Western (Prairie) Rattle Snake	*Crotalus viridis*	Venomous snake which can cause harm to pets and humans.
AMPHIBIANS		
Tiger Salamander	*Ambystoma tigrinum*	
Plains Spadefoot	*Spea bombifrons*	
Great Plains Toad	*Bufo cognatus*	
Woodhouse's Toad	*B. woodhousii*	
Western Chorus Frog	*Psuedacris triseriata*	
Bullfrog	*Rana catesbeiana*	
Northern Leopard Frog	*R. pipiens*	
NATIVE FISH		
Black Bullhead (Catfish)	*Icterus melas*	
Stonecat	*Noturus flavus*	
Green Sunfish	*Lepomis cyanellus*	
Orange-spotted Sunfish	*L. humilis*	
Brook Stickleback	*Cutaea inconstans*	
Stoneroller	*Sampostoma anomalum*	
Northern Redbelly Dace	*Phoxinus eos*	
Longnose Dace	*Rhynichthys cataractae*	

Creek Chub	*Semotilus atromaculatus*	
Fathead Minnow	*Pimephales promelas*	
Brassy Minnow	*Hybognathus hankinsoni*	
Red Shiner	*Notropis lutrensis*	
Common Shiner	*N. cornutus*	
Bigmouth Shiner	*N. dorsalis*	
Sand Shiner	*N. stramineus*	
White Sucker	*Catostomus commersoni*	
Longnose Sucker	*C. catostomus*	
Plains Killifish	*Fundulus zebrinus*	
Plains Topminnow	*F. sciadicus*	
Johnny Darter	*Etheostoma nigrum*	
Iowa Darter	*E. exile*	

Bald Eagles in Westminster

Standley Lake Regional Park, located in northwest Westminster, has been home to a nesting pair of bald eagles since 1992 with the pair's first offspring observed in 1996. Since then, the eagles have returned every year and have raised 1-2 eaglets on an annual basis. This has afforded the public the unique opportunity to see these magnificent creatures in an urban setting.

ECO FACT: Forty years ago there were just over 400 nesting pairs of Bald Eagles in the U.S. Today there are more than 7,000 nesting pairs, including about 60 in Colorado alone.

Bald eagles are usually found close to large bodies of water, such as rivers, lakes, and the coast. These birds mate for life and re-use nest sites. The female will lay eggs (usually 1-3) in early February. After a 35 day incubation period, the eggs will hatch. The offspring will then leave the nest in late May or early June.

Protected Status

The bald eagle has made a significant recovery and is no longer listed under the Endangered Species Act (ESA). However, the Bald and Golden Eagle Protection Act (Eagle Act, 16 U.S.C. 668-668-d, as amended) still grants bald eagles federal protective status. The Eagle Act prohibits harming bald eagles, directly and indirectly (e.g. interfering with breeding, feeding, sheltering, and other essential functions). Violations of the Eagle Act by individuals are punishable by a fine of $100,000 and/or imprisonment for one year for first-time offenders. An organization can be fined $200,000 for a first offense.

The Lacey Act and Migratory Bird Treaty Act (MBTA) also give bald eagles protection under federal law. The Lacey Act makes it a federal crime to take, possess, transport, sell, import, or export bald eagle nests, eggs and parts that are taken in violation of any

state, tribal or U.S. law. Penalties include a maximum of five years in prison and a $250,000 fine for felony convictions and a maximum $10,000 fine for civil violations. Fines are doubled for organizations.

Furthermore, the bald eagle is considered a "State Threatened" species in Colorado. Colorado House Bill 08-1304, enacted July 1, 2008, makes it illegal to hunt, take, or possess a bald eagle in Colorado, except if an individual or organization has a federal permit to do so. Violations of this bill are punishable by a fine of $1,000 to $100,000, up to one-year imprisonment, and assessment of 20 license suspension points.

Conservation

In order to ensure that the bald eagles continue to have a viable habitat at Standley Lake, the City will continue to follow the U.S. Fish and Wildlife Service's "National Bald Eagle Management Guidelines." The Guidelines are designed to help prevent individuals, agencies, organizations, and companies from violating bald eagle protections provided by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act and preserve bald eagle habitats.

Moreover, the City will continue to abide by Colorado Division of Wildlife recommendations for buffer zones and seasonal restrictions at nest sites. These include:

- No surface occupancy (beyond that which historically occurred in the area) within ¼ mile radius of active nests
- Seasonal restriction to human encroachment within ½ mile radius of active nests from October 15 through July 31
- No prairie dog control, including relocation or extermination, on any colony larger than 100 prairie dogs that is within 1 mile of an active nest or occupied communal roost. This excludes control measures needed to protect public health and safety.
- No removal of trees greater than 12 inches in diameter within ¼ mile, to the extent possible, of a documented nest site or communal roost, even if the removal would occur when the nest or roost is not active or occupied. This excludes control measures needed to protect public health and safety.
- For any project in which the City is the applicant/proponent (e.g., road or utility projects, construction of greenway trails), the project should be designed to avoid or minimize habitat loss and the potential for disturbance to the extent practicable, even if such loss could be permitted by the U.S. Fish and Wildlife Service.

WESTMINSTER

Prairie Dog Management Plan

For City-Owned Open Space Parcels

City of Westminster
Department of Parks, Recreation, and Libraries
6575 West 88th Avenue
Westminster, Colorado 80031
(303) 430-2400
www.ci.westminster.co.us

City of Westminster
Prairie Dog Management Plan

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3 January 2005

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1. Introduction

1.1. Purpose of the Plan

In 2002, the City Council adopted a Resolution that established a citywide black-tailed prairie dog (*Cynomys ludovicianus*) management policy and defined basic internal priorities for management on City-owned properties. The Resolution provided only very basic guidelines of what is and is not acceptable in a general sense. In 2002, the City of Westminster Prairie Dog Administrative Policy was developed pursuant to the Resolution, which expanded slightly on the Resolution, but still provided only generic guidelines. City staff recognized that basic guidelines were not sufficient to allow the City to determine appropriate management actions and to ensure that prairie dogs were being properly conserved and managed on either a landscape or individual parcel basis.

In the spring and early summer of 2004, wildlife biologists from Roe Ecological Services, LLC (RES) surveyed Open Space parcels within the City for prairie dog and wildlife habitat suitability attributes. Attributes surveyed included soil type, vegetation composition within and surrounding each prairie dog colony, slope, location, size and density of existing prairie dog colonies, associated species, and other significant or sensitive wildlife species and/or habitats. RES biologists and City staff then developed management strategies for each individual parcel based on the following:

1) Land use objective and possible conflicts or benefits from prairie dogs;
2) Habitat suitability attributes for prairie dogs or other valuable/sensitive wildlife species;
3) Prairie dog population density limits/carrying capacity;
4) Recommended types and levels of prairie dog control;
5) Buffer zones/barrier needs;
6) Adjacent landowner concerns; and
7) Suitability for future live wild-to-wild relocation.

The same criteria for analysis and development of management strategies will be utilized for any open space parcel not addressed herein as well as all undeveloped parks and future acquisitions owned by the City of Westminster.

1.2. Westminster Prairie Dog Policies

1.2.1. Resolution No. 8 – Prairie Dog Management Policy

Westminster City Council adopted Resolution No. 8 (Resolution) establishing a City-wide Prairie Dog Management Policy for city-owned properties on 11 February 2002. The Resolution recognizes that the City is interested in achieving a responsible balance between the demands of development on City-owned properties with maintaining open space and healthy, balanced wildlife populations (not just prairie dogs) within the City. Relocation is defined as the first choice if prairie dogs need to be removed from a property. However, the Resolution permits eradication if relocation is not feasible. Furthermore, the Resolution states that the City will not regulate or try to manage prairie dogs located on property not owned by the City.

1.2.2. 2002 Prairie Dog Administrative Policy

The Administrative Policy (Policy) was developed to define internal priorities to manage prairie dogs on City-owned land. The Policy does not permit private landowners or other public agency landowners to relocate prairie dogs onto City property due to the lack of available suitable habitat and ability to manage those prairie dogs in the long-term. The Policy generally describes monitoring, on-site preservation, predator enhancement, barriers, relocation, eradication and disease control, as well as a basic outline of procedures. It does not, however, provide guidance for how to manage a given situation on any given open space parcel.

1.3. Westminster Municipal Code

1.3.1. Open Space

According to the Open Space Program Policy Statement (§13-5-1):

> In the broadest sense the objective of the Open Space Program is to promote quality of life for citizens of Westminster through the preservation and protection of the quality of the natural environment which has given Westminster much of its character...

Open Space properties are to be managed in a natural condition (§13-5-3), which includes farming and ranching objectives. Maintenance of Open Space properties is the responsibility of the Department of Parks, Recreation, and Libraries through funds from the general operating budget (§13-5-7).

1.3.2. Prairie Dog Management

The Municipal Code does not include any ordinances relating to the management of prairie dogs.

1.4. Prairie Dog Management Per Colorado Law

Prairie dogs are defined as small game and destructive rodent pests by Colorado state law.

§ 33-1-102, C.R.S. Definitions.

(41) "Small game" means: Game birds, including grouse, ptarmigan, pheasant, quail, partridge, wild turkey, wild ducks, wild geese, sora and Virginia rails, coot, sandhill cranes, snipe, mergansers, band-tailed pigeons, doves, and crow; game mammals, including cottontail rabbit, snowshoe hare, fox squirrel, pine squirrel, Abert's squirrel, jackrabbits, marmot, and prairie dogs; and all species of small mammals and birds that may be introduced or transplanted into this state for hunting or are classified as small game by the commission.

§ 35-7-203, C.R.S. Release of destructive rodent pests - definitions.

(1) No person shall release destructive rodent pests into a county unless such person has complied with all requirements for such release imposed by the wildlife commission and obtained both the prior approval of the commission and the prior approval, by resolution duly adopted, of the board of county commissioners of such county. A person need not obtain such prior approval before:

a) Transporting destructive rodent pests through a county without releasing such destructive rodent pests; or
b) Confining destructive rodent pests indoors or in cages or similar enclosures and using such destructive rodent pests for scientific purposes or as food for human or animal consumption; or
c) Keeping destructive rodent pests indoors or in cages or similar enclosures as pets; or
d) Releasing destructive rodent pests into the county in which such destructive rodent pests were originally taken into captivity.

(2) For purposes of this section, "destructive rodent pests" means one or more rodents, including but not limited to prairie dogs, ground squirrels, pocket gophers, jackrabbits, and rats, that pose a threat to agricultural, horticultural, or livestock concerns or to human health.

(3) The board of county commissioners of any county into which a person releases destructive rodent pests without the prior approval of such board may, at its discretion:

(a) Require the person who released the destructive rodent pests to eradicate the destructive rodent pests or remove the destructive rodent pests from the county; or

(b) Impose a fine upon the person who released the destructive rodent pests in an amount sufficient to compensate the county for the cost of eradicating the destructive rodent pests or removing the destructive rodent pests from the county.

The Colorado Division of Wildlife (CDOW) authorizes wild-to-wild relocations through a permit process as specified by the Colorado Wildlife Commission. Additional permission for wild-to-wild relocations must be obtained from the county commissioners if the relocation occurs across county lines. Jefferson and Adams Counties are both included within the City of Westminster municipal boundary. Currently, neither county is willing to accept prairie dogs from another county. Therefore, any relocations that are likely to occur within the City of Westminster must occur within the same county.

1.5. CDC/FDA Monkeypox Restrictions

The Centers for Disease Control and Prevention (CDC) and the Food and Drug Administration (FDA) established new restrictions and modify existing restrictions on the import, capture, transport, sale, barter, exchange, distribution, and release of African rodents, prairie dogs, and certain other animals. This action was taken to prevent the spread of monkeypox, a communicable disease, in the United States. An exemption permit is required from the FDA and the CDOW for any activity that results in the transport of prairie dogs, alive or dead.

1.6. Noxious Weed Management

The Colorado Noxious Weed Act (§§ 35-5.5-101–119, C.R.S.) requires all public and private landowners in the State of Colorado to control noxious weeds. It is unlawful to intentionally allow any noxious weed to grow without management, defined as any activity that prevents a plant from establishing, reproducing, or dispersing itself such that:

The Colorado general assembly clearly recognizes the profound negative impacts of noxious weeds on the economic and environmental values of Colorado's private and public lands. Consequently, the assembly has placed all Colorado lands under the jurisdiction of local

governments that have been delegated the responsibility and power to assure the management of state and locally designated noxious weeds.

Appendix A provides the Colorado noxious weed list and information about the noxious weeds found during the assessments and how some of these species can be particularly detrimental in prairie dog colonies.

2. Background On Black-Tailed Prairie Dogs

2.1. Species Status

In 1998, the U.S. Fish and Wildlife Service (USFWS) received two petitions to list the black-tailed prairie dog as threatened under the Endangered Species Act of 1973, as amended (ESA) (USFWS 1999). Each petition listed several factors as major threats to the long-term viability and conservation of this species, which included habitat loss, habitat fragmentation, disease, unregulated shooting and poisoning. The USFWS stated that while listing the black-tailed prairie dog as a threatened species under the ESA may be warranted, it was precluded, as other species were in greater peril thereby tying up the financial resources necessary to complete the process (USFWS 2000). In August of 2004, however, the USFWS, after reviewing the best available scientific and commercial information, reached a determination that the black-tailed prairie dog did not meet the definition of threatened under ESA (USFWS 2004).

Regardless of the ESA status of black-tailed prairie dog, municipalities, counties, states, and federal entities have worked to develop conservation strategies for the black-tailed prairie dog within their jurisdictions. Many of these strategies try to address the conservation needs of prairie dogs and their grassland ecosystem without jeopardizing other non-compatible wildlife species and habitats. Specifically, the City of Westminster has worked to develop conservation and management strategies for black-tailed prairie dog within its jurisdictional boundaries. Unfortunately, conversion of native grasslands to urban development has altered the role and function of the historic grassland ecosystem and made such conservation and management challenging. Most of the prairie dog colonies that exist on City of Westminster open space parcels are generally isolated and support few, if any, associated species. Instead, the colonies, because they are not able to expand, have enabled bare soil (resulting in wind and water erosion), noxious weed infestation, and stream bank degradation to be prevalent on many of these parcels. Therefore, the City developed this plan in an effort to minimize these problems and identify the most scientifically sound approach for maximizing the greatest wildlife diversity and ecosystem health on City-owned parcels across the landscape.

2.2. Description and Taxonomy

Prairie dogs are small burrowing rodents who are aboveground during the day. Black-tailed prairie dogs are approximately 13-16 inches long and weigh 1-3 pounds. Most individuals are light tan with a whitish underside and have a characteristic black-tipped tail. Females are typically smaller than males and have eight mammae (Fitzgerald et al. 1994, Hoogland 1996).

2.3. Life History and Habitat

Black-tailed prairie dogs are active above ground during the day throughout the entire year. While they do not hibernate, they will enter periods of torpor. The basic social group is called a coterie. Coteries generally consist of one adult male, two or three adult females, and their offspring (Garrett and Franklin 1988, Hoogland 1995). Several coteries make up a colony. Both within and between these coteries, black-tailed prairie dogs communicate through tactile, visual, olfactory, and auditory stimuli (Fitzgerald et al. 1994). Interactions between different coterie members may result in a territorial dispute involving staring, flaring of the tail, bluff charges, tooth chattering, anal sniffing, and chasing and fighting (King 1955, Hoogland 1995). Prairie dogs have only one litter consisting of generally 4 to 6 pups per year (Knowles and Knowles 1994, Hoogland 1995). Along the Front Range of Colorado, breeding generally occurs from mid-February to early March (Fitzgerald et al. 1994). Gestation lasts approximately 30 to 35 days and pups emerge from the burrow four to seven weeks after birth (Fitzgerald et al. 1994).

2.4. Species Associated With Prairie Dogs

Kotliar et al. (1999) found that nine vertebrate species are dependent upon prairie dogs at least to a small degree. These species include the black-footed ferret (*Mustella nigripes*), mountain plover (*Charadrius montanus*), western burrowing owl (*Athene cunicularia hypugea*) ferruginous hawk (*Buteo regalis*), golden eagle (*Aquila chrysaetos*), swift fox (*Vulpes velox*), horned lark (*Eremophila alpestris*), deer mouse (*Peromyscus maniculatus*), and grasshopper mouse (*Onychomys leucogaster*). While there are other species that may utilize prairie dog colonies, such as cottontail rabbits, badgers, prairie rattlesnakes, bald eagles, and tiger salamanders, there is no data available to support that they cannot survive without prairie dogs or their colonies (Kotliar et al. 1999). Most of the above species are not found within highly urbanized areas of the Front Range, such as most of the City of Westminster. Instead, because of their need for expansive prairie dog colonies and other attributes associated with rural areas, some or most of the species are found in the larger open spaces of Boulder and Jefferson Counties or Eastern Colorado.

3. Evaluation Procedure and Parcel Evaluations

Roe Ecological Services, LLC conducted the vegetation classification, prairie dog habitat, and population assessments in late March through early June 2004. Appendix B provides all soil classification and mapping used in the evaluation of City parcels as obtained from Sampson and Baber (1974) and Price and Amen (1980). Appendix C provides the manuscript by Roe and Roe (2003), which outlines the scientific rationale and justification for the prairie dog habitat suitability determinations.

For each parcel, prairie dog suitability was determined from an evaluation table through which attributes of the parcels were rated. Appendix D provides the factors considered in the rating for each attribute. The average of all attributes determines the parcel's overall prairie dog ecosystem suitability. A value of zero signifies that the parcel is completely unsuitable for an ecologically balanced prairie dog ecosystem such that it has:

1. High levels of disturbance (through extreme levels of bare soil, potential for severe erosion, and noxious weeds);
2. No suitable vegetation for prairie dogs;
3. Extreme slope;
4. Incompatible developed land use on the parcel;
5. Incompatible adjacent land use with no barrier;
6. No species associated with the prairie dog colony; and
7. Incompatible wildlife habitat on the parcel.

A value of five signifies that the parcel is very suitable for an ecologically balanced prairie dog ecosystem such that it has:

1. Very low disturbance (no bare soil, low potential for erosion, and no noxious weeds)
2. 100% suitable vegetation for prairie dogs;
3. Minimal slope (flat);
4. No current incompatible land use on the parcel;
5. No incompatible adjacent land use;
6. Habitat for at least one dependent species; and
7. Compatible wildlife habitat on the parcel and it was obtained for the primary purpose of providing prairie dog habitat.

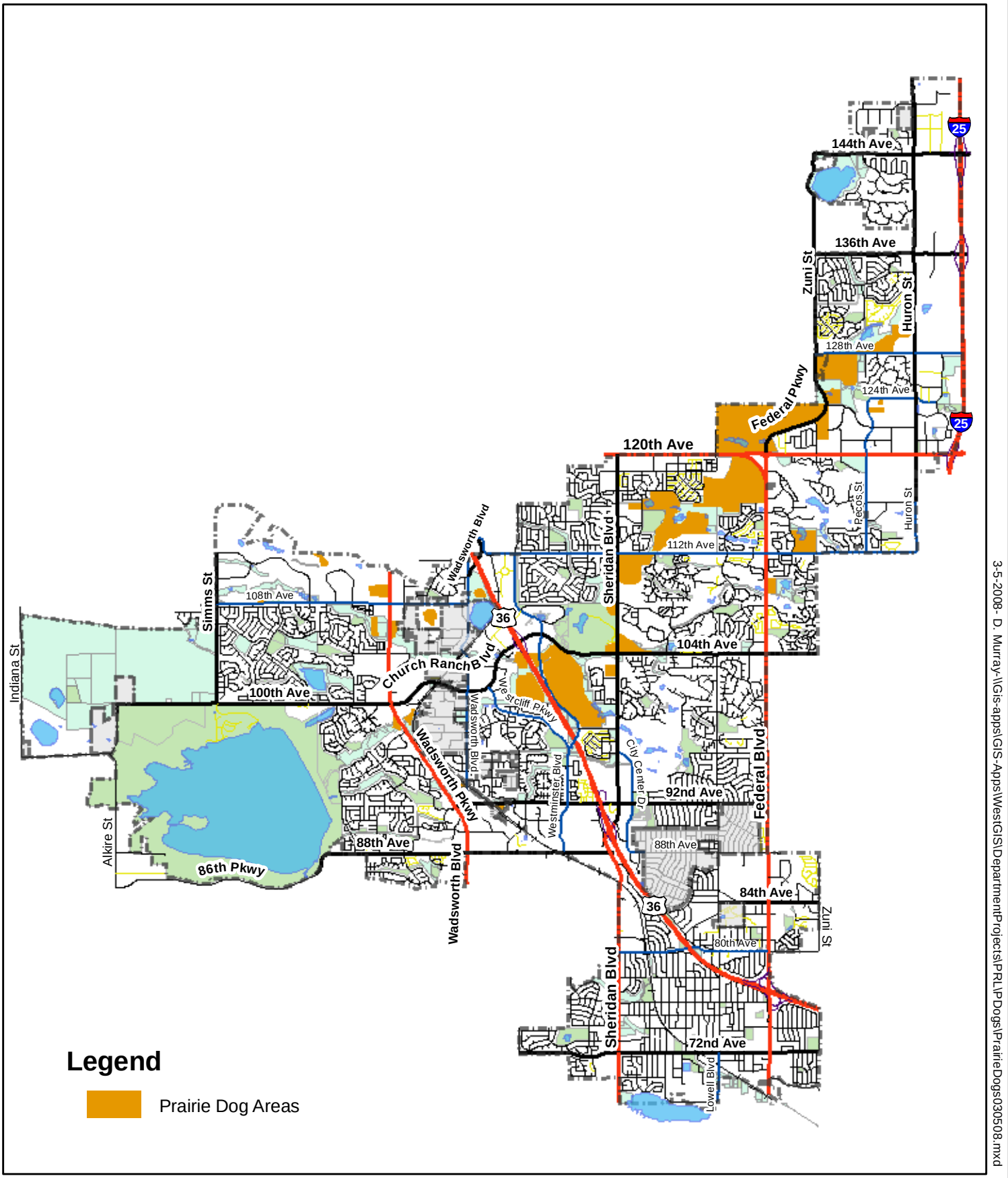
A value of 1-4 signifies a gradation from low suitability to high suitability for an ecologically balanced prairie dog ecosystem.

Walnut Creek Corridor

The Walnut Creek Corridor is located east of Simms Street, west of Highway 36, south of Westmoor Drive, and north of Church Ranch Boulevard in Westminster, Colorado (Figure 1).

Open Space parcels evaluated within this classification include:

1. Westmoor Open Space, which is located north of 108th Avenue, east of Simms Street, and directly west of the West View Recreation Center.
2. Cooper and Cooper/Walnut Grove Open Space, which is located south of 108th Avenue, north of 104th Avenue, and directly west of Wadsworth Parkway.
3. Nottingham Open Space, which is located south of 106th Place and directly east of Wadsworth Parkway.



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City of Westminster

Prairie Dog Areas

Miles

0 1 2 3

3.1.1. Westmoor Open Space

3.1.1.1. Site Characteristics

Soils

The soil along Walnut Creek is Haverson loam (60). The soil in the upland area to the south of the creek is Nunn-Urban land complex (105), Renohill-Midway complex (134), and Ulm-Urban land complex (163). The prairie dog colony is almost completely within the Nunn-Urban land complex.

Vegetation

Price and Amen (1980) state that native vegetation of the Nunn-Urban land complex in this area was mainly western wheatgrass (*Pascopyrum smithii*), green needlegrass (*Nassella viridula*), and blue grama (*Bouteloua gracilis*). The current vegetation immediately north of the current prairie dog colony is smooth brome (*Bromus inermis*), yellow sweet clover (*Melilotus officinalis*), field bindweed (*Convolvulus arvensis*), lambsquarters (*Chenopodium album*), and annual kochia (*Kochia scoparia*). The vegetation within the prairie dog colony is primarily field bindweed, lambsquarters, and annual kochia with a small proportion of narrowleaf yucca (*Yucca glauca*) (Figure 2). The amount of bare soil within the colony is moderate (< 50%), particularly when the vegetation has senesced.

Figure 2. Photos taken in March and May 2004 (respectively) showing the vegetation on the Westmoor property.

Prairie Dogs

The prairie dog colony is located southwest of the West View Recreation Center. The colony is approximately two acres and of moderate to high density (estimated 15 adult prairie dogs per acre). The colony is encroaching into the landscaping of the recreation center to the east (Figure

3). The straw bale and chicken wire barrier to the west has been successful in precluding prairie dog movement in that direction; however, it is in need of maintenance as the straw is starting to deteriorate and the chicken wire has pulled way from the bales in some sections (Figure 4).

Other Wildlife

No other species of wildlife was observed during the assessment or otherwise known to exist within the prairie dog colony.

Figure 3. Photos taken in March 2004 showing the encroachment of the Westmoor prairie dog colony into the landscaping of the West View Recreation Center.

Figure 4. Photos taken in March and May 2004 (respectively) showing the straw bale and chicken wire barrier on the west side of the Westmoor prairie dog colony.

Land Use

West View Recreation Center lies immediately to the northeast. Landscaping and the parking lot for the Recreation Center lie to the east. The Heritage Golf Course lies to the northwest behind the barrier. The aerial photo in Figure 5 shows the surrounding land uses as well as potential future movement.

Figure 5. 2002 aerial photo showing the location of the Westmoor prairie dog colony in relation to surrounding land uses (arrows depict potential future movement of prairie dogs).

3.1.1.2. Habitat Evaluation

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type					X	
Amount of Bare Soil				X		
Noxious Weed Infestation	X					
Suitable Vegetative Cover	X					
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X	X				
Associated Species	X					
Parcel Purpose for Wildlife				X		

Suitability Rating: (4 + 3 + 0 +0 + 4 + 5 + 0.5 + 0 + 3)/ 9 = **2.17**

The Westmoor Open Space has moderately low habitat suitability for prairie dogs.

3.1.2. Cooper and Cooper/Walnut Grove Open Space

3.1.2.1. Site Characteristics

Soils

The soil along Walnut Creek is Leyden-Nunn-Rooney complex, 9 to 30 percent slopes (79). The upland area to the west is Nunn-Urban land complex (105). The upland area to the east is Nunn clay loam (103).

Vegetation

Price and Amen (1980) state that native vegetation of the Nunn-Urban land complex and Nunn clay loam in this area was mainly western wheatgrass, green needlegrass, and blue grama. The current vegetation immediately north of the prairie dog colony is composed primarily of yellow sweet clover, field bindweed, cheatgrass or downy brome (*Bromus tectorum*), alyssum (*Alyssum minus*), Canada thistle (*Cirsium arvense)* and pigweed (*Amaranthus* sp.). The current vegetation within the prairie dog colony is almost entirely field bindweed (> 50%) and annual kochia (> 30%) with a small amount of pigweed (< 10%) (Figure 6). The amount of bare soil within the colony is high (> 75%), particularly when the vegetation has senesced.

Figure 6. Photos taken in April 2004 showing the vegetation and bare soil in the Cooper/Walnut Grove prairie dog colony.

The native vegetation of the Leyden-Nunn-Rooney complex along the Walnut Creek riparian corridor was mainly western wheatgrass, sideoats grama (*Bouteloua curtipendula*), blue grama, and Gambel oak (*Quercus gambelii*) (Price and Amen 1980). The current vegetation of the Walnut Creek riparian corridor within this parcel is moderately degraded, particularly on the northern end. The vegetation of the riparian corridor is composed of field bindweed, annual kochia, flixweed (*Descurainia Sophia*), cheatgrass, pigweed, prairie rose (*Rosa arkansana*),

coyote willow (*Salix exigua*), smooth brome, rabbitbrush (*Ericameria nauseosa*), hoary cress or whitetop (*Cardaria draba*), alyssum, poison hemlock (*Conium maculatum*), field mustard (*Brassica campenstris*), Canada goldenrod (*Solidago canadensis*), narrowleaf cottonwood (*Populus angustifolia*), and Russian olive (*Eleagnus angustifolia*).

Prairie Dogs

The main prairie dog colony is located west of Walnut Creek. The colony is approximately 9 acres and is of moderate density (estimated 10-15 adult prairie dogs per acre). It has expanded significantly to the south and southeast since the Walnut Creek Corridor Biological Evaluation conducted in 1996 (LREP, Inc. 2004). The prairie dog colony east of Walnut Creek is approximately 1.5-2.0 acres of low to moderate density (estimated 5-10 prairie dogs per acre). This colony was not shown as part of the Walnut Creek Corridor Biological Evaluation (Figgs et al. 2004) and likely did not exist at that time.

Other Wildlife

No other species of wildlife were observed within the prairie dog colony during the assessment. The only wildlife species known to be associated with the riparian area of Walnut Creek immediately adjacent to the large prairie dog colony at this time are Red-Winged Blackbirds (*Agelaius phoeniceus*). Figgs et al. (2004) provides a potential wildlife species list for the property.

Land Use

Figure 7 shows the location of the prairie dog colonies in relation to surrounding land uses. Residential housing lies west of the large prairie dog colony behind a tall, dense vegetative barrier (Figure 8). Commercial development exists north of Walnut Creek; however, the creek should be a sufficient barrier to prevent the prairie dogs west of the creek from moving north. The prairie dogs in the smaller colony east of the creek, however, have no such movement barrier and may expand/disperse to the north. The future Walnut Grove Park and surrounding residential development lies to the northwest of the main prairie dog colony. The private property to the south is currently undeveloped.

Figure 7. 2002 aerial photo showing the location of the Cooper and Cooper/Walnut Grove prairie dog colonies in relation to the trail and surrounding land uses (arrows depict potential future movement of prairie dogs).

Figure 8. Photo taken in May 2004 showing the vegetative barrier west of the main prairie dog colony precluding most if not all prairie dog movement towards the residential housing.

3.1.2.2. Habitat Evaluation

3.1.2.2.1. Large Colony West of Walnut Creek

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type		X				
Amount of Bare Soil		X				
Noxious Weed Infestation		X				
Suitable Vegetative Cover	X					
Slope						X
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns			X	X		
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (1 + 1 + 1 + 0 + 5 + 5 + 2.5 + 1 + 0)/ 9 = **1.83**

The area west of Walnut Creek on the Copper and Cooper/Walnut Grove Open Space has low habitat suitability for prairie dogs.

NOTE:

The future Walnut Creek Park site is currently a vacant lot that has tall vegetation such as smooth brome and crested wheatgrass (*Agropyron cristatum*), which thus far precluded prairie dog movement in that direction. This tall vegetation used to exist almost to the edge of the prairie dog colony with just a very narrow (approximately only two feet wide) trail. However, the recent development of a wide hardened trail (at least 10 feet wide including the trail and adjacent impact) that loops around the prairie dog colony and extends into the future park and along Walnut Creek will likely provide easier access for dispersing prairie dogs to establish in the future park area.

The riparian corridor of Walnut Creek, particularly that which runs adjacent to the current prairie dog colony, is extremely weedy and very little bank stabilizing vegetation. Long-term prairie dog conservation within the riparian corridor is not conducive with maintaining low sedimentation rates, high water quality, and reestablishing a healthy riparian zone.

3.1.2.2.2. Small Colony East of Walnut Creek

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type		X				
Amount of Bare Soil		X				
Noxious Weed Infestation			X			
Suitable Vegetative Cover	X					
Slope						X
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (1 + 1 + 2 + 0 + 5 + 5 + 0 + 1 + 0)/ 9 = **1.67**

The area east of Walnut Creek on the Cooper/Walnut Grove Open Space has moderately low habitat suitability for prairie dogs.

3.1.3. Nottingham Open Space

3.1.3.1. Site Characteristics

Soils

The soil within the Nottingham Open Space is Haverson loam (60). The upland area to the north and east is Nunn clay loam (102). The upland area to the west is Denver-Kutch clay loam (29).

Vegetation

Price and Amen (1980) state that native vegetation of the Nunn clay loam, Haverson loam and Denver-Kutch clay loam in this area was mainly western wheatgrass, green needlegrass, switchgrass (*Panicum virgatum*), and blue grama. The current vegetation of the riparian corridor of Walnut Creek in this parcel includes plains cottonwood (*Populus deltoides*), western snowberry (*Symphoricarpos occidentalis*), coyote willow, Wood's rose (*Rosa woodsii*), alyssum, Canada thistle, Canada goldenrod, and smooth brome. The upland areas are primarily composed of smooth brome and crested wheatgrass. The prairie dog colony is primarily composed of field bindweed and annual kochia.

Prairie Dogs

There is a small colony of prairie dogs in the northwest corner of the parcel. The majority of the colony exists on the private property to the north. There are only an estimated 20 adult prairie dogs within the Nottingham parcel at this time.

Other Wildlife

No other species of wildlife were observed during the assessment. Figgs et al. (2004) provides a potential wildlife species list for the property.

Land Use

Figure 9 shows the location of the prairie dog colonies in relation to surrounding land uses. Wadsworth Parkway lies to the west of the parcel. Private property surrounds the parcel to the north, east, and southeast. The Northwest Water Treatment Facility lies to the southeast of the parcel.

Figure 9. 2003 aerial photo showing the location of the Nottingham Open Space prairie dog colony in relation to surrounding land uses (arrows depict potential future movement of prairie dogs).

3.1.3.2. Habitat Evaluation

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type					X	
Amount of Bare Soil			X			
Noxious Weed Infestation		X				
Suitable Vegetative Cover		X				
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (4 + 2 + 1 + 1 + 4 + 5 + 0 + 1 + 0)/ 9 = **2.00**

The Nottingham Open Space has moderately low habitat suitability for prairie dogs.

3.2. Farmers' High Line Canal

The Farmers' High Line Canal Open Space parcels are located east of Wadsworth Boulevard, west of the Northglenn municipal boundary, north of 92nd Avenue, and south of 112th Avenue in Westminster, Colorado (Figure 10).

Open Space parcels evaluated within this classification include:

1. Hawn-Hewitt Open Space, which is located directly north of 104th Avenue and east of Sheridan Boulevard.
2. Smith/Mushroom Pond/Cedar Bridge Open Space, which is located east of Federal Boulevard, west of Bruchez Parkway and 112th Avenue.

3.2.1. Hawn-Hewitt Open Space

3.2.1.1. Site Characteristics

Soils

The soil of the Hyland Creek riparian corridor within the Hawn-Hewitt Open Space is Samsil-Shingle complex (ShF). The upland soil within the prairie dog colonies is Ulm loam (UlD).

Vegetation

Historical vegetation for these soil types is not known at this time. However, based on geographic location and similar known vegetative communities, the historic vegetation within the prairie dog colony was likely western wheatgrass, green needlegrass, needle and thread, and blue grama. Currently, categorization of vegetation within the prairie dog colony on the Hawn-Hewitt Open Space can be broken down into thirds. The west third is extremely disturbed, has high bare soil (>50%), and is primarily composed of field bindweed (>60%) interspersed with flixweed, annual kochia, lambsquarters, cheatgrass, pigweed, and yellow sweet clover (Figure 11). The central third has less bare soil and noxious weeds and a higher prevalence of rabbitbrush and western wheatgrass (Figure 12). The eastern third is composed of rabbitbrush, yellow sweetclover, cheatgrass, and prickly pear (*Opuntia polyacantha*) (Figure 13). The Hyland Creek riparian corridor is composed of plains cottonwood, coyote willow, Russian olive, poison hemlock, broadleaf cattail (*Typha latifolia*), and Starry False-Solomon's Seal (*Maianthemum stellatum*) (Figure 14).

Figure 11. Photos taken in May 2004 showing the vegetation on the western third of the Hawn-Hewitt Open Space prairie dog colony.

Figure 12. Photos taken in May 2004 showing the vegetation on the central third of the Hawn-Hewitt Open Space prairie dog colony.

Figure 13. Photos taken in May 2004 showing the vegetation on the eastern third of the Hawn-Hewitt Open Space prairie dog colony.

Figure 14. Photos taken in May 2004 showing the riparian/wetland vegetation of the Hawn-Hewitt Open Space adjacent to the existing prairie dog colony.

Prairie Dogs

The prairie dog colony is approximately four acres of moderate to high density (estimated average of 15 adult prairie dogs per acre). Prairie dogs have burrowed and excessively "rooted" (dug small holes presumably to forage on plant roots) immediately adjacent to the riparian corridor (Figure 15). There is a prairie dog colony directly to the north across the riparian corridor on a moderately steep slope. Movement from this colony onto the Hawn-Hewitt Open Space may be possible in low water years. In addition, there are prairie dog colonies on the northwest and southwest corners of the intersection of Sheridan Boulevard and 104th Avenue. It is unlikely there would be any significant prairie dog dispersal across these streets.

Figure 15. Photos showing the high level of rooting immediately adjacent to the riparian corridor (to the right of the photos).

Other Wildlife

One cottontail (*Sylvilagus* sp.), multiple Red-Winged Blackbirds, and one Western Kingbird (*Tyrannus verticalis*) were observed on the parcel during the assessment.

Land Use

Figure 16 shows the location of the Hawn-Hewitt prairie dog colony in relation to surrounding land uses. The Legacy Ridge golf course lies directly to the east of the Hawn-Hewitt colony.

Figure 16. 2002 aerial photo showing the location of the Hawn-Hewitt prairie dog colony in relation to surrounding land uses (arrows depict potential future movement of prairie dogs with solid lines being likely and dashed lines being possible, but not likely).

3.2.1.2. Habitat Evaluation

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type		X				
Amount of Bare Soil				X		
Noxious Weed Infestation				X		
Suitable Vegetative Cover		X				
Slope				X		
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (1 + 3 + 3 + 1 + 3 + 5 + 0 + 1 + 0)/ 9 = **1.89**

The Hawn-Hewitt Open Space has low habitat suitability for prairie dogs.

3.2.2. Smith/Mushroom Pond/Cedar Bridge Open Space

3.2.2.1. Site Characteristics

Soils

The soil of the Open Space is Platner loam (PlB and PlC) and Ulm loam (UlD).

Vegetation

Historical vegetation for these soil types is not known at this time. However, based on geographic location and similar known vegetative communities, the historic vegetation within the prairie dog colony was likely western wheatgrass, green needlegrass, needle and thread, and blue grama. Currently, the vegetation generally consists of western wheatgrass, smooth brome, cheatgrass, annual kochia, yellow sweet clover, plains cottonwood, and field bindweed. The vegetation on the prairie dog colonies is primarily field bindweed (at least 50% up to 100%), pigweed, annual kochia, and high levels of bare soil (particularly on the northwest colony).

Prairie Dogs

The prairie dog colony on the northwest corner of the Open Space is approximately 2.25 acres and of high density (estimated at least 15-20 adult prairie dogs per acre). This colony extends west onto private property an additional 3 acres (approximate) and is of moderate to high density (10-20 adult prairie dogs per acre) in that area. This colony extends down the steep slope leading to the Savory Pond (Figure 17). The prairie dog colony on the east side of the Open Space is approximately 1.0-1.5 acres and of high density (estimated at least 20 adult prairie dogs). This colony is immediately adjacent to the southeast corner of the Savory Pond (Figure 18).

Figure 17. Photos taken in June 2004 showing the prairie dog colony in the northwest corner of the Smith/Mushroom Pond/Cedar Bridge Open Space, the associated vegetation, and the steep slope leading to Savory Pond.

Figure 18. Photos taken in June 2004 showing the prairie dog colony southeast of Savory Pond in the Smith/Mushroom Pond/Cedar Bridge Open Space, the associated vegetation, and its location immediately adjacent to Savory Pond

Other Wildlife

Fox squirrels (*Sciurus niger*), American robins (*Turdus migratorius*), European starlings (*Sturnus vulgaris*), mallards (*Anas Platyrhynchos*), a double-crested cormorant (*Phalacrocorax auritus*), and a snowy egret (*Egretta thula*) were observed in and around the Savory Pond in June 2004 during the assessment (Figure 19). No species were observed within either of the prairie dog colonies during the assessment.

Figure 19. Photos taken in June 2004 showing a Double-Crested Cormorant, Snowy Egret, and a Mallard hen and her chicks currently utilizing Savory Pond.

Land Use

Figure 20 shows the location of the Smith/Mushroom Pond/Cedar Bridge Open Space, adjacent prairie dog colonies and surrounding land uses. The Open Space is surrounded on the north and east by residential property and the Legacy Ridge Golf Course to the south.

Figure 20. 2003 aerial photo showing the location of the Smith/Mushroom Pond/Cedar Bridge Open Space, prairie dog colonies, and surrounding land uses (arrows depict potential future movement of prairie dogs).

3.2.2.2. Habitat Evaluation

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type			X			
Amount of Bare Soil			X			
Noxious Weed Infestation		X				
Suitable Vegetative Cover	X					
Slope		X				
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species	X					
Parcel Purpose for Wildlife	X					

Suitability Rating: (2 + 2 + 1 + 0 + 1 + 5 + 0 + 0 + 0)/ 9 = **1.22**

The Smith/Mushroom Pond/Cedar Bridge Open Space has low habitat suitability for prairie dogs.

NOTE:

The soil can experience severe water sheeting and wind erosion, particularly under bare soil conditions. This is not conducive with maintaining low sedimentation rates and quality habitat for species associated with the ponds.

3.3. Big Dry Creek Corridor

The Big Dry Creek Corridor extends from Standley Lake on the west, along Big Dry Creek to Huron Street in Westminster, Colorado (Figure 21).

Open Space parcels evaluated within this classification include:

1. Bruchez Open Space and Lang Open Space, which are located on either side of Wadsworth Parkway between 100th Avenue and 94th Avenue.
2. Church Ranch Open Space and Hawn Open Space, which are located west of Highway 36, east and south of Church Ranch Boulevard, and north of 99th Avenue.
3. Northpoint Open Space, of which the north portion is located east of Westminster Boulevard, west of City Park, north of 104th avenue, and south of Promenade South Drive. The south portion is location south and west of 104th Avenue and east of Westminster Boulevard.
4. Melody Open Space, which is located directly west of Sheridan Boulevard, north of 108th Avenue, and south of 110th Avenue.
5. Hawn-Hewit Open Space and Cotton Creek Open Space, which are located directly east of Sheridan Boulevard, west of Vrain Street, and south of 112th Avenue.
6. Martin, Starika, and Life Fellowship Open Space, which are located west of Front Range Community College, east of Sheridan Boulevard, and north of 112th Avenue.
7. 3M/Adamas County Open Space and Sheridan 116 Open Space, which are located northeast of Front Range Community College, south of 120th Avenue, north of the future Westfield Park, east of Sheridan Boulevard and Wolff Street, and west of Federal Boulevard.
8. Front Range Community College Open Space, which is located north of Front Range Community College, south of 120th Avenue, east of Sheridan Boulevard, and west of Federal Boulevard.
9. College Hills PLD, Foster, Federal Square / Cozy Corner, and Hassig Open Space parcels, which are located northeast of Front Range Community College, south of 120th Avenue, east of Sheridan Boulevard, and west of Federal Boulevard.
10. Koleski Open Space, which is located north of 120th Avenue and Federal Boulevard.
11. Big Dry Creek Open Space, which is located north of 120th Avenue and Federal Boulevard.
12. Tejon 128 Open Space and Park Center Open Space, which are located north of 122nd Avenue, directly south of 128th Avenue, and east of Zuni Street.
13. Frisco / Bull Canal Open Space, which is located directly north of 128th Avenue, south of 129th Drive, and east of Zuni Street.
14. Bogg Open Space, which is located north of 128th Avenue and directly west of Huron Street.

3.3.1. Bruchez Open Space and Lang Open Space

3.3.1.1. Site Characteristics

Soils

The soil along Big Dry Creek within western-most Bruchez parcel is Arvada clay loam (6). The soil within the eastern-most Bruchez parcel includes Arvada clay loam (6), Manzanola clay loam (93), and Nunn clay loam (103). The soil of the Lang parcel is primarily Arvada clay loam (6) with the northeastern slope Manzanola clay loam (94).

Vegetation

Price and Amen (1980) state that native vegetation of Nunn clay loam and Manzanola clay loam in this area was mainly western wheatgrass, green needlegrass, and blue grama. The native vegetation of Arvada clay loam in this area was mainly alkali sacaton (*Sporobolus airoides*), western wheatgrass, blue grama, and saltgrass (*Distichlis* sp.) (Price and Amen 1980). The current vegetation of all three parcels is predominantly field bindweed, annual kochia, lambsquarters, and ragweed (*Ambrosia* sp) (Figures 22-24). All of the parcels also have a very high percentage of bare soil (at least 75%).

Figure 22. Photos taken in late March 2004 showing the vegetation and high amount of bare soil within the western Bruchez parcel.

Figure 23. Photos taken in late March 2004 showing the vegetation and high amount of bare soil within the eastern Bruchez parcel.

Figure 24. Photo taken in late March 2004 showing the vegetation and high amount of bare soil within the Lang parcel.

Prairie Dogs

The western Bruchez prairie dog colony is approximately 1.8 acres in size and of moderate density (estimated 10-15 individuals in late March 2004). This number may increase, however, as prairie dogs are displaced from the parcel directly to the southeast currently being developed. This colony is adjacent to the riparian area of Big Dry Creek. The eastern Bruchez prairie dog colony is approximately 4.85 acres in size and of high density (estimated 15 per acre). The colony also extends onto the extremely steep slopes of the railroad right-of-way on the east side of the parcel (Figure 25). These slopes are almost 100% bare soil most of the year. The Lang prairie dog colony is approximately four acres in size and of high density (estimated 15 per acre).

Figure 25. Photos taken in late March 2004 showing prairie dogs on the very steep slope of the railroad right-of-way on the eastern edge of the eastern Bruchez colony.

Other Wildlife

No other species of wildlife were observed within the prairie dog colony during the assessment. The only wildlife species seen in the vicinity were European starlings and rock doves (*Columba livia*).

Land Use

Figure 26 shows the location of the Bruchez and Lang Open Space parcels and surrounding land uses. Residential housing and commercial development lies south of the western Bruchez parcel. Another segment of the Bruchez Open Space extends west of this colony to the eastern boundary of Standley Lake. This segment is primarily pasture grasses and a moderately healthy riparian area. Commercial development lies north of the Lang parcel.

Figure 26. 2003 aerial photo showing the location of the Bruchez and Lang Open Space parcels and surrounding land uses (arrows depict potential future movement of prairie dogs).

3.3.1.2. Habitat Evaluation

3.3.1.2.1. West Bruchez Open Space

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type				X		
Amount of Bare Soil		X				
Noxious Weed Infestation	X					
Suitable Vegetative Cover	X					
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (3 + 1 + 0 + 0 + 4 + 5 + 0 + 1 + 0)/ 9 = **1.56**

The west Bruchez Open Space has low habitat suitability for prairie dogs.

3.3.1.2.2. East Bruchez Open Space

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type				X		
Amount of Bare Soil		X				
Noxious Weed Infestation	X					
Suitable Vegetative Cover	X					
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species	X					
Parcel Purpose for Wildlife				X		

Suitability Rating: (3 + 1 + 0 + 0 + 4 + 5 + 0 + 0 + 3)/ 9 = 1.78

The east Bruchez Open Space has low habitat suitability for prairie dogs.

3.3.1.2.3. Lang Open Space

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type				X		
Amount of Bare Soil		X				
Noxious Weed Infestation	X					
Suitable Vegetative Cover	X					
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species	X					
Parcel Purpose for Wildlife				X		

Suitability Rating: (3 + 1 + 0 + 0 + 4 + 5 + 0 + 0 + 3)/ 9 = **1.78**

The Lang Open Space has low habitat suitability for prairie dogs.

NOTE:

The riparian corridor of Big Dry Creek between the east Bruchez and Lang parcels is extremely degraded in that it is extremely weedy with little bank stabilizing or filtration vegetation. Prairie dogs have established burrow systems directly within the riparian zone of this section. Although their presence is not significant enough to account for the extreme level of degradation along this section of the creek corridor, their continued presence is not conducive with maintaining low sedimentation rates, high water quality, and reestablishing a

healthy riparian zone.

3.3.2. Church Ranch Open Space and Hawn Open Space

3.3.2.1. Site Characteristics

Soils

The Church Ranch Open Space soils include Arvada clay loam (6) along Big Dry Creek and the associated riparian/lowland area and Manzanola clay loam (92 and 94) on the upland slopes. The Hawn Open Space soils include Arvada clay loam (6) along Big Dry Creek and the lowland areas, Manzanola clay loam (94) on the steep upland slopes, and Nunn-Urban land complex (105 and 106) on the southern tableland.

Vegetation

Price and Amen (1980) state that native vegetation of the Nunn-Urban land complex and Manzanola clay loam in this area was mainly western wheatgrass, green needlegrass, and blue grama. The native vegetation of Arvada clay loam in this area was mainly alkali sacaton, western wheatgrass, blue grama, and saltgrass (Price and Amen 1980). The current vegetation of the Church Ranch Open Space varies. The riparian vegetation generally consists of Russian olive, plains cottonwood, annual kochia, field bindweed, cheatgrass, yellow sweet clover, coyote willow, and rush (*Juncus* sp.) (Figure 27). The upland vegetation includes yucca, blue grama, smooth brome, and various annuals.

Figure 27. Photos taken in late March 2004 and early June 2004 (respectively) showing the vegetation on the Church Ranch Open Space (east and west sides respectively).

North of Big Dry Creek, vegetation of the Hawn Open Space is composed primarily of smooth brome, western wheatgrass, prickly pear, and broom snakeweed (*Gutierrezia sarothrae)*, with a small proportion of field bindweed, cheatgrass, annual kochia, and ragweed (Figure 28). The proportion of bare soil is moderate (generally < 50%).

Figure 28. Photos taken in late March 2004 showing the Hawn Open Space north of Big Dry Creek.

South of Big Dry Creek, vegetation of the Hawn Open Space is indicative of prairie dog overpopulation such that is consists primarily of field bindweed (Figure 29). There is a small amount of smooth brome on the southern edge of the parcel and a patch of yucca along the northern and eastern edges.

Figure 29. Photos taken in late March 2004 showing the Hawn Open Space south of Big Dry Creek.

Prairie Dogs

There is a small colony on the Hawn Open Space north of Big Dry Creek that is approximately 4.4 acres in size and of low extent and density (estimated that there were approximately 50 prairie dogs as of late March). The colony on the Hawn Open Space south of Big Dry Creek is approximately 43 acres in size and of moderate to high density (estimated approximately 10-20 prairie dogs per acre). The colony is most dense in the center of the property. The colony on the Church Ranch Open Space is approximately 3.3 acres in size and of moderate to high density (estimated approximately 10-15 prairie dogs per acre). This colony is immediately adjacent to the Hawn Open Space and its existence is likely the result of dispersal from that colony.

Other Wildlife

No other species of wildlife were observed within the prairie dog colony during the assessment. Blackbirds were observed in the Church Ranch Open Space riparian area.

Land Use

Figure 30 provides an aerial photo that shows the location of the Church Ranch and Hawn prairie dog colonies in relation to surrounding land uses. Residential housing is immediately adjacent to the southern boundaries of the Church Ranch and Hawn prairie dog colonies. Commercial development lies immediately adjacent to the North Hawn prairie dog colony and west of the Church Ranch Open Space. The RTD Park and Ride also lies immediately adjacent to the North Hawn prairie dog colony and another prairie dog colony on adjacent private property.

Figure 30. 2002 aerial photo showing the location of the Church Ranch and Hawn Open Space prairie dog colonies in relation to surrounding land uses (arrows depict potential future movement without management).

3.3.2.2. Habitat Evaluation

3.3.2.2.1. South Hawn Open Space

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type						X
Amount of Bare Soil			X			
Noxious Weed Infestation			X			
Suitable Vegetative Cover		X				
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife				X		

Suitability Rating: (5 + 2 + 2 + 1 + 4 + 5 + 0 + 1 + 3)/ 9 = **2.56**

The south Hawn Open Space has moderate habitat suitability for prairie dogs.

3.3.2.2.2. North Hawn Open Space

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type						X
Amount of Bare Soil				X		
Noxious Weed Infestation					X	
Suitable Vegetative Cover			X			
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife				X		

Suitability Rating: (5 + 3 + 4 + 2 + 4 + 5 + 0 + 1 + 3)/ 9 = **3.00**

The north Hawn Open Space has moderate habitat suitability for prairie dogs.

3.3.2.2.3. Church Ranch Open Space

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type		X				
Amount of Bare Soil				X		
Noxious Weed Infestation		X				
Suitable Vegetative Cover		X				
Slope	X					
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (1 + 3.5 + 1 + 1 + 0 + 5 + 0 + 1 + 0)/ 9 = **1.38**

The Church Ranch Open Space has low habitat suitability for prairie dogs.

3.3.3. Northpoint Open Space

3.3.3.1. Site Characteristics

Soils

The soil of the Northpoint Open Space parcels is primarily Arvada clay loam (6). The southeastern corner of the southern parcel is Manzanola clay loam (94).

Vegetation

Price and Amen (1980) state that native vegetation of Manzanola clay loam in this area was mainly western wheatgrass, green needlegrass, and blue grama. The native vegetation of Arvada clay loam in this area was mainly alkali sacaton, western wheatgrass, blue grama, and saltgrass (Price and Amen 1980). The current vegetation of the south Northpoint Open Space parcel within the prairie dog colony is primarily field bindweed (Figure 31). The current vegetation of the north Northpoint Open Space parcel includes field bindweed, rabbitbrush, broom snakeweed, and annual kochia (Figure 32). Both parcels include the Big Dry Creek riparian corridor, which generally consists of plains cottonwood, willows, and Russian olive.

Figure 31. Photos taken in June 2004 showing the vegetation of the south Northpoint Open Space prairie dog colony.

Prairie Dogs

Prairie dogs exist on the edges of the south Northpoint Open Space parcel and are of moderate to high density (approximately 10-15 adult prairie dogs per acre). This parcel is surrounded on all sides by prairie dogs on private property. Prairie dogs exist on both sides of Big Dry Creek on the north Northpoint Open Space. East of Big Dry Creek, prairie dogs currently exist on less than one acre (less than 10 adult prairie dogs in April 2004). There are abandoned holes to the north of the existing colony on the Northpoint Open Space as well as to the east on the adjacent City

Park. West of Big Dry Creek, the colony extends slightly onto the Open Space from the adjacent private property.

Figure 32. Photos taken in June 2004 showing the vegetation of the north Northpoint Open Space prairie dog colony.

Other Wildlife

A muskrat (*Ondatra zibethicus*) was observed in Big Dry Creek within the north Northpoint Open Space parcel. No associated species were observed within any of the existing prairie dog colonies (either on Open Space or adjacent private property) during the assessment.

Land Use

Figure 33 shows the location of the Northpoint Open Space parcels in relation to surrounding land uses. The south Northpoint Open Space parcel is completely surrounded by private property, most of which contains prairie dogs. City Park lies to the north, south, east and northwest of the north Northpoint Open Space. Private property, which contains prairie dogs, lies to the southeast.

Figure 33. 2003 aerial photo showing the location of the Northpoint Open Space prairie dog colonies in relation to surrounding land uses (arrows depict likely future movement of prairie dogs).

3.3.3.2. Habitat Evaluation

3.3.3.2.1. South Northpoint Open Space

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type					X	
Amount of Bare Soil		X				
Noxious Weed Infestation		X				
Suitable Vegetative Cover	X					
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (4 + 1 + 1 + 0 + 4 + 5 + 0 + 1 + 0)/ 9 = **1.78**

The south Northpoint Open Space has low habitat suitability for prairie dogs.

3.3.3.2.2. North Northpoint Open Space

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type					X	
Amount of Bare Soil		X				
Noxious Weed Infestation		X				
Suitable Vegetative Cover	X					
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (4 + 1 + 1 + 0 + 4 + 5 + 0 + 1 + 0)/ 9 = **2.44**

The north Northpoint Open Space has moderate habitat suitability for prairie dogs.

3.3.4. Melody Open Space

3.3.4.1. Site Characteristics

Soils

The soil of the Melody Open Space is Manzanola-Renohill-Stoneham complex, 9 to 15 percent slopes (96) and Ulm-Urban land complex (163).

Vegetation

Price and Amen (1980) state that native vegetation of the Ulm-Urban land complex in this area was mainly western wheatgrass, green needlegrass, and blue grama. The native vegetation of the Manzanola-Renohill-Stoneham complex in this area was mainly western wheatgrass, green needlegrass, sideoats grama, and needle and thread (Price and Amen 1980). The Melody Open Space is highly degraded and is primarily composed of field bindweed (>75%) with sporadic patches of yellow sweet clover and pigweed (Figure 34). Bare soil is also very high on the site (>75% especially after vegetation has senesced).

Figure 34. Photos taken in June 2004 showing the vegetation on the Melody Open Space prairie dog colony.

Prairie Dogs

The prairie dog colony exists on the entire parcel, which is 10 acres in size. The colony is of high density (estimated at least 15-20 adult prairie dogs per acre). Prairie dogs surround the Open Space on the north, south and west sides (Figure 35). The entire colony is estimated to be approximately 35 acres in size.

Figure 35. Photos taken in June 2004 showing the prairie dog colony on the Melody Open Space (foreground) and surrounding City Park (background).

Other Wildlife

No other wildlife species were observed associating with the prairie dog colony at the time of the assessment.

Land Use

Figure 36 shows the location of the Melody Open Space prairie dog colony in relation to surrounding land uses. City Park lies to the north, south, and west sides of the Melody Open Space. No portions of the Park immediately adjacent to the Open Space are developed. Sheridan Boulevard lies along the eastern boundary of the parcel.

Figure 36. 2003 aerial photo showing the location of the Melody Open Space prairie dog colony in relation to surrounding land uses (arrows depict potential future movement).

3.3.4.2. Habitat Evaluation

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type			X			
Amount of Bare Soil		X				
Noxious Weed Infestation		X				
Suitable Vegetative Cover	X					
Slope				X		
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns						X
Associated Species	X					
Parcel Purpose for Wildlife				X		

Suitability Rating: (2 + 1 + 1 +0 + 3 + 5 + 5 + 0 + 3)/ 9 = **2.22**

The Melody Open Space has moderately low habitat suitability for prairie dogs.

3.3.5. Hawn-Hewit Open Space and Cotton Creek Open Space

3.3.5.1. Site Characteristics

Soils

The soils of the Hawn-Hewit Open Space and Cotton Creek Open Space are Arvada loam (AdB) and Heldt clay (HlD).

Vegetation

Historical vegetation for these soil types is not known at this time. However, based on geographic location and similar known vegetative communities, the historic vegetation within the prairie dog colony was likely western wheatgrass, green needlegrass, needle and thread, and blue grama. Currently, the Hawn-Hewit Open Space is highly degraded and is primarily composed of field bindweed (>75%) with sporadic patches of pigweed (Figure 37). Bare soil is also very high (>75% especially after vegetation has senesced). The Cotton Creek Open Space is less degraded and has a lower proportion of noxious weed infestation (<50%). The riparian community is primarily composed of Russian olive, willows, and plain's cottonwood. There is a high level of bank erosion where the prairie dogs have burrowed immediately adjacent to the creek.

Figure 37. Photos taken in June 2004 showing the vegetation on the Hawn-Hewit and Cotton Creek Open Space parcels.

Prairie Dogs

The prairie dog colony exists on the majority of the upland of the Open Space parcels (approximately 5-6 acres). The colony is of moderate to high density (estimated 10-15 adult prairie dogs per acre) on the Hawn-Hewit Open Space and low to moderate density (0-10 adult prairie dogs per acre) on the Cotton Creek Open Space. Prairie dogs also exist on the private property to the north (high density estimated 15+ adult prairie dogs per acre) and to the south

(low to moderate density estimated 5-10 adult prairie dogs per acre) (Figure 38). The entire colony is estimated to be approximately 30 acres in size.

Figure 38. Photos taken in June 2004 showing the prairie dog colony on and adjacent to the Hawn-Hewit and Cotton Creek Open Space parcels north and south respectively.

Other Wildlife

No other wildlife species were observed associating with the prairie dog colony at the time of the assessment. Red-winged blackbirds, common grackles (*Quiscalus quiscula*), and a great blue heron (*Ardea herodias*) were observed in the riparian area.

Land Use

Figure 39 shows the location of the Hawn-Hewit and Cotton Creek Open Space prairie dog colony in relation to surrounding land uses. Residential housing lies to the east and southeast. Vacant private property lies to the north and south. Sheridan Boulevard lies to the west and 112th Avenue lies to the north of the main colony, both of which should be sufficient barriers to prairie dog movement in those directions.

Figure 39. 2003 aerial photo showing the location of the Hawn-Hewit and Cotton Creek Open Space prairie dog colony in relation to surrounding land uses (arrows depict potential future movement).

3.3.5.2. Habitat Evaluation

3.3.5.2.1. Hawn-Hewit Open Space

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type			X			
Amount of Bare Soil		X				
Noxious Weed Infestation		X				
Suitable Vegetative Cover	X					
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns						X
Associated Species	X					
Parcel Purpose for Wildlife	X					

Suitability Rating: (2 + 1 + 1 +0 + 4 + 5 + 5 + 0 + 0)/ 9 = **2.00**

The Hawn-Hewit Open Space has moderately low habitat suitability for prairie dogs.

3.3.5.2.2. Cotton Creek Open Space

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type				X		
Amount of Bare Soil			X			
Noxious Weed Infestation				X		
Suitable Vegetative Cover		X				
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species	X					
Parcel Purpose for Wildlife	X					

Suitability Rating: (3 + 2 + 3 +1 + 4 + 5 + 0 + 0 + 0)/ 9 = **2.00**

The Cotton Creek Open Space has moderately low habitat suitability for prairie dogs.

3.3.6. Martin, Starika, and Life Fellowship Open Space Parcels

3.3.6.1. Site Characteristics

Soils

The soil of the Martin Open Space is Alamosa loam (AdB) and Heldt clay (HlD). The soil of the Starika Open Space is Heldt clay (HlD) and Nunn clay loam (NuB). The soil of the Life Fellowship Open Space is Nunn clay loam (NuB), Renohill loam (ReD), and wet alluvial land (Wt).

Vegetation

Historical vegetation for these soil types is not known at this time. However, based on geographic location and similar known vegetative communities, the historic vegetation within the prairie dog colony was likely western wheatgrass, green needlegrass, needle and thread, and blue grama. Currently, the Martin, Starika, and Life Fellowship parcels are highly degraded and primarily composed of field bindweed (>50%), annual kochia, lambsquarters, flixweed, dalmatian toadflax (*Linaria dalmatica*), and rabbitbrush (Figure 40 and 41). Bare soil is also very high on the site (>75% especially after vegetation has senesced). The west side of the riparian corridor through the Martin and Starika Open Space parcels has very high bank erosion (Figure 42) as the prairie dogs have burrowed immediately adjacent to the creek corridor (Figure 43). The vegetation of the riparian area is primarily Russian olive, plains cottonwood, rush, and pigweed.

Figure 40. Photos taken in June 2004 showing the vegetation on the Martin and Starika Open Space parcels.

Figure 41. Photos taken in June 2004 showing the vegetation on the Life Fellowship Open Space.

Figure 42. Photos taken in June 2004 showing bank erosion along Big Dry Creek within the Martin and Starika Open Space parcels.

Figure 43. Photos taken in June 2004 showing prairie dogs burrowing immediately adjacent to Big Dry Creek within the Martin and Starika Open Space parcels.

Prairie Dogs

The prairie dog colony exists on the majority of the upland (3.3 acres on Life Fellowship, 5.0 acres on Starika, and 6.5 acres on Martin). The colony is of low to moderate density (0-10 adult prairie dogs per acre) on the east side of Big Dry Creek and high density (estimated 15+ adult

prairie dogs per acre) on the west. The colony on either side of the creek extends into both adjacent private property as well as other Open Space parcels.

Other Wildlife

No other wildlife species were observed associating with the prairie dog colony at the time of the assessment. Mallards, red-winged blackbirds, mourning doves (*Zenaida macroura*), and a great blue heron were observed within the riparian area of Big Dry Creek.

Land Use

Figure 44 shows the location of the Martin, Starika, and Life Fellowship Open Space prairie dog colonies in relation to surrounding land uses. Residential housing lies to the west, open space parcels lie to the north and east, Front Range Community College lies to the east, and 112th Avenue lies to the south.

Figure 44. 2003 aerial photo showing the location of the Martin, Starika, Life Fellowship, Sheridan/116, 3M/Adams County, and a portion of the Front Range Community College prairie dog colonies in relation to surrounding land uses (arrows depict potential future movement of prairie dogs with regard to those parcels).

3.3.6.2. Habitat Evaluation

3.3.6.2.1. Martin Open Space

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type				X		
Amount of Bare Soil		X				
Noxious Weed Infestation		X				
Suitable Vegetative Cover	X					
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (3 + 1 + 1 +0 + 4 + 5 + 0 + 1 + 0)/ 9 = **1.67**

The Martin Open Space has low habitat suitability for prairie dogs.

3.3.6.2.2. Starika Open Space

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type				X		
Amount of Bare Soil		X				
Noxious Weed Infestation		X				
Suitable Vegetative Cover	X					
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (3 + 1 + 1 +0 + 4 + 5 + 0 + 1 + 0)/ 9 = **1.67**

The Starika Open Space has low habitat suitability for prairie dogs.

3.3.6.2.3. Life Fellowship Open Space

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type			X			
Amount of Bare Soil		X				
Noxious Weed Infestation		X				
Suitable Vegetative Cover	X					
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns						X
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (2 + 1 + 1 +0 + 4 + 5 + 5 + 1 + 0)/ 9 = **2.11**

The Life Fellowship Open Space has moderately low habitat suitability for prairie dogs.

NOTE: The habitat suitability may decrease once the Westfield Park is developed. Development of the Park would convert the Adjacent Land Use to a 0 rating unless a sufficient barrier is installed or prairie dogs are completely removed from the Life Fellowship parcel (see management guidelines).

3.3.7. 3M/Adams County and Sheridan 116 Open Space Parcels

3.3.7.1. Site Characteristics

Soils

The soil of both the 3M/Adams County and Sheridan 116 Open Space parcels is Platner loam (PlC), Nunn clay loam (NuB), Renohill loam (ReD), and wet alluvial land (Wt). The slope is roughly 0-5% in the upland and 10-45% from the upland down to the wetlands/ponds.

Vegetation

Historical vegetation for these soil types is not known at this time. However, based on geographic location and similar known vegetative communities, the historic vegetation within the upland was likely western wheatgrass, green needlegrass, needle and thread, and blue grama. Currently, the upland of the 3M/Adams County and Sheridan 116 parcels is moderately degraded and primarily composed of field bindweed (>50%), annual kochia, pigweed and rabbitbrush (Figure 45). Bare soil is also very high on the site (>50% especially after vegetation has senesced). The wetland area is primarily composed of rushes, cattails, and willows.

Figure 45. Photos taken in June 2004 showing the prairie dog burrows, slope, vegetation, pond and wetland area on the 3M/Adams County and Sheridan 116 Open Space parcels.

Prairie Dogs

The prairie dog colony exists on the majority of the upland (approximately 6 acres total). The colony is of high density (15+ adult prairie dogs per acre) within the 3M/Adams County parcel and moderate to high density (estimated 10-15+ adult prairie dogs per acre) within the Sheridan 116 parcel.

Other Wildlife

No other wildlife species were observed associating with the prairie dog colony at the time of the assessment.

Land Use

Figure 44 shows the location of the 3M/Adams County and Sheridan/116 prairie dog colonies in relation to surrounding land uses. Residential housing lies to the west. A City Park lies to the north, east and northeast of the parcels. Open Space parcels lie to the south and east. Front Range Community College lies to the southeast.

3.3.7.2. Habitat Evaluation

3.3.7.2.1. 3M/Adams County Open Space

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type			X			
Amount of Bare Soil			X			
Noxious Weed Infestation		X				
Suitable Vegetative Cover	X					
Slope	X					X
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (2 + 2 + 1 + 0 + 2.5 + 5 + 0 + 1 + 0)/ 9 = **1.50**

The 3M/Adams County Open Space has low habitat suitability for prairie dogs.

3.3.7.2.2. Sheridan 116 Open Space

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type			X			
Amount of Bare Soil			X			
Noxious Weed Infestation		X				
Suitable Vegetative Cover	X					
Slope	X					X
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (2 + 2 + 1 + 0 + 2.5 + 5 + 0 + 1 + 0)/ 9 = **1.50**

The Sheridan 116 Open Space has low habitat suitability for prairie dogs.

3.3.8. Front Range Community College Open Space

3.3.8.1. Site Characteristics

Soils

The soil of the Front Range Community College Open Space is Arvada loam (AdB), Nunn clay loam (NuB), Platner loam (PlC), and Renohill loam (ReD). The slope is roughly 0-30%.

Vegetation

Historical vegetation for these soil types is not known at this time. However, based on geographic location and similar known vegetative communities, the historic vegetation within the upland was likely western wheatgrass, green needlegrass, needle and thread, and blue grama. Currently, the upland of the Front Range Community College Open Space is moderately to heavily degraded and is primarily composed of field bindweed (>75%), annual kochia, pigweed and rabbitbrush (Figure 46). Bare soil is also very high on the upland (>50% especially after vegetation has senesced). The riparian area is primarily composed of rushes, cattails, willows, plains cottonwood, narrowleaf cottonwood, and Russian olive (Figure 47).

Figure 46. Photos taken in June 2004 showing the prairie dog burrows, slope, and vegetation within the upland of the Front Range Community College Open Space parcel.

Figure 47. Photos taken in June 2004 showing the prairie dog burrows, slope, and vegetation within the riparian area and adjacent to the main pond of the Front Range Community College Open Space parcel.

Prairie Dogs

The prairie dog colony exists on the majority of the upland (approximately 50 acres total). The colony is of moderate to high density (10-155+ adult prairie dogs per acre). The colony exists immediately adjacent to the pond and in very close proximity to the riparian area.

Other Wildlife

No other wildlife species were observed associating with the prairie dog colony at the time of the assessment.

Land Use

Figure 48 shows the location of the Front Range Community College prairie dog colonies in relation to surrounding land uses. Residential housing lies to the north and southeast. Open Space parcels lie to the west and east. Front Range Community College lies to the south.

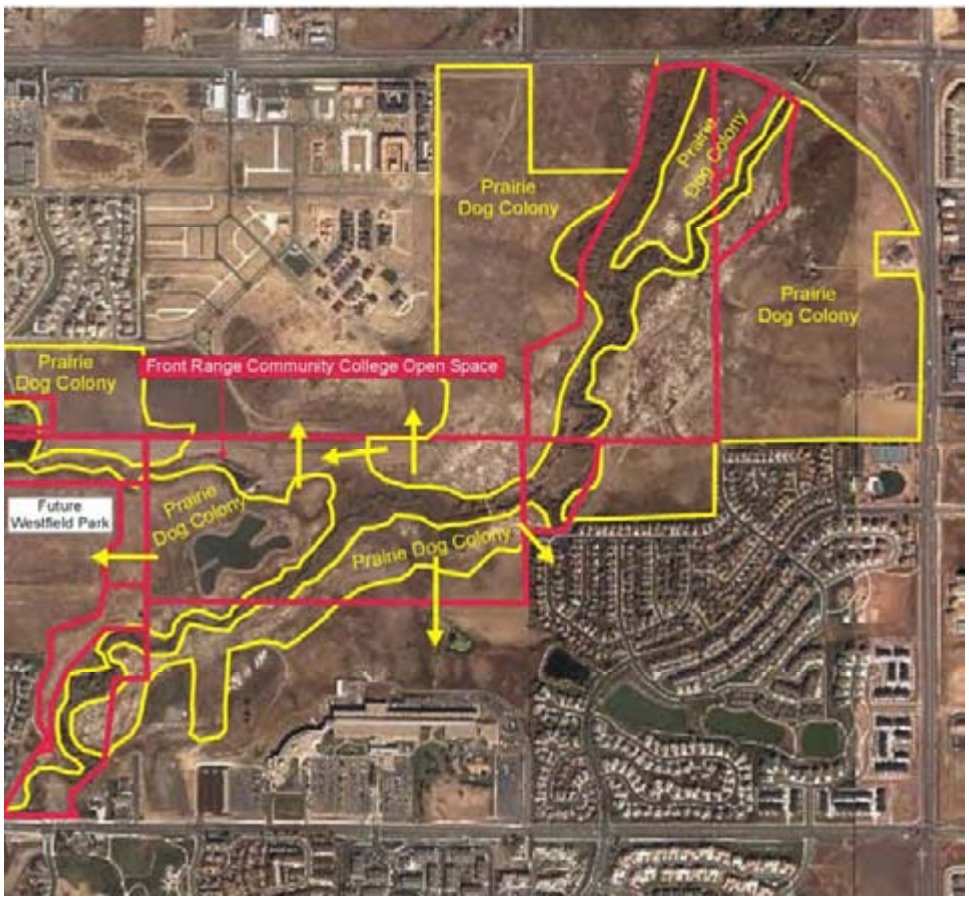

Figure 48. 2003 aerial photo showing the location of the Front Range Community College prairie dog colonies in relation to surrounding land uses (arrows depict potential future movement of prairie dogs with regard to the Front Range Community College Open Space).

3.3.8.2. Habitat Evaluation

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type				X		
Amount of Bare Soil			X			
Noxious Weed Infestation		X				
Suitable Vegetative Cover	X					
Slope			X			X
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (3 + 2 + 1 + 0 + 3.5 + 5 + 0 + 1 + 0)/ 9 = **1.72**

The Front Range Community College Open Space has low habitat suitability for prairie dogs.

3.3.9. College Hills PLD, Foster, Federal Square/Cozy Corner, and Hassig Open Space Parcels

3.3.9.1. Site Characteristics

Soils

The soil of the College Hills PLD Open Space is Arvada loam (AdB). The soil of the Foster Open Space is Arvada loam (AdB) and Ulm loam (UlD). The soil of Federal Square/Cozy Corner Open Space is Arvada loam (AdB). The soil of the Hassig Open Space is Arvada loam (AdB). The slope is roughly <15%.

Vegetation

Historical vegetation for these soil types is not known at this time. However, based on geographic location and similar known vegetative communities, the historic vegetation within the prairie dog colony was likely western wheatgrass, green needlegrass, needle and thread, and blue grama. Currently, the upland of the parcels is heavily degraded and primarily composed of field bindweed (>75%), annual kochia, and pigweed (Figures 49-52). Bare soil is also very high on the upland (>75% especially after vegetation has senesced). The riparian area is primarily composed of Russian olive, plains cottonwood, western snowberry, and cheatgrass and is moderately to heavily degraded (Figure 53).

Figure 49. Photos taken in June 2004 showing the vegetation within the College Hills PLD Open Space looking to the east and the west (respectively) from the trailhead on 115th Avenue at the south edge of the parcel.

Figure 50. Photos taken in June 2004 showing the vegetation within the Foster Open Space looking west from Sheridan Boulevard and south from the Federal Square / Cozy Corner parcel (respectively).

Figure 51. Photos taken in June 2004 showing the vegetation within the Federal Square / Cozy Corner Open Space looking to the south from the onramp from 120th Avenue to Sheridan Boulevard and within the parcel (respectively).

Figure 52. Photos taken in June 2004 showing the vegetation within the Hassig Open Space looking to the west and then the east (respectively) from the onramp from 120th Avenue to Sheridan Boulevard.

Figure 53. Photos taken in June 2004 showing the proximity of prairie dog mounds and relatively sparse amount of riparian vegetation within the riparian area of the Federal Square / Cozy Corner and Foster Open Space parcels.

Prairie Dogs

The prairie dog complex exists throughout the entirety of the upland within the parcels and much of the adjacent property (approximately 180 acres total). The small colony within the Hassig parcel is the lowest density of all of the parcels and is of low to high density (5-15+ adult prairie dogs per acre where the lowest density is the northern portion and density increases to the south). This particular colony extends south into the Foster Open Space, is approximately 11.75 acres, and is isolated from the remainder of the complex as it is surrounded by Big Dry Creek on the west, east and south and 120th Avenue on the north. The colony to the east of Big Dry Creek within the Federal Square / Cozy Corner, Foster, and College Hills PLD is approximately 30 acres and of moderate to high density (10-15+ adult prairie dogs per acre). The highest density is adjacent to Big Dry Creek. The colony to the west of Big Dry Creek is primarily on private property with a small portion extending into the western portion of the Foster Open Space and is approximately 5 acres and of moderate density (approximately 10 adult prairie dogs per acre). Big Dry Creek likely provides a sufficient barrier to movement of prairie dogs from east to west within and between these parcels.

Other Wildlife

No other wildlife species were observed associating with the prairie dog colony at the time of the assessment.

Land Use

Figure 54 shows the location of the prairie dog complex in relation to surrounding land uses. Residential housing lies to the west and south. Open Space parcels lie to the southwest. Commercial development is currently occurring west of the northwest portion of the Foster Open

Space. The private lands to the west, south, and east upon which the surrounding prairie dog colonies exist are generally vacant fields.

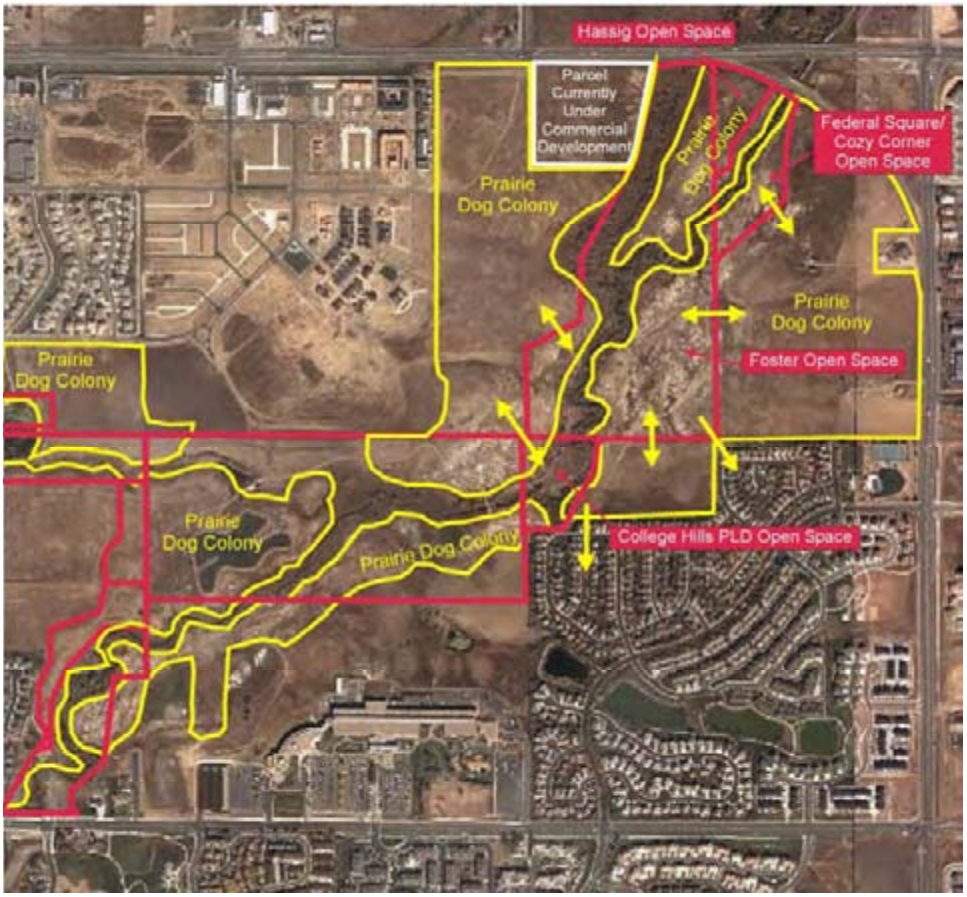

Figure 54. 2003 aerial photo showing the location of the College Hills PLD, Foster, Federal Square / Cozy Corner, and Hassig Open Space prairie dog colonies in relation to surrounding land uses (arrows depict potential future movement of prairie dogs with those parcels).

3.3.9.2. Habitat Evaluation

3.3.9.2.1. College Hills PLD Open Space

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type					X	
Amount of Bare Soil		X				
Noxious Weed Infestation		X				
Suitable Vegetative Cover	X					
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (4 + 1 + 1 + 0 + 4 + 5 + 0 + 1 + 0)/ 9 = **1.78**

The College Hills PLD Open Space has low habitat suitability for prairie dogs.

3.3.9.2.2. Foster Open Space

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type			X			
Amount of Bare Soil		X				
Noxious Weed Infestation		X				
Suitable Vegetative Cover	X					
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (2 + 1 + 1 + 0 + 4 + 5 + 0 + 1 + 0)/ 9 = **1.56**

The Foster Open Space has low habitat suitability for prairie dogs.

3.3.9.2.3. Federal Square / Cozy Corner Open Space

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type					X	
Amount of Bare Soil		X				
Noxious Weed Infestation		X				
Suitable Vegetative Cover	X					
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns						X
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (4 + 1 + 1 + 0 + 4 + 5 + 5 + 1 + 0)/ 9 = **2.33**

The Federal Square / Cozy Corner Open Space has moderately low habitat suitability for prairie dogs.

3.3.9.2.4. Hassig Open Space

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type					X	
Amount of Bare Soil		X				
Noxious Weed Infestation		X				
Suitable Vegetative Cover	X					
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns						X
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (4 + 1 + 1 + 0 + 4 + 5 + 5 + 1 + 0)/ 9 = **2.33**

The Hassig Open Space has moderately low habitat suitability for prairie dogs.

3.3.10. Koleski Open Space

3.3.10.1. Site Characteristics

Soils

The soil of the Koleski Open Space is Arvada loam (AdB), Platner loam (PlB), Ulm loam (UlC, and UlD).

Vegetation

Historical vegetation for these soil types is not known at this time. However, based on geographic location and similar known vegetative communities, the historic vegetation within the prairie dog colony was likely western wheatgrass, green needlegrass, needle and thread, and blue grama. Currently, the vegetation of the Koleski Open Space parcel south of Federal Boulevard is almost completely field bindweed (Figure 55). The area within the prairie dog colonies is very high in bare soil. The vegetation of the upland of the Koleski Open Space parcel north of Federal Boulevard is primarily crested wheatgrass, field mustard, cheatgrass, and rabbitbrush (Figure 56). The vegetation of the riparian corridor is primarily plains cottonwood, Russian olive, coyote willow, Wood's rose, western snowberry, smooth brome, and western wheatgrass (Figure 57). The vegetation of the Koleski Open Space parcel north of Federal Boulevard within the prairie dog colonies is primarily field bindweed and annual kochia (Figures 55-59).

Figure 55. Photos taken in June 2004 showing the vegetation of the Koleski Open Space south of Federal Boulevard.

Figure 56. Photos taken in June 2004 showing the vegetation south of Big Cry Creek on the Koleski Open Space north of Federal Boulevard.

Figure 57. Photos taken in June 2004 showing the riparian vegetation of the Koleski Open Space north of Federal Boulevard.

Figure 58. Photos taken in June 2004 showing the vegetation within the main prairie dog colony adjacent to and south of Big Cry Creek on the Koleski Open Space north of Federal Boulevard.

Figure 59. Photos taken in June 2004 showing the vegetation within the prairie dog colony north of Big Cry Creek on the Koleski Open Space north of Federal Boulevard (west and east sides respectively).

Prairie Dogs

Prairie dogs exist throughout the majority of the Koleski Open Space parcel south of Federal Boulevard, particularly east of the creek (approximately 4 acres) and are of moderate density (approximately 10 adult prairie dogs per acre). A very expansive prairie dog colony on private property lies directly to the east.

Prairie dogs exist on both sides of the Big Dry Creek in the Koleski Open Space north of Federal Boulevard. There is a small colony of prairie dogs (<10 individuals) along the south fenceline adjacent to Federal Boulevard. There is another colony in the northeast portion of the parcel, which connects to the colony on the Big Dry Creek Open Space to the east. The portion which exists on the Koleski Open Space is approximately 1 acre and of moderate density (approximately 10 adult prairie dogs per acre). There is a colony south of Big Dry Creek, which is approximately 1.2 acres and of high density (at least 15 adult prairie dogs per acre). There is a colony directly across Big Dry Creek to the north. This colony is approximately 5 acres and of moderate density (approximately 10 adult prairie dogs per acre).

Other Wildlife

A black-billed magpie (*Pica pica*) was observed and Red-winged Blackbirds were heard within the Big Dry Creek corridor of the Koleski Open Space parcel. No associated species were observed within any of the existing prairie dog colonies (either on Open Space or adjacent private property) during the assessment.

Land Use

Figure 60 shows the location of the Koleski Open Space parcels in relation to surrounding land uses. 120th Avenue lies to the south, Federal Boulevard lies to the north and west, and private property, which harbors an expansive prairie dog colony, lies to the east of the south Koleski Open Space. Federal Boulevard lies to the south, Big Dry Creek lies to the east, and private property lies to the north and west of the north Koleski Open Space.

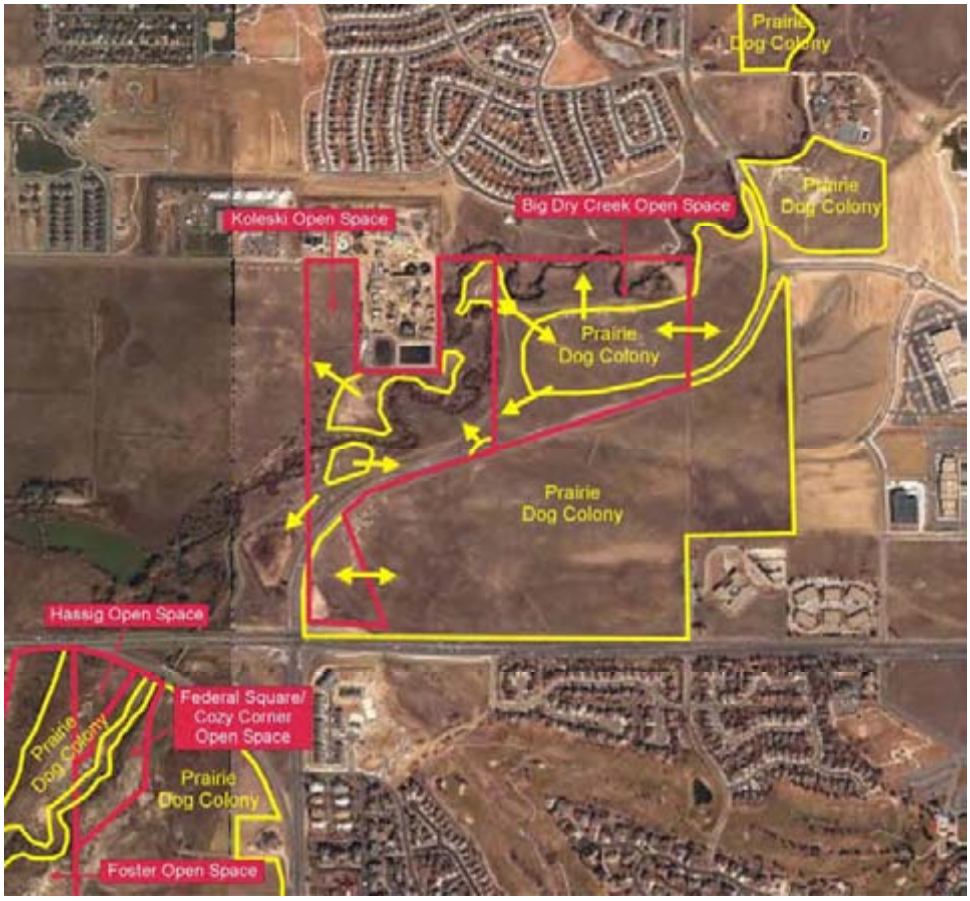

Figure 60. 2003 aerial photo showing the location of the Koleski and Big Dry Creek Open Space prairie dog colonies in relation to surrounding land uses (arrows depict likely future movement with regard to colonies on Open Space parcels).

3.3.10.2. Habitat Evaluation

3.3.10.2.1. South Koleski Open Space

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type		X				
Amount of Bare Soil		X				
Noxious Weed Infestation		X				
Suitable Vegetative Cover	X					
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns						X
Associated Species		X				
Parcel Purpose for Wildlife						X

Suitability Rating: (1 + 1 + 1 + 0 + 4 + 5 + 5 + 1 + 5)/ 9 = **2.56**

The Koleski Open Space south of Federal Boulevard has moderate habitat suitability for prairie dogs.

3.3.10.2.2. North Koleski Open Space

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type			X			
Amount of Bare Soil		X				X
Noxious Weed Infestation			X			
Suitable Vegetative Cover	X					
Slope				X		X
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (2 + 3 + 2 + 0 + 4 + 5 + 0 + 1 + 0)/ 9 = **1.89**

The Koleski Open Space north of Federal Boulevard has low habitat suitability for prairie dogs.

3.3.11. Big Dry Creek Open Space

3.3.11.1. Site Characteristics

Soils

The soil of the Big Dry Creek Open Space is Arvada loam (AdB), Renohill loam (ReD), Samsil-Shingle complex (ShF), and Ulm loam (UlC). Bare soil is high within the prairie dog colonies and low to moderate in the adjacent upland and riparian corridor.

Vegetation

Historical vegetation for these soil types is not known at this time. However, based on geographic location and similar known vegetative communities, the historic vegetation within the prairie dog colony was likely western wheatgrass, green needlegrass, needle and thread, and blue grama. Currently, the vegetation of the upland of the Big Dry Creek Open Space is primarily crested wheatgrass, field mustard, cheatgrass, and rabbitbrush (Figure 61). The vegetation of the riparian corridor is primarily plains cottonwood, Russian olive, coyote willow, Wood's rose, western snowberry, smooth brome, and western wheatgrass. The vegetation within the prairie dog colonies is primarily field bindweed, annual kochia, lambquarters, flixweed, kochia, field mustard and rabbitbrush (Figures 62-63).

Figure 61. Photos taken in June 2004 showing the upland vegetation including the edges of the main prairie dog colony of the Big Dry Creek Open Space.

Figure 62. Photos taken in June 2004 showing the vegetation within the main prairie dog colony of the Big Dry Creek Open Space.

Figure 63. Photos taken in June 2004 showing the vegetation within the prairie dog colony in the northwest corner of the Big Dry Creek Open Space.

Prairie Dogs

Prairie dogs exist throughout the majority of the upland of the Big Dry Creek Open Space parcel south of Federal Boulevard. The primary colony is approximately 12 acres in size and of low (on the edges) to moderate (in the center) density (approximately 5-10 adult prairie dogs per acre). The colony in the northwest portion of the parcel, which connects to the colony on the Koleski Open Space to the east is approximately 0.75 acres and of high density (at least 15 adult prairie dogs per acre). Prairie dogs exist on the private property to the east of the parcel.

Other Wildlife

A Black-billed Magpie was observed and Red-winged Blackbirds were heard within the Big Dry Creek corridor of the Koleski Open Space parcel. No associated species were observed within any of the existing prairie dog colonies (either on Open Space or adjacent private property) during the assessment.

Land Use

Figure 60 shows the location of the Big Dry Creek Open Space parcels in relation to surrounding land uses. Federal Boulevard lies to the south, private property lies to the north and east, and Koleski Open Space lies to the west.

3.3.11.2. Habitat Evaluation

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type		X				
Amount of Bare Soil		X		X		
Noxious Weed Infestation		X		X		
Suitable Vegetative Cover	X					
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns						X
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (1 + 2 + 2 + 0 + 4 + 5 + 5 + 1 + 0)/ 9 = **2.22**

The Big Dry Creek Open Space has moderately low habitat suitability for prairie dogs.

3.3.12. Tejon 128 Open Space

3.3.12.1. Site Characteristics

Soils

The soil of the Tejon 128 Open Space is Arvada loam (AdB) and Renohill loam (ReD). Bare soil is high within the prairie dog colony. Slope is very high, particularly on the western portion of the Open Space.

Vegetation

Historical vegetation for these soil types is not known at this time. However, based on geographic location and similar known vegetative communities, the historic vegetation within the prairie dog colony was likely western wheatgrass, green needlegrass, needle and thread, and blue grama. Currently, the vegetation within the prairie dog colony of the Tejon 128 Open Space west of Big Dry Creek is primarily annual kochia, field bindweed, and lambquarters (Figures 64-65). In the southwest corner of the Open Space where the prairie dogs are of lower density, the vegetation also includes field mustard and cheatgrass (Figure 66). The vegetation of the riparian corridor is primarily Russian olive and smooth brome with some plains cottonwood, coyote willow, western snowberry, and western wheatgrass (Figure 67).

Figure 64. Photos taken in June 2004 showing the upland vegetation within the prairie dog colony of the Tejon 128 Open Space west of Big Dry Creek.

Figure 65. Photos taken in June 2004 showing the vegetation around the mounds within the prairie dog colony of the Tejon 128 Open Space west of Big Dry Creek.

Figure 66. Photos taken in June 2004 showing the vegetation within the southwest corner of the Tejon Open Space.

Figure 67. Photos taken in June 2004 showing the riparian vegetation within the Tejon 128 Open Space west of Big Dry Creek.

Prairie Dogs

Prairie dogs exist throughout the majority of the upland of the Tejon 128 Open Space parcel west of Big Dry Creek. The colony is approximately 6 acres in size and of low (to the south) to high (from the trail to the north) density (approximately 5-15 adult prairie dogs per acre). Prairie dogs

also exist along the eastern edge of the parcel east of Big Dry Creek (approximately 1.5 acres and of high density). Prairie dogs also reside on the private property to the west and on the Park Center Open Space to the east.

Other Wildlife

No associated species were observed within any of the existing prairie dog colonies (either on Open Space or adjacent private property) during the assessment.

Land Use

Figure 68 shows the location of the Tejon 128 Open Space in relation to surrounding land uses. The Open Space is bound on the south and west by private property, on the north by 128th Avenue, and on the west by Transamerica Open Space and Park Center Open Space.

Figure 68. 2003 aerial photo showing the location of the Tejon 128, Transamerica, and Park Center Open Space prairie dog colonies in relation to surrounding land uses (arrows depict likely future movement with regard to colonies on Open Space parcels).

3.3.12.2. Habitat Evaluation

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type		X				
Amount of Bare Soil		X		X		
Noxious Weed Infestation		X				
Suitable Vegetative Cover	X					
Slope				X	X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (1 + 2 + 1 + 0 + 3.5 + 5 + 0 + 1 + 0)/ 9 = **1.50**

The Tejon 128 Open Space has low habitat suitability for prairie dogs.

3.3.13. Park Center Open Space

3.3.13.1. Site Characteristics

Soils

The soil of the Park Center Open Space is Arvada loam (AdB) and Renohill loam (ReD). Bare soil is high within the prairie dog colony.

Vegetation

Historical vegetation for these soil types is not known at this time. However, based on geographic location and similar known vegetative communities, the historic vegetation within the prairie dog colony was likely western wheatgrass, green needlegrass, needle and thread, and blue grama. Currently, the vegetation within the prairie dog colony of the Park Center Open Space is primarily annual kochia, field bindweed, and lambquarters (Figure 69). The vegetation of the riparian corridor is primarily Russian olive and smooth brome with some plains cottonwood, coyote willow, western snowberry, and western wheatgrass.

Figure 69. Photos taken in June 2004 showing the upland vegetation within the prairie dog colony of the Park Center Open Space looking to the west from the trail across the Open Space and adjacent Park (left) and looking to the south from the north end of the Open Space (right).

Prairie Dogs

Prairie dogs exist throughout the majority of the upland of the Park Center Open Space. The colony is approximately 6.5 acres in size and generally of high density (approximately 15 adult prairie dogs per acre). This colony is part of the larger colony, which exists primarily on the private property to the east.

Other Wildlife

No associated species were observed within the existing prairie dog colony (either on Open Space or adjacent private property) during the assessment.

Land Use

Figure 68 shows the location of the Park Center Open Space in relation to surrounding land uses. The Open Space is bound on the south by private property, the east by City of Westminster 128th Avenue Park, on the north by 128th Avenue, and on the west by Transamerica Open Space and Tejon 128 Open Space.

3.3.13.2. Habitat Evaluation

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type		X				
Amount of Bare Soil		X				
Noxious Weed Infestation		X				
Suitable Vegetative Cover	X					
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns						X
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (1 + 1 + 1 + 0 + 4 + 5 + 5 + 1 + 0)/ 9 = **2.00**

The Park Center Open Space has moderately low habitat suitability for prairie dogs.

3.3.14. Frisco/Bull Canal Open Space

3.3.14.1. Site Characteristics

Soils

The soil of the Frisco/Bull Canal Open Space is Arvada loam (AdB).

Vegetation

Historical vegetation for this soil type in this area is not known at this time. Currently, the vegetation within the prairie dog colony of the Frisco/Bull Canal Open Space is primarily western wheatgrass, annual kochia, field bindweed, lambsquarters, red three-awn, yucca, cheatgrass, and Indian ricegrass (small segment) (Figures 70-71). The vegetation of the riparian corridor is primarily broadleaf cattail, Russian olive, plains cottonwood, coyote willow, western wheatgrass, smooth brome, Canada thistle, and cheatgrass. The vegetation of the area immediately north and northwest of the prairie dog colony is western wheatgrass, smooth brome, annual kochia, diffuse knapweed, and prickly pear.

Figure 70. Photos taken in June 2004 looking north from 128th Avenue showing the vegetation within the prairie dog colony of the Frisco/Bull Canal Open Space.

Figure 71. Photos taken in June 2004 looking south across Bull Canal from the northwest corner showing the vegetation within the prairie dog colony of the Frisco/Bull Canal Open Space.

Prairie Dogs

Prairie dogs exist throughout the majority of the Frisco/Bull Canal Open Space east and south of Big Dry Creek. The colony is approximately 5 acres in size and of low to moderate density (approximately 5-10 adult prairie dogs per acre). There do not appear to be any prairie dogs west of Big Dry Creek, which likely serves as a sufficient barrier to prairie dog dispersal to the west.

Other Wildlife

A pair of red-tailed hawks were observed nesting north of the Open Space.

Land Use

Figure 72 shows the location of the Frisco/Bull Canal Open Space in relation to surrounding land uses. 128th Avenue lies to the south and private property lies to the north and east.

Figure 72. 2003 aerial photo showing the location of the Frisco/Bull Canal and Bogg Open Space prairie dog colonies in relation to surrounding land uses (arrows depict likely future movement with regard to colonies on Open Space parcels).

3.3.14.2. Habitat Evaluation

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type		X				
Amount of Bare Soil				X		
Noxious Weed Infestation				X		
Suitable Vegetative Cover			X			
Slope						X
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns						X
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (1 + 3 + 3 + 2 + 5 + 5 + 5 + 1 + 0)/ 9 = **2.78**

The Frisco/Bull Canal Open Space has moderate habitat suitability for prairie dogs.

3.3.15. Bogg Open Space

3.3.15.1. Site Characteristics

Soils

The soil of the Bogg Open Space is Arvada loam (AdB).

Vegetation

Historical vegetation for this soil type in this area is not known at this time. Currently, the vegetation within the prairie dog colony of the Bogg Open Space is primarily annual kochia, field bindweed, lambsquarters, red three-awn, and common mullein (Figure 73). The vegetation of the riparian corridor is primarily broadleaf cattail, Russian olive, plains cottonwood, coyote willow, western wheatgrass, smooth brome, Canada thistle, and cheatgrass.

Figure 73. Photos taken in June 2004 looking west from Huron Street showing the vegetation within the prairie dog colony of the Bogg Open Space.

Prairie Dogs

Prairie dogs exist in the southern portion of the Bogg Open Space north of Big Dry Creek and east of Bull Canal. The colony is approximately 1.5-2.0 acres in size and of low to moderate density (approximately 5-10 adult prairie dogs per acre). There do not appear to be any prairie dogs west of Bull Canal, which likely serves as a sufficient barrier to prairie dog dispersal into the wetlands to the west.

Other Wildlife

A pair of red-tailed hawks were observed nesting west of the Open Space.

Land Use

Figure 72 shows the location of the Bogg Open Space in relation to surrounding land uses. Residential property lies to the west and north of the Open Space (separated from the Open Space by a wooden privacy fence), Huron Street lies to the east, and private property lies to the south.

3.3.15.2. Habitat Evaluation

Category	Rating of Suitability of Prairie Dog Colony					
	0	**1**	**2**	**3**	**4**	**5**
Soil Type		X				
Amount of Bare Soil			X			
Noxious Weed Infestation				X		
Suitable Vegetative Cover	X					
Slope						X
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns						X
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (1 + 2 + 3 + 0 + 5 + 5 + 5 + 1 + 0)/ 9 = **2.44**

The Bogg Open Space has moderate habitat suitability for prairie dogs.

3.4. Great Views and Vistas

Open Space parcels evaluated within this classification include the Colorado Hills Open Space and Woman Creek Open Space, which are located north of 96th Avenue, south of the Broomfield County boundary, east of Indiana Street, and west of Simms Street in Westminster, Colorado (Figure 74).

3.4.1. Colorado Hills Open Space

3.4.1.1. Site Characteristics

Soils

The soils of the Colorado Hills Open Space vary based on topography. The drainages are Nunn clay loam (102) and Manzanola-Renohill-Stoneham complex (96). The dog park in the northeast corner is Nunn-Urban land complex (106). The ridges are primarily Leyden-Primen-Standley cobbly clay loam (80). The bulk of the property, and within which the bulk of the prairie dogs exist is Standley-Nunn gravelly clay loam (149).

Vegetation

Price and Amen (1980) state that native vegetation in this area was mainly western wheatgrass, green needlegrass, needle and thread, sideoats grama, buffalograss, and blue grama. The current vegetation varies across the parcel. The bulk of the property in the southern two-thirds of the parcel (south of the main ridgeline) is almost completely field bindweed, cheatgrass, annual kochia, yucca, smooth brome, broom snakeweed, common mullein (*Verbascum thapsus*), fringed sage (*Artemisia frigida*), prickly pear, and dalmatian toadflax (Figures 75-77). The northeastern portion of the parcel, of which is currently a dog park, is primarily cheatgrass, field bindweed, red three awn (*Aristida purpurea*), field mustard, and annual kochia (Figure 78). The remaining portion of the northern one-third of the parcel is much healthier and although extremely rocky, is more reminiscent of both short- and mid-grass prairie and consists of western wheatgrass, fringed sage, red three awn, broom snakeweed, little bluestem (*Schizachyrium scoparium*), junegrass (*Koeleria macrantha*), blue grama, and sulfur flower (*Eriogonum umbellatum*), with a small amount of dalmatian toadflax, diffuse knapweed (*Centaurea diffusa*), and rabbitbrush (Figure 79).

Figure 75. Photos taken in April 2004 showing the vegetation and large amount of bare soil in the southern two-thirds of the Colorado Hills Open Space.

Figure 76. Photos taken in April 2004 showing the large amount of bare soil and rock in the southern two-thirds of the Colorado Hills Open Space.

Figure 77. Photos taken in April 2004 showing the expansive cheatgrass infestation in areas without prairie dogs in the southern two-thirds of the Colorado Hills Open Space.

Figure 78. Photos taken in April 2004 showing the vegetation of the dog park both within the park (left) and from the hill to the west looking both at the north portion of the dog park as well as the private property to the north (right) of the Colorado Hills Open Space.

Figure 79. Photos taken in April 2004 showing the short- and mid-grass prairie vegetation on the north one-third of the Colorado Hills Open Space.

Prairie Dogs

The main prairie dog colony on the southern two-thirds of the Colorado Hills Open Space is expansive and is approximately 222 acres of moderate to high density (approximately 10-15 adult prairie dogs per acre). At least three different prairie dog relocations have been conducted into this area over the years as evidenced by the trash, bare soil, surface disturbance that remains on the open space (Figures 80-82).

Figure 80. Photos taken in April 2004 showing the large amount of bare soil, surface disturbance, and trash left from the prairie dog relocation in the northeast corner of the southern two-thirds of the Colorado Hills Open Space.

Figure 81. Photos taken in April 2004 showing the large amount of bare soil, surface disturbance, and trash left from the prairie dog relocation in the center of the southern two-thirds of the Colorado Hills Open Space.

Figure 82. Photos taken in April 2004 showing the large amount of bare soil, surface disturbance, and trash left from the prairie dog relocation along the western ridgeline of the southern two-thirds of the Colorado Hills Open Space.

The prairie dog colony within the dog park in the northeast portion of the open space is approximately 17 acres of low density (less than 5 adult prairie dogs per acre). This colony extends onto the private property to the northwest.

The prairie dog colony in the northwest of the parcel is less than 5 acres on the Colorado Hills Open Space and extends another 5-6 acres onto the adjacent Woman Creek Open Space. This colony is of low density (approximately 5 adult prairie dogs per acre). This colony appears to be in good balance with its habitat.

The prairie dog colony in the southwestern drainage is approximately 46 acres and of moderate to high density (10-15+ adult prairie dogs per acre). This colony extends up the drainage and over the ridge to the west into the private property and Woman Creek Open Space.

Other Wildlife

No wildlife species were observed associating with any of the prairie dog colonies at the time of the assessment. The area is, however, within critical bald eagle (*Haliaeetus leucocephalus*) nesting and wintering habitat and immediately north of known nesting/roosting sites.

Land Use

Figure 83 shows the location of the Colorado Hills Open Space prairie dog colonies in relation to surrounding land uses. A dog park exists in the northeast corner of the Open Space. Residential housing lies to the north, Simms Street and residential housing lies to the east, 100th Avenue and Standley Lake Regional Park lies to the south, and Woman Creek Open Space lies to the west. There are no barriers between the prairie dog colonies and any adjacent land use.

Figure 83. 2003 aerial photo showing the location of the Colorado Hills Open Space and Woman Creek Open Space prairie dog colonies in relation to surrounding land uses (arrows depict potential future movement).

3.4.1.2. Habitat Evaluation

3.4.1.2.1. Colorado Hills Dog Park

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type	X					
Amount of Bare Soil		X				
Noxious Weed Infestation		X				
Suitable Vegetative Cover	X					
Slope					X	
Current Developed Land Use	X					
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species	X					
Parcel Purpose for Wildlife	X					

Suitability Rating: (0 + 1 + 1 + 0 + 4 + 0 + 0 + 0 + 0)/ 9 = **0.67**

The dog park in the northeast corner of the Colorado Hills Open Space has very low habitat suitability for prairie dogs.

3.4.1.2.2. Northern One-Third of Colorado Hills

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type		X				
Amount of Bare Soil					X	
Noxious Weed Infestation					X	
Suitable Vegetative Cover				X		
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns						X
Associated Species		X				
Parcel Purpose for Wildlife				X		

Suitability Rating: (1 + 4 + 4 + 3 + 4 + 5 + 5 + 1 + 3)/ 9 = **3.33**

The northern one-third of the Colorado Hills Open Space has moderately high habitat suitability for prairie dogs.

3.4.1.2.3. Southern Two-Thirds of Colorado Hills

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type	X					
Amount of Bare Soil		X				
Noxious Weed Infestation	X					
Suitable Vegetative Cover	X					
Slope				X		
Current Developed Land Use				X		
Adjacent Land Use / Neighboring Landowner Concerns						X
Associated Species				X		
Parcel Purpose for Wildlife				X		

Suitability Rating: (0 + 1 + 0 + 0 + 3 + 3 + 5 + 3 + 3)/ 9 = **2.00**

The south two-thirds of the Colorado Hills Open Space has moderately low habitat suitability for prairie dogs.

3.4.1.2.4. Southwestern Drainage

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type	X					
Amount of Bare Soil			X			
Noxious Weed Infestation			X			
Suitable Vegetative Cover		X				
Slope			X		X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife				X		

Suitability Rating: (0 + 2 + 2 + 1 + 3 + 5 + 0 + 1 + 3)/ 9 = **1.89**

The southwestern drainage on the Colorado Hills Open Space has low habitat suitability for prairie dogs.

3.4.2. Woman Creek Open Space

3.4.2.1. Site Characteristics

Soils

The soils of the Woman Creek Open Space vary generally based on topography. The main drainages are Nunn clay loam (102 and 103). The hilltops, slopes, and ridges are primarily Denver-Kutch clay loam (29 and 30) and Leyden-Primen-Standley cobbly clay loam (80). The remainder of the property is made of a conglomeration of patches of Denver clay loam (27), Renohill-Manzanola clay loam (133), and Standley-Nunn gravelly clay loam (149).

Vegetation

Price and Amen (1980) state that native vegetation in this area was mainly western wheatgrass, green needlegrass, needle and thread, sideoats grama, buffalograss, and blue grama. The current vegetation varies slightly across the parcel. The bulk of the property is primarily field bindweed and cheatgrass with a moderate to high proportion of bare soil (Figures 84-88). There are occasional patches, such as in the southwest corner and along the ridgelines that contain yucca, curlycup gumweed (*Grindelia squarrosa*), smooth brome, and prickly pear (Figure 89). The vegetation around Mower Reservoir generally consists of cattails and plains cottonwood.

Figure 84. Photos taken in April 2004 showing the prairie dog colony vegetation and large amount of bare soil in the southeastern bowl of the Woman Creek Open Space.

Figure 85. Photos taken in April 2004 looking to the east and southeast (respectively) showing the prairie dog colony and the large amount of bare soil and rock on the top of the eastern-most ridge and down into the eastern-most drainage of the Woman Creek Open Space (Colorado Hills Open Space is in the background).

Figure 86. Photos taken in April 2004 looking to the north showing the prairie dog colony within the main east/west drainage of the Woman Creek Open Space.

Figure 87. Photos taken in April 2004 looking to the west both to the northwest and southwest (respectively) across the western-most drainage towards Sims Street (in the background) showing the vegetation and the prairie dog colony within the drainage of the Woman Creek Open Space.

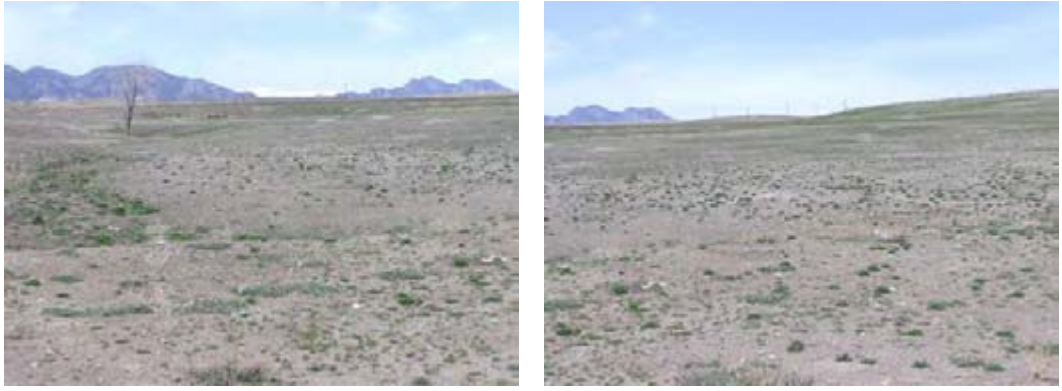

Figure 88. Photos taken in April 2004 looking to the west both to the west and northwest (respectively) towards Sims Street (in the background) showing the vegetation and the prairie dog colony within the southwestern portion of the Woman Creek Open Space.

Figure 89. Photos taken in April 2004 showing the occasional patches of yucca, smooth brome, and prickly pear along the center ridgeline and the southwestern portion west of Mower Reservoir (respectively) within the Woman Creek Open Space.

Prairie Dogs

The prairie dog colony exists primarily within the drainages, which extends from the Colorado Hills Open Space on the east, through the northern portion of the parcel to Simms Street, and south through the western-most drainage. The colony also extends from the Colorado Hills Open Space into the bowl in the southeast corner of the Woman Creek Open Space. The entire colony is expansive and approximately 208 acres of moderate to high density (approximately 10-15 adult prairie dogs per acre).

The prairie dog colony in the northeastern section of the parcel is approximately 5-6 acres and extends another 4-5 acres onto the adjacent Colorado Hills Open Space. This colony is of low density (approximately 5 adult prairie dogs per acre). This colony appears to be in good balance with the habitat.

Other Wildlife

No wildlife species were observed associating with any of the prairie dog colonies at the time of the assessment.

Land Use

Figure 83 shows the location of the Woman Creek Open Space prairie dog colonies in relation to surrounding land uses. City and County of Broomfield's Great Western Reservoir Open Space lies to the north, private property lies to the south, Simms Street lies to the west, and Colorado Hills Open Space lies to the east. There are no barriers between the prairie dog colonies and any adjacent land use.

3.4.2.2. Habitat Evaluation

3.4.2.2.1. Northeastern Section of Woman Creek

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type		X				
Amount of Bare Soil					X	
Noxious Weed Infestation					X	
Suitable Vegetative Cover				X		
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns						X
Associated Species		X				
Parcel Purpose for Wildlife				X		

Suitability Rating: (1 + 4 + 4 + 3 + 4 + 5 + 5 + 1 + 3)/ 9 = **3.33**

The northeastern section of Woman Creek Open Space has moderately high habitat suitability for prairie dogs.

3.4.2.2.2. Southern Four-Fifths of Colorado Hills

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type	X					
Amount of Bare Soil			X			
Noxious Weed Infestation	X					
Suitable Vegetative Cover	X					
Slope				X		
Current Developed Land Use				X		
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife				X		

Suitability Rating: (0 + 2 + 0 + 0 + 3 + 3 + 0 + 1 + 3)/ 9 = **1.33**

The southern four-fifths of the Woman Creek Open Space has low habitat suitability for prairie dogs.

3.5. Natural Areas, Water, Trees, and Wildlife

Open Space parcels evaluated within this classification include:

1. Countryside Open Space, which is located south of 106th Avenue and east of Oak Street in Westminster, Colorado (Figure 90).
2. Hyland Ponds Open Space, which is located south of 104th Avenue and west of Sheridan in Westminster, Colorado (Figure 90).
3. Vogel Pond Open Space, which is located north of 112th Avenue and east of Ranch Reserve Parkway in Westminster, Colorado (Figure 90).
4. Wadsworth Wetlands Open Space, which is located north of 92nd Avenue between Wadsworth Parkway and Wadsworth Boulevard in Westminster, Colorado (Figure 90).
5. Lower Church Lake North Shore Open Space, which is located in the northeast corner of the intersection of Wadsworth Boulevard and 108th Avenue in Westminster, Colorado (Figure 90).

3.5.1. Countryside Open Space

3.5.1.1. Site Characteristics

Soils

The soils of the Countryside Open Space include Arvada clay loam (6), Leyden-Primen-Standley cobbly clay loam (80), and Nunn-Urban land complex (105 and 107). The prairie dog colony exists on the Nunn-Urban land complex.

Vegetation

Price and Amen (1980) state that native vegetation of Nunn-Urban land complex and Leyden-Primen-Standley cobbly clay loam in this area was mainly western wheatgrass, green needlegrass, needleandthread, and blue grama. The native vegetation of Arvada clay loam in this area was mainly alkali sacaton, western wheatgrass, blue grama, and saltgrass (Price and Amen 1980). The vegetation within the prairie dog colony is primarily bindweed and pigweed with a high proportion of bare soil (>75%) (Figure 91).

Figure 91. Photos taken in March 2004 showing the vegetation on the Countryside Open Space/Park prairie dog colony.

Prairie Dogs

The prairie dog colony is located on the northeast corner of the Countryside Open Space and the western half of the Country Side Park. The colony is approximately 3.25 acres and of high density (estimated at least 15 adult prairie dogs per acre).

Other Wildlife

No other wildlife species were observed on the parcel during the assessment.

Land Use

Figure 92 shows the location of the Countryside prairie dog colony in relation to surrounding land uses. Residential housing lies on all sides of the Open Space/Park, the Countryside Youth Little League Ballfields lie to the west, Witt Elementary School lies to the south, and the City of Westminster Mayfair Park lies to the southeast.

Figure 92. 2003 aerial photo showing the location of the Countryside Open Space/Park prairie dog colony in relation to surrounding land uses (arrows depict likely future movement without management).

3.5.1.2. Habitat Evaluation

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type					X	
Amount of Bare Soil		X				
Noxious Weed Infestation		X				
Suitable Vegetative Cover	X					
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species	X	X				
Parcel Purpose for Wildlife				X		

Suitability Rating: (4 + 1 + 1 + 0 + 4 + 5 + 0 + 0.5 + 3)/ 9 = **2.06**

The Countryside Open Space has moderately low habitat suitability for prairie dogs.

3.5.2. Hyland Ponds Open Space

3.5.2.1. Site Characteristics

Soils

The soil of the lowland area around the ponds and drainage/riparian area is Manzanola clay loam, 15 to 25 percent slope (94). The soil of the upland area west of the riparian corridor and south of the ponds is Nunn-Urban land complex, 0 to 2 percent slope (105).

Vegetation

Price and Amen (1980) state that native vegetation of Nunn-Urban land complex and Manzanola clay loam in this area was mainly western wheatgrass, green needlegrass, and blue grama. The current vegetation of the upland area within the prairie dog colony varies. The southern portion of the Hyland Ponds Open Space (also known as the Rose Creek/Axtell Property) and the Waverly Acres Park is heavily degraded. The vegetation within these parcels is primarily composed of field bindweed, whitetop, and a high percentage of bare soil (up to 75%) (Figure 93).

The Hyland Ponds Open Space is not as heavily degraded. In areas without prairie dogs, it generally has less bare soil (less than 75%), a slightly lower prevalence of noxious weeds, and the occasional presence of grasses such as crested wheatgrass (*Agropyron cristatum*), western wheatgrass, and blue grama, and a small proportion of prairie rose (*Rosa arkansana*) (Figure 94).

Figure 93. Photos taken in April 2004 showing the prairie dog colony and noxious weeds within the Rose Creek/Axtell Property and the Waverly Acres Park (respectively).

Figure 94. Photos taken in April 2004 showing the prairie dog colony and associated vegetation within the Hyland Ponds Open Space.

Prairie Dogs

The black-tailed prairie dog colony within the Hyland Ponds Open Space parcel south of Waverly Acres Park exists on the west side of the north/south trail system. The colony is approximately 27 acres in size and of low to high density (approximately 1-15 adult prairie dogs per acre with an estimated average of 10 adult prairie dogs per acre). The colony on the Hyland Ponds Open Space parcel adjacent to 104th Avenue and north of Waverly Acres Park is approximately seven acres in size and of moderate density (approximately 10 adult prairie dogs per acre). Within the Waverly Acres Park, the prairie dogs exist on both sides of the trail; however, they do not exist east of the drainage. This colony is approximately 5 acres in size and of high density (approximately 15-20 adult prairie dogs per acre).

The Open Space and Park are adjacent to numerous colonies on private land. Immediately to the west is a very expansive prairie dog colony. This colony is approximately 105 acres in size and is densely populated (at least 15-20 prairie dogs per acre). Immediately to the south is a low to moderate density population (likely less than an average of 10 prairie dogs per acre) which is approximately 20+ acres in size. This population to the south, however, is not likely to have been a major source of prairie dog movement onto the Open Space/Park as most of the prairie dogs are on the east edge, away from the southern boundary of the Open Space/Park. There is also a colony to the northeast of the Open Space/Park directly north of the Waverly Acres Subdivision. This colony is beginning to expand into the eastern portion of the drainage and is connected to the Hyland Ponds Open Space parcel adjacent to 104th Avenue.

Other Wildlife

No other species of wildlife were observed on the parcel during the assessment.

Land Use

Figure 95 shows the location of the Hyland Ponds Open Space, adjacent prairie dog colonies and surrounding land uses. The Waverly Acres Subdivision lies south and east of the Open Space/Park. Commercial property lies on the northwest corner of 98th Avenue and Sheridan Boulevard. The private lands upon which the surrounding prairie dog colonies exist are generally vacant fields.

Figure 95. 2003 aerial photo showing the location of the Hyland Ponds Open Space and Waverly Acres Park, prairie dog colonies, and surrounding land uses (arrows depict potential future movement of prairie dogs).

3.5.2.2. Habitat Evaluation

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type					X	
Amount of Bare Soil		X				
Noxious Weed Infestation		X				
Suitable Vegetative Cover			X			
Slope			X		X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife				X		

Suitability Rating: (4 + 1 + 1 + 2 + 3 + 5 + 0 + 1 + 3)/ 9 = **2.22**

The Hyland Ponds Open Space has moderately low habitat suitability for prairie dogs.

NOTE:

In analyzing aerial photos taken in 2002 and 2003, prairie dogs were prevalent throughout the large private property to the west, particularly in the southern portion (directly west of Hyland Ponds Open Space), but not generally within the Hyland Ponds Open Space (except in the southern most area) or the Waverly Acres Park. Therefore, expansion into the park and the majority of the Open Space appears to have occurred within the past two years. The expansion can be largely attributed to the area being mowed in the summer of 2002 to alleviate fire danger concerns. This tall vegetation likely served as a highly effective barrier which kept most prairie dogs from expanding onto the Open Space/Park prior to mowing. Black-tailed prairie dogs prefer a visually unobstructed environment (typically less than 12 inches tall) (Clippinger 1989, Coffeen and Pederson 1989, Fitzgerald et al. 1994, Hoogland 1995). When the area was mown, however, it became suitable for prairie dog expansion.

Regarding the drainage/riparian corridor and ponds, prairie dog presence is not conducive with maintaining low sedimentation rates, high water quality, and low prevalence of noxious weeds. One contributing factor for this is the slope is extreme and the properties of the soil promote high water and wind erosion. Therefore, extensive amounts of bare soil (created by the prairie dogs) in this area will likely result in high levels of erosion into the drainage increasing sedimentation and decreasing water quality, particularly during high precipitation events. In addition, it is difficult to establish and maintain vegetation in the drainage due to the soil properties. Therefore,

any excessive disturbance will remove the ability for the native and desirable plant species to out compete the noxious weeds.

3.5.3. Vogel Pond Open Space

3.5.3.1. Site Characteristics

Soils

The soils of the Vogel Pond Open Space are Ulm loam (UlD) and Platner loam (PlB).

Vegetation

Historical vegetation for these soil types is not known at this time. However, based on geographic location and similar known vegetative communities, the historic vegetation within the prairie dog colony was likely western wheatgrass, green needlegrass, needle and thread, and blue grama. The current vegetation on the Vogel Pond Open Space is highly degraded and the entire upland area on the western half surrounding the prairie dog colony is almost completely composed of pigweed, annual kochia, field bindweed, flixweed, lambsquarters, cheatgrass, and has a very high percentage of bare soil (>75%) (Figure 96). The vegetation of the prairie dog colony is field bindweed, pigweed, yellow sweet clover, cheatgrass, and has a very high percentage of bare soil (>75) (Figure 97). The vegetation of the pond's littoral zone is primarily crested wheatgrass, smooth brome, plains cottonwood, alyssum, and cheatgrass (Figure 98).

Figure 96. Photos taken in June 2004 showing the upland vegetation on the Vogel Pond Open Space.

Figure 97. Photos taken in June 2004 showing the vegetation of the prairie dog colony on the Vogel Pond Open Space.

Figure 98. Photos taken in June 2004 showing the littoral vegetation surrounding Vogel Pond.

Prairie Dogs

The prairie dog colony is located on the west and south sides of Vogel Pond. It is approximately four acres and of low to moderate density (approximately 5 – 10 adult prairie dogs per acre).

Other Wildlife

No other wildlife species were observed associating with the prairie dog colony at the time of the assessment. A pair of White Pelicans (*Pelecanus erythrorhyncos*), two pairs of Canada Geese (*Branta canadensis*) with goslings, a Snowy Egret, and multiple Red-Winged Blackbirds were observed in and immediately adjacent to Vogel Pond (Figure 99).

Figure 99. Photos taken in June 2004 showing the White Pelicans (left) and Canada Geese (left) within and immediately north of Vogel Pond.

Land Use

Figure 100 shows the location of the Vogel Pond Open Space prairie dog colony in relation to surrounding land uses. Residential housing lies to the east, west, and south and the Ranch Country Club golf course lies directly to the north. There are no barriers between the prairie dog colony and any adjacent land use.

Figure 100. 2003 aerial photo showing the location of the Vogel Pond Open Space prairie dog colony in relation to surrounding land uses (arrows depict potential future movement of prairie dogs).

3.5.3.2. Habitat Evaluation

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type			X			
Amount of Bare Soil		X				
Noxious Weed Infestation		X				
Suitable Vegetative Cover	X					
Slope					X	
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife				X		

Suitability Rating: (2 + 1 + 1 +0 + 4 + 5 + 0 + 1 + 3)/ 9 = **1.89**

The Vogel Open Space has low habitat suitability for prairie dogs.

3.5.4. Wadsworth Wetlands Open Space

3.5.4.1. Site Characteristics

Soils

The soils of the Wadsworth Wetland Open Space include Nunn-Urban land complex (105) and Ulm-Urban land complex (162).

Vegetation

Price and Amen (1980) state that native vegetation of the Nunn-Urban land complex and Ulm-Urban land complex in this area was mainly western wheatgrass, green needlegrass, and blue grama. The current vegetation of the open space includes both a large cattail marsh and field bindweed and bare soil associated with the prairie dog colony (Figure 101).

Figure 101. Photos taken in March 2004 showing the cattail marsh in the background and the field bindweed associated with the prairie dog colony in the foreground within the Wadsworth Wetlands Open Space.

Prairie Dogs

The prairie dog colony is located east of the large cattail marsh. The colony is approximately 2.7 acres and of moderate to high density (estimated 15 adult prairie dogs per acre). The prairie dog colony extends onto the adjacent private property to the south and east across Wadsworth Boulevard along the railroad right-of-way (Figure 102).

Figure 102. Photos taken in March 2004 showing the prairie dog colony to the south on the private property and southeast along the railroad right-of-way from the Wadsworth Wetlands Open Space (respectively).

Other Wildlife

No other wildlife species were observed associating with the prairie dog colony at the time of the assessment. Red-Winged Blackbirds were observed within the cattail marsh.

Land Use

Figure 103 shows the location of the Wadsworth Wetlands Open Space, adjacent prairie dog colonies and surrounding land uses. Commercial development lies to the northwest. Residential housing lies to the north and east across the railroad tracks. The private property to the south is generally a fallow field.

Figure 103. 2003 aerial photo showing the location of the Wadsworth Wetlands Open Space prairie dog colony in relation to surrounding land uses (arrows depict potential future movement).

3.5.4.2. Habitat Evaluation

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type					X	
Amount of Bare Soil		X				
Noxious Weed Infestation	X					
Suitable Vegetative Cover	X					
Slope						X
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (4 + 1 + 0 +0 + 5 + 5 + 0 + 1 + 0)/ 9 = **1.78**

The Wadsworth Wetlands Open Space has low habitat suitability for prairie dogs.

3.5.5. Lower Church Lake North Shore Open Space

3.5.5.1. Site Characteristics

Soils

The soils of the Lower Church Lake North Shore Open Space include primarily Nunn-Urban land complex (105) and Ulm-Urban land complex (163)

Vegetation

Price and Amen (1980) state that native vegetation of the Nunn-Urban land complex and Ulm-Urban land complex in this area was mainly western wheatgrass, green needlegrass, and blue grama. The current vegetation of the prairie dog colony is primarily field bindweed, annual kochia, and cheatgrass (Figure 104). The current vegetation surrounding the prairie dog colony is primarily cheatgrass, western wheatgrass, crested wheatgrass, and ragweed (Figure 104).

Figure 104. Photos taken in late March 2004 showing the vegetation on the Lower Church Lake North Shore Open Space (looking northwest and southeast respectively).

Prairie Dogs

The prairie dog colony is located on the north side of Lower Church Lake and is less than 75 yards from the edge of the lake. It is approximately 4.75 acres and of moderate to high density (approximately 10-15 adult prairie dogs per acre).

Other Wildlife

A coyote (*Canis latrans*) was observed on the open space during the assessment. No other wildlife species were observed associating with the prairie dog colony at the time of the assessment.

Land Use

Figure 105 shows the location of the Lower Church Lake North Shore Open Space prairie dog colony in relation to surrounding land uses. Residential housing lies to the west, Highway 36 lies to the north and east, and Lower Church Lake lies to the south. There are no barriers between the prairie dog colony and any adjacent land use.

Figure 105. 2003 aerial photo showing the location of the Lower Church Lake North Shore prairie dog colony in relation to surrounding land uses (arrows depict potential future movement without management).

3.5.5.2. Habitat Evaluation

Category	Rating of Suitability of Prairie Dog Colony					
	0	1	2	3	4	5
Soil Type					X	
Amount of Bare Soil		X				
Noxious Weed Infestation		X				
Suitable Vegetative Cover			X			
Slope			X			
Current Developed Land Use						X
Adjacent Land Use / Neighboring Landowner Concerns	X					
Associated Species		X				
Parcel Purpose for Wildlife	X					

Suitability Rating: (4 + 1 + 1 + 2 + 2 + 5 + 0 + 1 + 0)/ 9 = **1.78**

The Lower Church Lake North Shore has low habitat suitability for prairie dogs.

4. Prairie Dog Management

4.1. Goal Statement and Objectives

Goal Statement

To provide prairie dog habitat conservation and viewing opportunities to as great an extent as possible while not causing conflict with adjacent landowners/land uses and excessive resource damage on Westminster Open Space parcels including, but not limited to, soil erosion, noxious weed infestation, or loss of habitat for other species of wildlife.

Objectives

1. Establish at least two Prairie Dog Education Areas (PEA) on Westminster Open Space.
2. Establish at least five Prairie Dog Conservation Areas (PDCA) on Westminster Open Space.
3. Install necessary movement barriers between PEAs or PDCAs and adjacent incompatible land uses.
4. Conduct population control activities as designated to establish and/or maintain healthy and viable densities on PEAs and PDCAs.
5. Promptly humanely remove all prairie dogs from areas designated as No Prairie Dog Areas (NPD).

4.2. Land Use Designations

4.2.1. Prairie Dog Education Area (PEA)

A Westminster Open Space parcel (or a portion thereof) managed for continued prairie dog existence to provide for prairie dog viewing and educational opportunities. Prairie dog populations with this designation may or may not serve any ecological purpose, however, they will allow residents and visitors of Westminster an opportunity to view and enjoy prairie dogs in an urban setting. Parcel(s) with this designation will be open to public access and have at least one interpretive sign addressing prairie dog conservation, biology, etc for education purposes. The population of prairie dogs on this parcel will be frequently monitored and adaptively managed (control needs will be defined by prescribed acreage, population, vegetation, and/or soil parameters) to ensure that noxious weeds, soil erosion, potential for disease, and negative impacts to adjacent land owners/land uses are kept at an absolute minimum. Live relocation of prairie dogs to these areas may be permitted when the current population falls below sustainable or desirable levels.

4.2.2. Prairie Dog Conservation Area (PDCA)

A Westminster Open Space parcel (or a portion thereof) managed for continued prairie dog existence in as healthy a shortgrass prairie ecosystem as possible in order to ensure the perpetual conservation of prairie dogs within the City of Westminster. Prairie dog populations with this designation may or may not serve any ecological purpose. This parcel may or may not be open to public use; it is to be maintained primarily as a natural area, and there will be no mandated prairie dog interpretive signage. The population of prairie dogs on this parcel will be frequently monitored and adaptively managed (control needs will be defined by prescribed acreage, population, vegetation, and/or soil parameters) to ensure that noxious weeds, soil erosion, and impacts to adjacent land owners/land uses are maintained at an absolute minimum. Live relocation of prairie dogs to these areas may be permitted when the current population falls below sustainable or desirable levels.

4.2.3. No Prairie Dog Area (NPD)

A Westminster Open Space parcel (or a portion thereof) that excludes prairie dogs due to incompatible land use objectives. City personnel or a qualified contractor will remove all prairie dogs from these areas according to acceptable removal activities (Section 5). Relocation is not permitted to these parcels for any reason.

4.2.4. Unclassified Area (UCA)

A Westminster Open Space parcel (or a portion thereof) that is inappropriate for classification as a PEA or PDCA as its current land use may change in the future. This parcel is generally not suitable for prairie dogs; however, there are no current incompatible land use objectives either on the parcel or on adjacent properties, which would justify it as being an NPD at the present time. Population control may be employed as deemed necessary to ensure that noxious weeds, soil erosion, and impacts to adjacent land owners/land uses are maintained at an absolute minimum. Relocation is not permitted to these parcels for any reason.

4.3. Specific Parcel Guidelines

Land Use Designations were assigned and comprehensive guidelines developed for management of prairie dogs on individual Open Space parcels. For each parcel, consideration was given to the following factors:

1. Ecological significance of the parcel both within the City and on a regional scale;
2. Priority of conflicting land uses for the City and regionally; and
3. Ability of the parcel to provide an educational and/or viewing opportunity while not compromising other ecological, land use objectives, or causing conflict with adjacent private property.

It is imperative that parcels be adaptively managed to ensure the most appropriate and scientifically valid management occurs for the natural resources, adjacent landowners, and the residents of the City of Westminster. If any of the above factors change for any given parcel, the Land Use Designation will be re-evaluated and changed if necessary. Table 1 provides an overview of each parcel, its land use designation, and necessary management action.

Table 1. Summary of the parcels, acreage, current occupied acres, land use designation, and management activity necessary to comply with land use designation.

Parcel	Current Occupied Acres	Estimated Adult Density per acre	Land Use Designation	Management Action
Walnut Creek Corridor				
Westmoor Open Space	2.0	15	NPD	Complete removal
Cooper/Walnut Grove - West of Walnut Creek	9.0	10 – 15	PEA	Removal of all prairie dogs outside the center of the property (defined as central to the loop trail), monitoring, population control if necessary to maintain at moderate density, and installation of interpretive signage
Cooper/Walnut Grove - East of Walnut Creek	1.5 – 2.0	5 – 10	NPD	Complete removal
Nottingham Open Space	<1.0	20	NPD	Complete removal of all prairie dogs, installation of movement barrier, monitoring, and prompt removal of immigrant prairie dogs
Farmer's High Line Canal				
Hawn-Hewitt Open Space	4.0	15	NPD	Complete removal of all prairie dogs, monitoring, and removal of immigrant prairie dogs
Smith/Mushroom Pond/Cedar Bridge Open Space	3.25 – 3.75	10 – 20	NPD	Maintenance of tall vegetation around the ponds and adjacent residential property, complete removal of all of the prairie dogs within the Open Space, installation of a movement barrier between the Open Space and colony on the western private property, monitoring, and prompt removal of all immigrant prairie dogs

Table 1 cont.

Parcel	Current Occupied Acres	Estimated Adult Density per acre	Land Use Designation	Management Action
Big Dry Creek Corridor				
Bruchez Open Space west of Wadsworth Parkway	1.8	10-15	NPD	Complete removal
Bruchez Open Space east of Wadsworth Parkway	4.85	15	UCA	No action unless the riparian area of Big Dry Creek is slated for reclamation or poor water quality becomes a significant concern for downstream wildlife, humans, or other uses
Lang Open Space	4.0	15	UCA	No action unless the riparian area of Big Dry Creek is slated for reclamation or poor water quality becomes a significant concern for downstream wildlife, humans, or other uses
Church Ranch Open Space	3.3	10-15	NPD	Complete removal, monitoring, and removal of immigrant prairie dogs
South Hawn Open Space	43	10-20	PDCA	Removal of prairie dogs within buffer areas, development of predator cover areas, monitoring, population control as needed to maintain at moderate density
North Hawn Open Space	4.4	Approx. 10	PDCA	Maintenance at current population level
South Northpoint	1.0 – 2.0	10 – 15	UCA	No action unless there are adjacent land use changes or area is slated for reclamation at which time parcel would convert to a NPD
North Northpoint	< 1.0	< 10	NPD	Complete removal of the few resident prairie dogs on the east side of Big Dry Creek, monitoring, and removal of immigrant prairie dogs

Table 1 cont.

Parcel	Current Occupied Acres	Estimated Adult Density per acre	Land Use Designation	Management Action
Melody	10	15 – 20	UCA	No action unless surrounding City Park land becomes developed, there is excessive damage to the Big Dry Creek Corridor, and/or the area is slated for reclamation
Hawn-Hewitt Open Space	3.5 – 4.0	10 – 15	UCA	No action unless surrounding private property becomes developed, there is excessive damage to the Big Dry Creek Corridor, and/or the area is slated for reclamation
Cotton Creek Open Space	1.0 – 2.0	0 – 10	UCA	No action unless surrounding private property becomes developed, there is excessive damage to the Big Dry Creek Corridor, and/or the area is slated for reclamation
Martin Open Space	6.5	5 – 15+	NPD	Complete removal, installation of movement barrier monitoring, and prompt removal of immigrant prairie dogs
Starika Open Space	5.0	15+	NPD	Complete removal, installation of movement barrier monitoring, and prompt removal of immigrant prairie dogs
Life Fellowship Open Space	3.3	15+	NPD	Complete removal, installation of movement barrier monitoring, and prompt removal of immigrant prairie dogs
Sheridan 116 Open Space	1.5	15+	NPD	Complete removal of all prairie dogs
3M/Adams County Open Space	3.5	10-15+	NPD	Complete removal of all prairie dogs

Table 1 cont.

Parcel	Current Occupied Acres	Estimated Adult Density per acre	Land Use Designation	Management Action
Front Range Community College Open Space - West	44	10-15+	NPD	Complete removal of all prairie dogs, installation of temporary movement barriers until vegetation can be reclaimed and a sufficient vegetative barrier established, monitoring, and prompt removal of immigrant prairie dogs
Front Range Community College Open Space - East	6	10-15+	PEA	Monitoring and population control as needed within the eastern portion of the parcel to maintain at moderate density
College Hills PLD Open Space	1.5	10-15+	PEA	Remove prairie dogs from buffer of 150 feet from riparian corridor, monitoring, and population control as necessary to maintain at moderate density
Foster Open Space	31.2	10-15+	PEA	Remove prairie dogs from buffer of 150 feet from riparian corridor, monitoring, and population control as necessary to maintain at moderate density
Federal Square / Cozy Corner Open Space	5	10-15+	PEA	Remove prairie dogs from buffer of 150 feet from riparian corridor, monitoring, and population control as necessary to maintain at moderate density
Hassig Open Space	4	5-15+	PEA	Remove prairie dogs from buffer of 150 feet from riparian corridor, monitoring, and population control as necessary to maintain at moderate density

Table 1 cont.

Parcel	Current Occupied Acres	Estimated Adult Density per acre	Land Use Designation	Management Action
Koleski Open Space - South	4	10	UCA	No action unless there are adjacent land use changes or water quality is extremely poor
Koleski Open Space – North, north of Big Dry Creek	5	10	PDCA	Remove prairie dogs from buffer of 150 feet from riparian corridor, monitoring, and population control as necessary to maintain at moderate density
Koleski Open Space – North, south of Big Dry Creek	2.4	10-15+	PDCA	Remove prairie dogs from buffer of 150 feet from riparian corridor, monitoring, and population control as necessary to maintain at moderate density
Big Dry Creek Open Space	12.75	5-15+	PDCA	Remove prairie dogs from buffer of 150 feet from riparian corridor, monitoring, and population control as necessary to maintain within 14 acres and moderate density
Tejon 128 Open Space	7.5	5-15+	UCA	Remove prairie dogs from buffer of 150 feet from riparian corridor, monitoring, population control as necessary, and installation of movement barrier between southern boundary and adjacent ball fields if it becomes necessary due to dispersal in the future

Table 1 cont.

Parcel	Current Occupied Acres	Estimated Adult Density per acre	Land Use Designation	Management Action
Park Center Open Space	6.5	15	UCA	Remove prairie dogs from buffer of 150 feet from riparian corridor, monitoring, population control as necessary, and installation of movement barrier between southern boundary and adjacent ball fields if it becomes necessary due to dispersal in the future
Transamerica Open Space	0	0	NPD	Maintenance of tall vegetation as buffer between adjacent prairie dog colony and Big Dry Creek, monitoring, and prompt removal of all immigrant prairie dogs
Frisco/Bull Canal	5	5-10	UCA	Remove prairie dogs from buffer of 150 feet from riparian corridor, monitoring, and population control as necessary
Bogg Open Space	1.5-2	5-10	UCA	Remove prairie dogs from buffer of 150 feet from riparian corridor, monitoring, and population control as necessary
Great Views and Vistas				
Colorado Hills Open Space – Dog Park	17	<5	NPD	Complete removal of all prairie dogs, monitoring, and prompt removal of immigrant prairie dogs
Colorado Hills Open Space – northern one-third	5	5	PDCA	Maintain prairie dogs within current acreage extent, monitoring, and population control as necessary
Colorado Hills Open Space – southern two-thirds	222	10-15	PDCA	Maintain prairie dogs within current acreage extent, monitoring, and population control as necessary

Table 1 cont.

Parcel	Current Occupied Acres	Estimated Adult Density per acre	Land Use Designation	Management Action
Colorado Hills Open Space – southwestern drainage	46	10-15+	UCA	Maintain prairie dogs within current acreage extent, monitoring, and population control as necessary
Woman Creek Open Space – northeastern section	5-6	5	PDCA	Maintain prairie dogs within current acreage extent, monitoring, and population control as necessary
Woman Creek Open Space – southern four-fifths	208	10-15	UCA	Maintain prairie dogs within current acreage extent, monitoring, and population control as necessary
Natural Areas, Water, Trees, and Wildlife				
Countryside Open Space	3.25	15+	NPD	Complete removal
North Hyland Ponds Open Space adjacent to 104th Ave	7.0	10	UCA	No action unless there are adjacent land use changes or area is slated for reclamation
Waverly Acres Park and the south Hyland Ponds Open Space	27	1 – 15	NPD	Complete removal of all prairie dogs, installation of temporary movement barrier, active revegetation / establishment of vegetative movement barrier
Vogel Pond Open Space	4.0	5 – 10	UCA	No action unless prairie dogs move further to the north and start impacting the adjacent golf course or the pond and the upland area slated for reclamation

Table 1 cont.

Parcel	Current Occupied Acres	Estimated Adult Density per acre	Land Use Designation	Management Action
Wadsworth Wetlands Open Space	2.7	15	NPD	Maintenance of tall vegetation around the wetland, complete removal of all of the prairie dogs within the Open Space, installation of a movement barrier between the Open Space and colony on the southern private property, monitoring, and prompt removal of all immigrant prairie dogs
Lower Church Lake North Shore	4.75	10-15	PDCA	Maintain prairie dogs from buffer of 300 feet from lakeshore, monitoring, and population control as necessary

4.3.1. Walnut Creek Open Space

4.3.1.1. Westmoor Open Space

County: Jefferson

Land Use Designation: NPD

Management Required: Complete removal of all prairie dogs

The land use designation of NPD chosen for this parcel acknowledges the low habitat suitability of the parcel for prairie dogs, the responsibility of the City to control noxious weeds, and the incompatibility of the prairie dogs with surrounding land uses.

4.3.1.2. Cooper/Walnut Grove Open Space

County: Jefferson

Land Use Designation: **1.** PEA – Population west of Walnut Creek
2. NPD – Population east of Walnut Creek

Management Required: **1.** Removal of all prairie dogs outside the center of the property (defined as central to the loop trail), monitoring, and population control if necessary
2. Complete removal of all prairie dogs

Although the Open Space has low habitat suitability for prairie dogs, because of the recreational loop trail, which is relatively short in length and handicapped accessible, as well as the ability to manage the colony so it doesn't negatively impact the riparian area or adjacent properties, the site is chosen to serve as a PEA. Prairie dogs will be maintained within the center of the property and are not permitted outside of the trail loop. The relocation of additional prairie dogs will not be permitted. If the population is removed for any reason (natural or management based), it will become a NPD.

The following is a list of parameters by which Westminster will manage the colony.

1. **Acreage:** The prairie dogs are permitted on a maximum acreage of 7.5 acres defined by Figure 106. Any prairie dogs outside of the trail system will be promptly humanely removed. This will ensure that the prairie dogs have minimal chance of causing damage to the riparian corridor or expanding into the future Walnut Grove Park area or adjacent residential properties.
2. **Density:** The prairie dogs will be managed < 10 adult prairie dogs per acre. This will help to ensure minimal impact to the vegetation and soil and minimal potential for dispersal.
3. **Vegetation:** Noxious weeds are already prevalent within the prairie dog colony and will not be able to be controlled unless the colony is removed. However, noxious weed control will occur on areas without prairie dogs (exterior to the colony).

Figure 106. The furthest allowable extent of the prairie dog colony (in red) in the Cooper/Walnut Grove Open Space.

In the event that any of the above parameters are violated, population control or complete removal will be implemented depending on severity of violation and habitat degradation.

Interpretive Opportunity:

To maximize visitor enjoyment and educational opportunities (given the property's designation as a PEA), an interpretive sign or a kiosk will be placed at north end of the colony along the trail system. The sign or kiosk should inform visitors of the local geography of the region, vegetation, area wildlife, property management (weed control, riparian reclamation), and/or other valuable information concerning the conservation and management of wildlife and their habitat(s).

4.3.1.3. Nottingham Open Space

County: Jefferson

Land Use Designation: NPD

Management Required: Complete removal of all prairie dogs, installation of movement barrier, monitoring, and prompt removal of immigrant prairie dogs

The land use designation of NPD chosen for this parcel acknowledges the incompatibility of prairie dogs expanding into the riparian corridor of Walnut Creek. Long-term prairie dog conservation within the riparian corridor is not conducive with maintaining low sedimentation rates, high water quality, and maintaining a healthy riparian zone.

4.3.2. Farmer's High Line Canal

4.3.2.1. Hawn-Hewitt Open Space

County: Adams

Land Use Designations: NPD

Management Required: Complete removal of all prairie dogs, monitoring, and removal of immigrant prairie dogs

The land use designation of NPD chosen for this parcel acknowledges the low habitat suitability of the site for prairie dogs, the importance of riparian and wetland conservation to numerous species of wildlife, the local community, and the region as well as the responsibility of the City to minimize noxious weeds and soil erosion. The prairie dogs on private land to the north and west as well as the North Hyland Ponds Open Space south across 104th Avenue will not be affected by this land use designation and subsequent management activities. When the area is reclaimed, tall vegetation should be established so as to deter immigrant prairie dogs from reestablishing on the parcel.

4.3.2.2. Smith/Mushroom Pond/Cedar Bridge Open Space

County: Adams

Land Use Designation: NPD

Management Required: Maintenance of tall vegetation around the ponds and adjacent residential property, complete removal of all of the prairie dogs within the Open Space, installation of a movement barrier between the Open Space and colony on the western private property, monitoring, and prompt removal of all immigrant prairie dogs

The land use designation of NPD chosen for the Open Space parcel acknowledges the low habitat suitability of the parcel for prairie dogs, the incompatibility of prairie dogs within and adjacent to the ponds, and the responsibility of the City to minimize noxious weeds and soil erosion. The highest priority should be given to removing the prairie dogs on the southeast corner of Savory Pond, as they are immediately adjacent to the pond and pose the greatest, most imminent danger to the health of the pond ecosystem.

4.3.3. Big Dry Creek Corridor

4.3.3.1. Bruchez Open Space and Lang Open Space

County: Jefferson

Land Use Designations: **1.** NPD – Bruchez Open Space west of Wadsworth Parkway
2. UCA – Bruchez Open Space east of Wadsworth Parkway
3. UCA – Lang Open Space

Management Required: **1.** Complete removal of all prairie dogs
2. No action unless the riparian area of Big Dry Creek is slated for reclamation or poor water quality becomes a significant concern for downstream wildlife, humans, or other uses
3. No action unless the riparian area of Big Dry Creek is slated for reclamation or poor water quality becomes a significant concern for downstream wildlife, humans, or other uses

NPD – Bruchez Open Space west of Wadworth Parkway:

The land use designation of NPD chosen for the west Bruchez Open Space parcel acknowledges the low habitat suitability for prairie dogs, the incompatibility of prairie dogs within and adjacent to the riparian area of Big Dry Creek, the value of the entire Open Space parcel to the west as valuable wildlife habitat, and the need to maintain the area as free of noxious weeds as possible.

UCA – Bruchez Open Space east of Wadworth Parkway & Lang Open Space:

The land use designation of UCA for the east Bruchez Open Space and the Lang Open Space parcels acknowledges the low habitat suitability of the parcel for prairie dogs and the large amount of riparian degradation. If, however, prairie dogs are simply removed without reclamation, because of its severe state of disturbance and habitat degradation, the site will likely continue to serve little to no ecological purpose for any species of wildlife and will maintain its severe noxious weed infestation. Therefore, the site should remain as prairie dog habitat unless in the future water quality is demonstrably poor and/or the riparian and upland areas are slated for reclamation (which will improve the ecological significance for multiple wildlife species). At that time, the site will convert to a NPD and all prairie dogs will be humanely removed.

4.3.3.2. Church Ranch Open Space and Hawn Open Space

County: Jefferson

Land Use Designations: **1.** Church Ranch and South Hawn Open Space Complex

a. NPD – Church Ranch Open Space

b. PDCA– South Hawn Open Space

2. PDCA – North Hawn Open Space

Management Required: **1.a.** Complete removal of all prairie dogs, monitoring, and removal of immigrant prairie dogs

1.b. Removal of all prairie dogs within 250 feet of southern private property boundary, removal of all prairie dogs within 250 feet of north/south Church Ranch Open Space boundary, removal of all prairie dogs within 250 feet of the northern tableland crest, installation of temporary movement barrier to allow vegetative buffer to grow along each of the aforementioned boundaries (if necessary), creation of predator cover areas, monitoring, and population control as needed

2. Maintenance of prairie dogs at current level

NPD – Church Ranch Open Space:

The land use designation of NPD chosen for the Church Ranch Open Space acknowledges the incompatibility of prairie dogs within and adjacent to the riparian corridor of Big Dry Creek especially given the slope and soil structure.

Church Ranch and South Hawn Open Space Complex:

The bulk of the south Hawn Open Space is currently moderately to severely degraded (high levels of noxious weeds and bare soil caused by a high density of prairie dogs) and the majority of the area occupied by the current colony is only suitable for prairie dogs and few, if any, associated species. However, the north and western edges of the Hawn Open Space (areas currently without prairie dogs) and the Church Ranch Open Space (designated NPD) provide valuable habitat diversity with the riparian corridor and upland yucca/shortgrass ecosystem. If these areas are protected from prairie dogs through movement barriers and population management while the

central portion of the south Hawn Open Space is conserved for prairie dogs, there will be a greater potential for habitat and wildlife diversity on the south Hawn Open Space/Church Ranch Open Space complex.

PDCA – South Hawn Open Space:

Prairie dogs will be maintained within 25 acres on the center of the south Hawn Open Space barring any excessive damage to soil, vegetation, other wildlife resources, and/or neighboring landowner conflicts. Excessive damage can be defined as, but is not limited to, decreased range condition, decreased wildlife diversity within the complex, or any other affect on natural resources or ecological processes in the area deemed to be negative or undesirable. Annual monitoring of prairie dogs within this area will ensure the earliest identification of any excessive damage, dispersal into buffer areas, or neighboring landowner conflicts. The following is a list of parameters by which Westminster will manage the colony.

1. **Acreage:** The prairie dogs are permitted on a maximum acreage of 25 acres. Any prairie dogs outside of this area and within buffer areas or on adjacent parcels will be promptly humanely removed.
2. **Density:** The prairie dogs will be managed < 10 adult prairie dogs per acre. This is to prevent excessive soil erosion, noxious weed infestation, and prairie dog dispersal. In addition, lower densities may encourage use of the site by burrowing owls that utilize unoccupied burrows for nesting.
3. **Vegetation:** Noxious weeds are already prevalent within the prairie dog colony and will not be able to be controlled unless the colony is removed. However, noxious weed control will occur on areas without prairie dogs (exterior to the colony and/or on areas without prairie dogs).

In the event that any of the above parameters are violated, population control or complete removal will be implemented depending on severity of violation and habitat degradation. If the population is completely removed, it will become a NPD. If, however, the area is otherwise within the above parameters, but a plague epizootic causes the population to fall below 5 acres, live relocation may be permitted to this site. Relocation will be permitted no sooner than one year after the plague event, only after the entire site has tested free of plague positive fleas, and at no more than 100 prairie dogs.

Movement Barriers/Vegetative Buffers for South Hawn Open Space:

Movement barriers/vegetative buffers at least 250 feet wide are necessary along the southern boundary to prevent prairie dogs from impacting the adjacent private property, the western boundary to prevent prairie dogs from damaging the Church Ranch Open Space, and the north crest of the tableland to keep prairie dogs from negatively impacting the northern slope and Big Dry Creek. Figure 107 shows the placement of the barriers as well as distance estimates and the location of the population to be maintained. The optimum time of year for prairie dog removal and buffer establishment would be late winter/early spring (low prairie dog dispersal rates and high soil moisture for vegetation growth). Prairie dogs should be completely removed from within the buffer area and temporary barriers erected until the vegetative buffers can become established, at which time the temporary barriers should be removed.

Figure 107. 2002 aerial photo showing the placement of the vegetative buffers as well as the location of the prairie dog population to be maintained on the South Hawn Open Space.

Regarding the southern boundary, there is a privacy fence separating the Open Space parcels and the residential properties (Figure 108). This fence should preclude the majority of surface dispersal, however, a vegetative buffer should not only help prevent prairie dogs from digging under the fence and impacting the private residential properties, but will also enhance habitat diversity and predator cover.

Figure 108. Photos taken in late March 2004 showing the privacy fence, vegetation, and prairie dogs at the southern boundary of the Hawn Open Space.

Predator Habitat Enhancement for South Hawn Open Space:

Predator Cover Areas

While it is unlikely that coyotes are present on the south Hawn Open Space due to the proximity of residential areas and Highway 36, by developing Predator Cover Areas (PCAs) within the Open Space, coyotes may be more inclined to remain on the parcel and help control the prairie dog population. Coyotes are often most successful at capturing prairie dogs when there is tall grass, shrubs, or other "cover" areas that offer them the ability to ambush. By creating several PCAs within and adjacent to the colony, it may be possible to increase the opportunity for coyotes to successfully capture prairie dogs. Visually pleasing and effective PCAs may be constructed from large tree stumps and roots. Brush piles constructed of large woody material may also be effective and visually pleasing if constructed properly.

Raptor Perches

Increased raptor use on the property may also help control prairie dog numbers and density, as well as increasing wildlife viewing opportunities. Through properly designed and placed raptor perches, it may be possible to increase raptor use and natural predation on prairie dogs by allowing raptors to hunt these animals more efficiently and successfully. Raptor perches,

however, should not necessarily consist of raptor "poles." Raptors that are adapted to hunting prairie dogs often do so from the ground or from low perches only a few feet off the ground. Traditional raptor "poles," while offering resting and roosting areas for raptors, extend 10+ feet in height and do not provide raptors with suitable hunting platforms. Therefore, in an effort to provide both viewing opportunities for visitors and effective hunting platforms for raptors, raptor perches should be no more than six feet in height. PCAs constructed with a vertical component can provide for both terrestrial and avian predator use and eliminate the need for separate resources for raptors and coyotes.

PDCA – North Hawn Open Space:

Prairie dogs will be maintained on the north Hawn Open Space barring any excessive damage to soil, vegetation, other wildlife resources, and/or neighboring landowner conflicts. Excessive damage can be defined as, but is not limited to, decreased range condition, decreased wildlife diversity within the complex, or any other affect on natural resources or ecological processes in the area deemed to be negative or undesirable. Annual monitoring of prairie dogs within this area will ensure the earliest identification of any excessive damage, dispersal into buffer areas, or neighboring landowner conflicts. The following is a list of parameters by which Westminster will manage the colony.

1. **Acreage:** The prairie dogs are permitted on a maximum acreage of 5 acres. Any prairie dogs outside of this area and within the riparian corridor or on adjacent parcels will be promptly humanely removed.
2. **Density:** The prairie dogs will be managed < 10 adult prairie dogs per acre. This is to prevent excessive soil erosion, noxious weed infestation, and prairie dog dispersal.
3. **Vegetation:** Active noxious weed control must occur on this parcel on at least an annual basis.

In the event that any of the above parameters are violated, population control or complete removal will be implemented depending on severity of violation and habitat degradation. If it is necessary to remove the population, the parcel will become a NPD.

4.3.3.3. Northpoint Open Space

County: Jefferson

Land Use Designations: **1.** UCA – south Northpoint Open Space
2. NPD – north Northpoint Open Space

Management Required: **1.** No action unless there are adjacent land use changes or area is slated for reclamation at which time parcel would convert to a NPD
2. Complete removal of the few resident prairie dogs on the east side of Big Dry Creek, monitoring, and removal of immigrant prairie dogs. No action on the west side of Big Dry Creek unless prairie dogs on adjacent private property are removed.

UCA – South Northpoint Open Space:

The land use designation of UCA chosen for the south Northpoint Open Space acknowledges that the habitat is of low suitability for prairie dogs and there is a conflicting land use value of the Big Dry Creek Corridor. However, the need to maintain a healthy riparian area is outweighed at this time by the costs associated with the initial prairie dog removal, installation of movement barriers, reclamation of the riparian area and upland, and continual removal of immigrant prairie dogs from the surrounding complex. Therefore, there will be no management on this parcel unless prairie dogs are removed from the adjacent parcels for any reason or reclamation of the riparian corridor is determined to be necessary for any reason.

NPD – North Northpoint Open Space:

The land use designation of NPD chosen for the north Northpoint Open Space acknowledges the low habitat suitability for prairie dogs, importance of riparian corridor conservation, and the responsibility of the City to minimize noxious weeds and soil erosion. In addition, local prairie dog viewing opportunities will still be available for at least the short-term, as the large complex on the private property to the south of 104th Avenue will not be affected by this land use designations and subsequent management activities.

4.3.3.4. Melody Open Space

County: Jefferson

Land Use Designation: UCA

Management Required: No action unless surrounding City Park land becomes developed, there is excessive damage to the Big Dry Creek Corridor, and/or the area is slated for reclamation at which time Melody Open Space would convert to a NPD

The land use designation of UCA chosen for the Melody Open Space acknowledges that the site is not suitable for prairie dogs, there is potential for significant runoff and erosion into Big Dry Creek, and the prairie dog colony has a conflicting land use value with the Big Dry Creek Corridor and the need to maintain a healthy riparian area. However, this is currently outweighed by the costs associated with the initial prairie dog removal (which would have to occur on both the Open Space and City Park) and reclamation of the riparian area and upland. Therefore, there will be no management on this parcel unless prairie dogs are removed from the adjacent parcels for any reason or reclamation of the riparian corridor is determined to be necessary for any reason.

If the City Park area currently inhabited by prairie dogs and surrounding the Open Space becomes developed, depending on the level and type of development, either a sufficient movement barrier should be installed around the Open Space to prevent conflict or the Open Space should convert to a NPD and all prairie dogs should be removed and the site reclaimed.

4.3.3.5. Hawn-Hewitt Open Space & Cotton Creek Open Space

County: Adams

Land Use Designation: UCA – both parcels

Management Required: No action unless surrounding private property becomes developed, there is excessive damage to the Big Dry Creek Corridor, and/or the area is slated for reclamation at which time both parcels would convert to a NPD

The land use designation of UCA chosen for the Hawn-Hewitt and Cotton Creek Open Space parcels acknowledges that the sites are not suitable for prairie dogs. There is potential for significant runoff and erosion into Big Dry Creek, and the prairie dog colony is a conflicting land use value with the Big Dry Creek Corridor and the need to maintain a healthy riparian area. However, this is currently outweighed by the costs associated with the initial prairie dog removal (which would have to occur on both the Open Space and adjacent private property), installation of movement barriers (which would likely be ineffective and further decrease the aesthetics of the parcels), and reclamation of the riparian area and upland (which is already degraded). Therefore, there will be no management on these parcels unless prairie dogs are removed from the adjacent parcels for any reason or reclamation of the riparian corridor is determined to be necessary for any reason.

4.3.3.6. Martin, Starika, and Life Fellowship Open Space Parcels

County: Adams

Land Use Designation: NPD – All parcels

Management Required: Complete removal of all prairie dogs within the parcels, installation of temporary movement barriers until vegetation can be reclaimed and a sufficient vegetative barrier established, monitoring, and prompt removal of immigrant prairie dogs

The land use designation of NPD chosen for these parcels acknowledges the low suitability of the parcels for prairie dogs, the prairie dog colony is a conflicting land use value with the Big Dry Creek Corridor and the need to maintain a healthy riparian area, and the prairie dog colony conflicts with adjacent land uses (current adjacent homeowners and future Westfield Park).

These parcels must be managed together as a complex with the surrounding Open Space and Front Range Community College. As seen on Figure 109, all Open Space land west of the pond is designated NPD, some of the land east of the pond is designated NPD, and most of the Open Space land south of Big Dry Creek is designated NPD. Preferably, all prairie dogs should be removed from the Front Range Community College property south of Big Dry Creek and in the City Park property north of the 3M/Adams County and Sheridan 116 parcels as well to limit potential for prairie dogs to migrate back into the Open Space parcels designated NPD. Local prairie dog viewing and educational opportunities will still be available, as the colonies to the east will be maintained as PEA unless there are land use changes, excessive conflict with adjacent land use, or any of the area is slated for reclamation. In addition, the diversity of habitat types in this juxtaposition can help to enhance species diversity throughout the complex.

Figure 109. 2003 aerial photo showing prairie dog management areas and the location of the movement barriers.

Movement Barrier:

To greatly reduce the number of prairie dogs that will reenter the Open Space/Park from the colony(s) to the east, barriers should be erected at least along the boundary between the NPD and PEA areas. There are a number of different designs, which vary in cost, longevity, and effectiveness. Generally, the most aesthetic, effective, and long-term barrier is a vegetative barrier such as existed before the mowing. Active revegetation should promptly follow the removal of the prairie dogs and installation of the temporary artificial movement barrier. The area west of the barriers and south of Big Dry Creek should be managed (sprayed, goats, etc.) to remove all noxious weeds. It should then be seeded/planted with native shrubs, grasses, and forbs that will provide food and cover for multiple species of wildlife and are able to compete with noxious weeds, are drought tolerant, and grow over 12 inches in height (will help prevent reestablishment of prairie dogs in the area).

4.3.3.7. 3M/Adams County and Sheridan 116 Open Space Parcels

County: Adams

Land Use Designation: NPD – All parcels

Management Required: Complete removal of all prairie dogs within the parcels including those on the adjacent parks, installation of temporary movement barriers until vegetation can be reclaimed and a sufficient vegetative barrier established, monitoring, and prompt removal of immigrant prairie dogs

The land use designation of NPD chosen for these parcels acknowledges the low suitability of the parcels for prairie dogs, the prairie dog colony is a conflicting land use value with the Big Dry Creek Corridor and the need to maintain a healthy riparian area, and the prairie dog colony conflicts with adjacent land uses (current adjacent homeowners and future Westfield Park).

These parcels must be managed together with the surrounding Open Space and Front Range Community College, as seen on Figure 108 and previously discussed in section 4.3.3.6. Martin, Starika, and Life Fellowship Open Space Parcels.

4.3.3.8. Front Range Community College Open Space

County: Adams

Land Use Designations: **1.** NPD – western portion and south of Big Dry Creek
2. PEA – eastern portion

Management Required: **1.** Complete removal of all prairie dogs within the western portion of the parcel and south of Big Dry Creek, installation of temporary movement barriers until vegetation can be reclaimed and a sufficient vegetative barrier established, monitoring, and prompt removal of immigrant prairie dogs
2. Monitoring and population control as necessary

NPD – Western Front Range Community College Open Space:

The land use designation of NPD chosen for this parcel acknowledges the low suitability of the parcels for prairie dogs, the prairie dog colony is a conflicting land use value with the Big Dry Creek Corridor and the need to maintain a healthy riparian area, and the prairie dog colony conflicts with adjacent land uses (current adjacent homeowners and future Westfield Park).

PEA – Eastern Front Range Community College Open Space:

The land use designation of PEA chosen for the eastern portion of the parcel is an attempt to strike a balance between the largely incompatible land use objectives of prairie dog conservation and riparian/wetland conservation. Although the parcel is not considered suitable for prairie dogs, one of the goals of the City is to provide educational opportunities for its residents with regard to prairie dogs, other wildlife species, and the challenges of managing and maintaining prairie dogs in a urban riparian corridor. Therefore, interpretive signs within this and the other PEA parcels in this complex will be developed along the trail system informing visitors of the local geography of the region, vegetation, area wildlife, land management (weed control, riparian reclamation), and/or other valuable information concerning the conservation and management of prairie dogs, other wildlife, and their habitat(s). This parcel must be managed together with the surrounding Open Space and Front Range Community College, as seen on Figure 108 and previously discussed in section 4.3.3.6.

The riparian corridor of Big Dry Creek, particularly that which runs adjacent to the current prairie dog colony, is extremely weedy with very little bank stabilizing vegetation. Long-term prairie dog conservation within the riparian corridor is not conducive with maintaining low sedimentation rates and high water quality. Therefore, prairie dogs will be removed from all PEA parcels in this complex within a buffer of at least 150 feet from the riparian corridor. In addition, the prairie dogs will be managed at no more than 10 adult prairie dogs per acre. This will help to ensure minimal impact to the vegetation and soil and minimal potential for dispersal. If the area is maintained within the above parameters, but a plague epizootic causes the population to fall below 5 acres, live relocation may be permitted to this site. Relocation will be permitted no sooner than one year after the plague event, only after the entire complex has tested free of plague positive fleas, and at no more than 150 prairie dogs across the complex.

4.3.3.9. College Hills PLD, Foster, Federal Square/Cozy Corner, and Hassig Open Space Parcels

County: Adams

Land Use Designations: PEA – all parcels

Management Required: Remove prairie dogs from a buffer of 150 feet from riparian corridor, monitoring, and population control as necessary

These parcels must be managed as a complex together with the surrounding Open Space and Front Range Community College, as previously discussed in section 4.3.3.6. and 4.3.3.8.

4.3.3.10. Koleski Open Space

County: Adams

Land Use Designations: **1.** UCA - south Koleski Open Space
2. PDCA – north Koleski Open Space north of Big Dry Creek
3. PDCA – north Koleski Open Space south of Big Dry Creek

Management Required: **1.** No action unless there are adjacent land use changes or water quality is extremely poor
2. Remove prairie dogs from buffer of 150 feet from riparian corridor, monitoring, and population control as necessary
3. Remove prairie dogs from buffer of 150 feet from riparian corridor, monitoring, and population control as necessary

UCA – South Koleski Open Space:

The land use designation of UCA for the south Koleski Open Space acknowledges that while the parcel has low habitat suitability for prairie dogs, exclusion of prairie dogs will be difficult if not impossible. There is an extensive colony of prairie dogs to the east. Even with a barrier between the Open Space and adjacent private property, the barrier would not extend over the sidewalks, or roadways. Because of these gaps in the barrier, prairie dogs would continue to have free access to the property. Therefore, the site should remain as prairie dog habitat unless in the future the prairie dogs on the adjacent private property are removed or water quality is extremely poor due to erosion within this parcel. At that time, the site will convert to a NPD and all prairie dogs will be removed. Otherwise, there will be no management on this parcel.

PDCA – North of Big Dry Creek on the North Koleski Open Space:

The land use designation of PDCA for the south Koleski Open Space north of Big Dry Creek acknowledges the following:

1. Because it is not extremely degraded and small in extent, if maintained at current levels, the colony may serve some ecological purpose as transient cover for generalist species (those not dependent upon prairie dogs) such as cottontail rabbits, garter snakes, amphibians, and small rodents and a possible foraging area for coyotes and raptors;

2. There is limited soil erosion but the soil types on the Open Space have the potential for severe water and wind erosion;
3. There is a high level of noxious weed infestation; and
4. The level of streambank degradation is low, but has the potential to increase if prairie dogs are permitted to burrow adjacent to Big Dry Creek.

Prairie dogs will be maintained in this area barring any excessive damage to soil, vegetation, other wildlife resources, and/or increased neighboring landowner conflicts. Excessive damage can be defined as, but is not limited to, decreased range condition, damage to the stream corridor and subsequent decrease in water quality, and decreased wildlife diversity within the area. A buffer of at least 150 feet from the riparian corridor will be managed for the exclusion of prairie dogs. In addition, the prairie dogs will be managed at no more than 10 adult prairie dogs per acre throughout the remainder of this portion of the Open Space. This will help to ensure minimal impact to the vegetation, soil, and streambank. The relocation of additional prairie dogs will not be permitted. If the population is removed for any reason, the parcel will become a NPD.

PDCA – South of Big Dry Creek on the North Koleski Open Space:

The land use designation of PDCA for the north Koleski Open Space south of Big Dry Creek acknowledges the following:

1. Because the colony is small, allowing easy access to adjacent habitat resources, if maintained at the current extent, it may serve some ecological purpose as transient cover for generalist species (those not dependent upon prairie dogs) such as cottontail rabbits, garter snakes, amphibians, and small rodents and a possible foraging area for coyotes and raptors;
2. There is a moderate to high level of soil erosion and the soil types on the Open Space have the potential for severe water and wind erosion;
3. There is a high level of noxious weed infestation; and
4. The level of streambank degradation is low to moderate and has the potential to increase if prairie dogs are permitted to continue to burrow adjacent to Big Dry Creek.

Prairie dogs will be maintained in this area barring any excessive damage to soil, vegetation, other wildlife resources, and/or increased neighboring landowner conflicts. Excessive damage can be defined as, but is not limited to, decreased range condition, damage to the stream corridor and subsequent decrease in water quality, and decreased wildlife diversity within the area. A

buffer of at least 150 feet from the riparian corridor will be managed for the exclusion of prairie dogs. In addition, the prairie dogs will be managed at no more than 10 adult prairie dogs per acre throughout the remainder of this portion of the Open Space. This will help to ensure minimal impact to the vegetation, soil, and streambank. The relocation of additional prairie dogs will not be permitted. If the population is removed for any reason, the parcel will become a NPD.

4.3.3.11. Big Dry Creek Open Space

County: Adams

Land Use Designation: PDCA

Management Required: Remove prairie dogs from a buffer of 150 feet from riparian corridor, monitoring, and population control as necessary

The land use designation of PDCA for the Big Dry Creek Open Space acknowledges the following:

1. Because the vegetation and stream banks of the riparian corridor are only marginally degraded (albeit weedy) and the prairie dog colonies are relatively small in extent, if maintained at current levels, the colonies may serve some ecological purpose as transient cover for generalist species (those not dependent upon prairie dogs) such as cottontail rabbits, garter snakes, amphibians, and small rodents and a possible foraging area for coyotes and raptors;
2. There is moderate soil erosion and the soil types on the Open Space have the potential for severe water and wind erosion;
3. There is a moderate level of noxious weed infestation;
4. The parcel is of moderate habitat suitability for prairie dogs; and
5. The level of streambank degradation is low, but has the potential to increase if prairie dogs are permitted to burrow adjacent to Big Dry Creek.

Prairie dogs will be maintained in this area barring any excessive damage to soil, vegetation, other wildlife resources, and/or increased neighboring landowner conflicts. Excessive damage can be defined as, but is not limited to, decreased range condition, excessive noxious weed infestation, damage to the stream corridor and subsequent decrease in water quality, and decreased wildlife diversity. A buffer of at least 150 feet from the riparian corridor will be managed for the exclusion of prairie dogs. In addition, the prairie dogs will be managed at no more than 10 adult prairie dogs per acre within no more than 14 acres of upland habitat within this Open Space. This will help to ensure minimal impact to the vegetation, soil, and streambank. The relocation of additional prairie dogs will not be permitted. If the population is removed for any reason, the parcel will become a NPD.

4.3.3.12. Tejon 128 Open Space

County: Adams

Land Use Designation: UCA

Management Required: Remove prairie dogs from a buffer of 150 feet from riparian corridor, monitoring, population control as necessary, and installation of movement barrier between southern boundary and adjacent ball fields if it becomes necessary due to dispersal in the future

The land use designation of UCA for the Tejon 128 Open Space acknowledges the:

1. Low suitability of the parcel for prairie dogs;
2. Potential for significant runoff and erosion into Big Dry Creek; therefore, the prairie dog colony is a conflicting land use value with the Big Dry Creek Corridor and the need to maintain a healthy riparian area;
3. Level of streambank degradation is low, but has the potential to increase if prairie dogs are permitted to burrow adjacent to Big Dry Creek;
4. Importance of wetland and riparian conservation to numerous species of wildlife;
5. Importance of wetland and riparian conservation to water quality;
6. High level of noxious weed infestation; and
7. Costs associated with a complete prairie dog removal (which would have to occur on both the Open Space and adjacent private property) and/or installation of movement barriers.

Given the low suitability and other issues, it is inappropriate to classify the Tejon 128 Open Space as a PDCA. Prairie dogs will be maintained, however, in this Open Space barring any excessive damage to soil, riparian vegetation and streambank integrity, other wildlife resources, and/or increased neighboring landowner conflicts. Excessive damage can be defined as, but is not limited to, decreased range condition, damage to the riparian corridor and subsequent decrease in water quality, and decreased wildlife diversity within the area. A buffer of at least 150 feet from the riparian corridor will be managed for the exclusion of prairie dogs. In addition, the prairie dogs will be managed at no more than 10 adult prairie dogs per acre throughout the remainder of this portion of the Open Space. This will help to ensure minimal impact to the

vegetation, soil, and the riparian corridor. The relocation of additional prairie dogs will not be permitted. If the colonies are removed completely for any reason, the parcel will become a NPD.

4.3.3.13. Park Center Open Space

County: Adams

Land Use Designation: UCA

Management Required: Remove prairie dogs from a buffer of 150 feet from riparian corridor, monitoring, population control as necessary, and installation of movement barrier between southern boundary and adjacent ball fields if it becomes necessary due to dispersal in the future

The land use designation of UCA for the Park Center Open Space acknowledges the:

1. Low suitability of the parcel for prairie dogs;
2. Potential for significant runoff and erosion into Big Dry Creek; therefore, the prairie dog colony is a conflicting land use value with the Big Dry Creek Corridor and the need to maintain a healthy riparian area;
3. Level of streambank degradation is low, but has the potential to increase if prairie dogs are permitted to burrow adjacent to Big Dry Creek;
4. Importance of wetland and riparian conservation to numerous species of wildlife;
5. Importance of wetland and riparian conservation to water quality;
6. High level of noxious weed infestation; and
7. Costs associated with a complete prairie dog removal (which would have to occur on both the Open Space and adjacent park) and/or installation of movement barriers.

Given the low suitability and other issues, it is inappropriate to classify the Park Center Open Space as a PDCA. Prairie dogs will be maintained, however, in this Open Space barring any excessive damage to soil, riparian vegetation and streambank integrity, other wildlife resources, and/or increased neighboring landowner conflicts. Excessive damage can be defined as, but is not limited to, decreased range condition, damage to the riparian corridor and subsequent decrease in water quality, and decreased wildlife diversity within the area. A buffer of at least 150 feet from the riparian corridor will be managed for the exclusion of prairie dogs. In addition, the prairie dogs will be managed at no more than 10 adult prairie dogs per acre throughout the remainder of this portion of the Open Space. This will help to ensure minimal impact to the

vegetation, soil, and the riparian corridor. The relocation of additional prairie dogs will not be permitted. If the colony is removed completely for any reason, the parcel will become a NPD.

4.3.3.14. Transamerica Open Space

County: Adams

Land Use Designation: NPD

Management Required: Maintenance of tall vegetation as a buffer between adjacent prairie dog colony and Big Dry Creek, monitoring and prompt removal of all immigrant prairie dogs

There are currently no prairie dogs on this parcel. Given its small size and proximity to Big Dry Open Space, it should remain that way. Therefore, to maintain a buffer of prairie dogs from the adjacent Park Center Open Space from Big Dry Creek, tall vegetation should be maintained in this parcel and any immigrant prairie dogs should promptly be removed.

4.3.3.15. Frisco/Bull Canal Open Space

County: Adams

Land Use Designation: UCA

Management Required: Remove prairie dogs from a buffer of 150 feet from riparian corridor, monitoring, and population control as necessary

The land use designation of UCA for the Frisco/Bull Canal Open Space acknowledges that the habitat is currently of moderate suitability for prairie dogs. In addition, because the prairie dog colony has good juxtaposition to the wetland habitat to the west, if maintained at current levels, the colony may serve some ecological purpose as transient cover for generalist species (those not dependent upon prairie dogs) such as cottontail rabbits, garter snakes, amphibians, and small rodents and a possible foraging area for coyotes and raptors. However, the site cannot be classified as a PDCA at this time since the bulk of the colony exists on the private property to the east. If those prairie dogs are removed, and the area developed, the site will likely lose its benefit to wildlife and habitat diversity.

Prairie dogs will be maintained in this area barring any excessive damage to soil, vegetation, other wildlife resources, and/or increased neighboring landowner conflicts. Excessive damage can be defined as, but is not limited to, decreased range condition, damage to the stream corridor and subsequent decrease in water quality, and decreased wildlife diversity within the area. A buffer of at least 150 feet from the riparian corridor will be managed for the exclusion of prairie dogs. In addition, the prairie dogs will be managed at no more than 10 adult prairie dogs per acre within no more than 20 acres of upland habitat within this Open Space. This will help to ensure minimal impact to the vegetation, soil, and stream bank. In addition, any prairie dogs that enter the wetland habitat to the west will be removed immediately. The relocation of additional prairie dogs will not be permitted. If the colony is removed completely for any reason, the parcel will become a NPD.

4.3.3.16. Bogg Open Space

County: Adams

Land Use Designation: UCA

Management Required: Remove prairie dogs from a buffer of 150 feet from riparian corridor, monitoring, and population control as necessary

The land use designation of UCA for the Bogg Open Space acknowledges that the habitat is of moderate suitability for prairie dogs (at current habitat parameters), but there is the potential for conflict with the generally incompatible land use objective of wetland habitat within the northern portion of the parcel. The vegetation and soil resources of the prairie dog colony are not yet extremely degraded. In addition, the colony may provide good habitat diversity in its juxtaposition to the wetland habitat. Therefore, if the colony is maintained at current levels, the colony may serve some ecological purpose as transient cover or foraging areas for generalist species (those not dependent upon prairie dogs) such as cottontail rabbits, garter snakes, amphibians, and small rodents and a possible foraging area for coyotes and raptors. However, the site cannot be classified as a PDCA at this time because the bulk of the colony exists on the private property to the south. If those prairie dogs are removed, and the area developed, the site will likely lose its benefit to wildlife and habitat diversity.

Prairie dogs will be maintained in this area barring any excessive damage to soil, vegetation, other wildlife resources, and/or increased neighboring landowner conflicts. Excessive damage can be defined as, but is not limited to, decreased range condition, damage to the stream corridor and subsequent decrease in water quality, and decreased wildlife diversity within the area. A buffer of at least 150 feet from the riparian corridor will be managed for the exclusion of prairie dogs. In addition, the prairie dogs will be managed at no more than 10 adult prairie dogs per acre within no more than 5 acres of upland habitat within this Open Space. This will help to ensure minimal impact to the vegetation, soil, and stream bank. In addition, any prairie dogs that enter the wetland habitat to the north will be removed immediately. The relocation of additional prairie dogs will not be permitted.

4.3.4. Great Views and Vistas

4.3.4.1. Colorado Hills Open Space

County: Jefferson

Land Use Designations: **1.** NPD - dog park
2. PDCA – northern one-third
3. PDCA – southern two-thirds
4. UCA – southwestern drainage

Management Required: **1.** Complete removal of all prairie dogs, monitoring, and prompt removal of immigrant prairie dogs.
2. Maintain prairie dogs within current acreage extent, monitoring, and population control as necessary.
3. Maintain prairie dogs within current acreage extent, monitoring, and population control as necessary.
4. Maintain prairie dogs within current acreage extent, monitoring, and population control as necessary.

NPD – Dog Park:

The land use designation of NPD for the dog park on the Colorado Hills Open Space acknowledges that the habitat is of low suitability for prairie dogs and prairie dog presence in the dog park could pose a health risk to domestic pets through fleabites and potentially subsequent sylvatic plague transmission should the fleas become infected.

PDCA – Northern One-Third:

The land use designation of PDCA on the northern one-third of the Colorado Hills Open Space acknowledges that the habitat, under current conditions, is of moderately high suitability for prairie dogs. If maintained at current levels, the colony may remain healthy and likely continue to serve some ecological purpose as cover for generalist species such as cottontail rabbits, amphibians, reptiles, and small rodents and a possible foraging area for rattlesnakes, coyotes, and raptors, such as ferruginous hawks.

Prairie dogs will be maintained in this area barring any excessive damage to soil and vegetation. Excessive damage can be defined as, but is not limited to, decreased range condition, increased bare soil, and increased noxious weed infestation. Therefore, the prairie dogs will be managed at no more than eight adult prairie dogs per acre within its current extent of approximately 5 acres on the Colorado Hills Open Space. This will help to ensure minimal impact to the vegetation and soil.

In the event that range condition decreases, there is an increase in bare soil, and/or there is increased noxious weed infestation, complete removal will be implemented. If the population is completely removed, it will become a NPD. If, however, the area is otherwise within the above parameters, but a plague epizootic causes the population to fall below one acre on the Colorado Hills Open Space, live relocation may be permitted to this site. Relocation will be permitted no sooner than one year after the plague event, only after the entire site has tested free of plague positive fleas, and at no more than 30 prairie dogs.

PDCA – Southern Two-Thirds:

The land use designation of PDCA for the southern two-thirds of the Colorado Hills Open Space acknowledges that while the habitat is of low suitability for prairie dogs, the area is within a critical bald eagle wintering/nesting area. Because prairie dogs have severely degraded this portion of the site, the colony likely does not provide cover for many (if any) species of wildlife. However, because of the colony's proximity to known bald eagle nest/roost sites on the north shore of Standley Lake (immediately south of the parcel) the prairie dogs are likely a valuable forage resource for those eagles utilizing the area.

Because the site is so heavily degraded, density management will likely not produce any benefit for the vegetation or soil resources. Therefore, the only prairie dog management on this parcel will be to maintain the prairie dogs within their current acreage extent in this area by humanely removing any expanding/dispersing prairie dogs. Relocation to this site will not be permitted unless a plague epizootic causes the population to fall below 50 acres. Relocation will be permitted no sooner than one year after the plague event, only after the entire site has tested free of plague positive fleas, and at no more than 200 prairie dogs.

UCA – Southwestern Drainage:

The land use designation of UCA chosen for the southwestern drainage of the Colorado Hills Open Space acknowledges that the area has low suitability for prairie dogs and is part of the colony that is negatively impacting Woman Creek Open Space. However, given that the range condition on this portion of the Colorado Hills Open Space and nearly the entire Woman Creek Open Space is so poor, a range management plan should be developed for the Woman Creek Open Space and this southwestern drainage of Colorado Hills Open Space dictating a reclamation plan for the parcels. Once the reclamation plan is developed and necessary funds are obtained/appropriated to successfully implement the plan, the area will convert to an NPD and all prairie dogs should be removed. Until that time, the only prairie dog management on this parcel will be to maintain the prairie dogs within their current extent in this area to reduce the amount of impact by humanely removing any expanding/dispersing prairie dogs.

4.3.4.2. Woman Creek Open Space

County: Jefferson

Land Use Designations: **1.** PDCA – northeastern section
2. UCA – southern four-fifths

Management Required: **1.** Maintain prairie dogs within current acreage extent, monitoring, and population control as necessary
2. Maintain prairie dogs within current acreage extent, monitoring, and population control as necessary

PDCA – Northeastern Section:

The land use designation of PDCA on the northeastern section of the Woman Creek Open Space acknowledges that the habitat, under current conditions, is of moderately high suitability for prairie dogs. If maintained at current levels, the colony may remain healthy and likely continue to serve some ecological purpose as cover for generalist species such as cottontail rabbits, reptiles, and small rodents and a possible foraging area for rattlesnakes, coyotes, and raptors, such as ferruginous hawks.

Prairie dogs will be maintained in this area barring any excessive damage to soil and vegetation. Excessive damage can be defined as, but is not limited to, decreased range condition, increased bare soil, and increased noxious weed infestation. Therefore, the prairie dogs will be managed at no more than 8 adult prairie dogs per acre within its current extent of approximately 5 acres on the Woman Creek Open Space. This will help to ensure minimal impact to the vegetation and soil.

In the event that range condition decreases, there is an increase in bare soil, and/or there is increased noxious weed infestation, complete removal will be implemented. If the population is completely removed, it will become a NPD. If, however, the area is otherwise within the above parameters, but a plague epizootic causes the population to fall below one acre on the Woman Creek Open Space, live relocation may be permitted to this site. Relocation will be permitted no sooner than one year after the plague event, only after the entire site has tested free of plague positive fleas, and at no more than 30 prairie dogs.

UCA – Southern Four-Fifths:

The land use designation of UCA chosen for the southern four-fifths of the Woman Creek Open Space acknowledges that the area has low suitability for prairie dogs. However, given that the range condition on nearly the entire open space is so poor, a range management plan should be developed for the Woman Creek Open Space and the southwestern drainage of Colorado Hills Open Space dictating a reclamation plan for the parcels. Once the reclamation plan is developed and necessary funds are obtained/appropriated to successfully implement the plan, the area will convert to an NPD and all prairie dogs should be removed. Until that time, the only prairie dog management on this parcel will be to maintain the prairie dogs within their current extent in this area to reduce the amount of impact by humanely removing any expanding/dispersing prairie dogs.

4.3.5. Natural Areas, Water, Trees, and Wildlife

4.3.5.1. Countryside Open Space

County: Jefferson

Land Use Designation: NPD

Management Required: Complete removal of all prairie dogs on both the Open Space and Countryside Park

The land use designation of NPD for the Countryside Open Space acknowledges that the site is of low habitat suitability for prairie dogs and the colony is surrounded by incompatible land uses where prairie dog presence could cause costly property damage and could pose a health risk to children on the park, elementary school, or ball fields.

4.3.5.2. Hyland Ponds Open Space

County: Jefferson

Land Use Designations: **1.** UCA – north Hyland Ponds Open Space parcel adjacent to 104th Avenue

2. NPD – Waverly Acres Park and the south Hyland Ponds Open Space

Management Required: **1.** No action unless there are adjacent land use changes or area is slated for reclamation.

2. Complete removal of all prairie dogs, installation of temporary movement barrier, active revegetation / establishment of vegetative movement barrier

UCA – North Hyland Ponds Open Space:

The land use designation of UCA for the north Hyland Ponds Open Space parcel adjacent to 104th Avenue acknowledges that the site is of low habitat suitability for prairie dogs and exclusion of prairie dogs will be difficult if not impossible. There is an extensive colony of prairie dogs to the south. Even with a barrier between the Open Space and adjacent private property, the barrier would not extend over the sidewalks, or roadways, so the prairie dogs could simply go around the barriers. Therefore, the site should remain as prairie dog habitat unless in the future prairie dogs on the adjacent private property are removed or water quality downstream is poor due to erosion within this parcel. At that time, the site will convert to a NPD and all prairie dogs will be removed. Otherwise, there will be no management on this parcel.

NPD – Waverly Acres Park and South Hyland Ponds Open Space:

The land use designation of NPD chosen for the Waverly Acres Park and the south Hyland Ponds Open Space acknowledges that the site is of low habitat suitability for prairie dogs the level of streambank/ditch degradation is high; and riparian and wetland conservation is very important to numerous species of wildlife, the local community, and the region. Local prairie dog viewing opportunities will still be available, as the colony to the north will be maintained unless there are adjacent land use changes or the area is slated for reclamation. In addition, the prairie dogs and

their associated wildlife on parcels to the north, south, and west will not be affected by this land use designation and subsequent management activities.

Movement Barrier:

To greatly reduce the number of prairie dogs that will reenter the Open Space/Park from the colonies to the east, south, and north, a barrier should be erected along those property lines. Figure 110 shows the placement of the barrier as well as distance estimates. There are a number of different designs, which vary in cost, longevity, and effectiveness. Generally, the most aesthetic, effective, and long-term barrier is a vegetative barrier such as existed before the mowing. However, because of the loss of the previous vegetative barrier and the fact that the Hyland Ponds Open Space/Park is adjacent to expansive prairie dog colonies, the establishment of a vegetative barrier must occur behind an artificial barrier.

The width of the vegetative barrier/buffer area should be as wide as possible, but at least 25 feet. Preferably, it should extend from the fencelines to the trail system. If the City is concerned about fire hazard in the future, we recommend mowing the grass on the east side of the drainage adjacent to the houses and not the grass within the vegetative barrier/buffer area west or south of the drainage.

Active revegetation should promptly follow the removal of the prairie dogs and installation of the artificial movement barrier. The area should be sprayed and managed to remove all noxious weeds. It should then be seeded/planted with shrubs, grasses, and forbs that are preferably native and will provide food and cover for multiple species of wildlife, but more importantly are able to compete with the noxious weeds, are moderately alkaline-tolerant, are drought tolerant, and grow over 12 inches in height.

Figure 110. Location where movement barrier should be erected to reduce the number of prairie dogs that will reenter the Hyland Ponds Open Space and Waverly Acres Park from adjacent properties.

4.3.5.3. Vogel Pond Open Space

County: Adams

Land Use Designation: UCA

Management Required: No action unless prairie dogs move further to the north and start impacting the adjacent golf course, and/or the pond and the upland areas are slated for reclamation

The land use designation of acknowledges that the site is of low habitat suitability for prairie dogs, the upland of the open space is extremely degraded, both within and external to the prairie dog colony, and there is a large amount of littoral degradation and pond sedimentation. If, however, prairie dogs are simply removed without reclamation, because of its severe state of disturbance and habitat degradation, both the upland and the pond will likely continue to serve minimal ecological purpose and will maintain its severe noxious weed infestation. Therefore, the site should remain as prairie dog habitat unless the pond, littoral, and upland areas are slated for reclamation (which will improve the ecological significance for multiple wildlife species). At that time, the site will convert to a NPD and all prairie dogs will be humanely removed.

4.3.5.4. Wadsworth Wetlands Open Space

County: Jefferson

Land Use Designation: NPD

Management Required: Maintenance of tall vegetation around the wetland, complete removal of all of the prairie dogs within the Open Space, installation of a movement barrier between the Open Space and colony on the private property to the south, monitoring, and prompt removal of all immigrant prairie dogs

The land use designation of NPD chosen for this parcel acknowledges the site is of low habitat suitability for prairie dogs, the importance of wetland conservation to numerous species of wildlife, the local community, and the region, as well as the responsibility of the City to minimize noxious weeds and soil erosion. If the area is reclaimed, tall vegetation should be established, as it will deter immigrant prairie dogs from reestablishing on the parcel.

4.3.5.5. Lower Church Lake North Shore Open Space

County: Jefferson

Land Use Designation: PDCA

Management Required: Maintain prairie dogs from a buffer of 300 feet from lakeshore, monitoring, and population control as necessary

The land use designation of PDCA for the Lower Church Lake North Shore Open Space acknowledges that the habitat is of low suitability for prairie dogs (at current habitat parameters) and there is the potential for conflict with Lower Church Lake and the need to minimize sedimentation by erosion into the lake. While the vegetation of the prairie dog colony is degraded and primarily bindweed (leaving the site almost completely bare soil in the winter), the soil has low potential for erosion. In addition, the colony may provide good habitat diversity in its juxtaposition to the lake habitat. Therefore, if the colony is maintained at current levels, the colony may serve some ecological purpose as transient cover or foraging areas for generalist species (those not dependent upon prairie dogs) such as cottontail rabbits, garter snakes, amphibians, and small rodents and a possible foraging area for coyotes and raptors.

Prairie dogs will be maintained in this area barring any excessive damage to soil, vegetation, or other wildlife resources. Excessive damage can be defined as, but is not limited to, decreased range condition, damage to the lakeshore and subsequent decrease in water quality and increase in sedimentation, and decreased wildlife diversity within the area. A buffer of at least 300 feet from the lakeshore will be managed for the exclusion of prairie dogs. In addition, the prairie dogs will be managed at no more than 10 adult prairie dogs per acre within no more than 15 acres. This will help to ensure minimal impact to the vegetation, soil, and lakeshore. The relocation of additional prairie dogs will not be permitted. If the colony is removed completely for any reason, the parcel will become a NPD.

5. Prairie Dog Monitoring and Removal Methodology

5.1. Monitoring

Annual population estimates give City of Westminster personnel the ability to evaluate the need for population control activities on a yearly basis. Qualified, trained City personnel or wildlife biologists knowledgeable in urban prairie dog population surveys will be responsible for the estimates. Surveys will be conducted each fall to ensure consistency. In years that population management activities are deemed necessary, control activities, when possible, will be conducted the following winter/spring (before the birthing season).

5.2. Human Control vs. Natural Predation

Most of the City parcels are small and relatively isolated within a highly urbanized environment. In the case of the need for population control or thinning, natural predation is unlikely to regulate prairie dog numbers. Likewise, habitat fragmentation, urbanization, and incompatible land use around the parcels have precluded prairie dogs from successfully expanding outward as numbers increased beyond vegetative and social carrying capacities. As a result, the populations have expanded beyond ecologically balanced densities. Often expansion of this sort results in increased levels of:

1. Bare soil and erosion;
2. Exotic and noxious weed diversity and abundance;
3. Potential for disease;
4. Territorial conflicts between individual prairie dogs;
5. Infanticide (prairie dogs themselves kill the young of the year); and
6. Human / prairie dog conflicts (prairie dogs in nearby backyards).

In instances where natural population control is ineffective in regulating prairie dog numbers within acceptable limits or within parcel objective, human induced control and removal methods should be employed.

5.3. Acceptable Removal Activities

In cases where prairie dogs need to be controlled (thinned or completely removed from a parcel or portion thereof), the following activities are presented below in order of preference on City-owned open space:

1. Live, wild-to-wild relocation of the animal(s) **<u>if the following are satisfied</u>**:
    a. In cases where ≥ 60 prairie dogs are in need of removal, a suitable relocation site must be available that:
        1) Does not violate any other land use or wildlife objectives;
        2) Follows the latest scientifically accepted habitat suitability guidelines (currently Roe and Roe 2003);
        3) Can be promptly identified at the time of need without delay to the project; and
        4) Allows a Colorado Division of Wildlife and FDA relocation permit to be readily obtained without unreasonable delay.
    b. In cases where 11 – 59 prairie dogs are in need of removal, a suitable relocation site must be available that:
        1) Currently harbors an existing prairie dog population which is below site carrying capacity;
        2) Does not violate any other land use or wildlife objectives;
        3) Follows the latest scientifically accepted habitat suitability guidelines (currently Roe and Roe 2003);
        4) Can be promptly identified at the time of need without delay to the project; and
        5) Allows a Colorado Division of Wildlife and FDA relocation permit to be readily obtained without unreasonable delay.
2. Live removal and donation of the animal(s) to wildlife research or rehabilitation centers (such as black-footed ferret or raptor centers) is permitted if a suitable relocation site is not available.
3. Fumigation may be utilized for ≤ 10 prairie dogs if live removal and relocation or donation is not possible and/or this number remains after a good faith effort to remove the majority of prairie dogs from the property has been conducted.

5.4. Live Removal Techniques

The live removal must be conducted via aboveground, humane, cage-type live traps. Flushing and vacuum extraction techniques include an unnecessary risk to the prairie dogs and non-target wildlife. Therefore, flushing and vacuum extraction is not considered humane and will not be utilized on City-owned open space properties.

5.5. Fumigation Techniques

Poison baits (zinc phosphide or strychnine) are not permitted on City-owned open space parcels. Fumigation by gas cartridge, tablet, or pellet (carbon dioxide, aluminum phosphide, etc…) is permitted.

5.6. Wildlife Impact Surveys

Before any removal effort, a wildlife impact survey must be conducted. Wildlife impact surveys should utilize current wildlife survey methodology including, but not limited to, track stations, spotlight scans, scat and/or track transects, and daytime visual scans/observations depending on species being surveyed. These surveys will help the City assess the risks to non-target species of wildlife that may be affected by control activities. Non-target species such as ground squirrels, rock squirrels, cottontail rabbits, skunks, amphibians, lizards, and other state protected animals may be negatively impacted by certain management activities and/or control methods. It is important to identify those species and work towards mitigating any impacts through live relocation, avoidance, or by obtaining the proper State or Federal take permits.

5.6.1. Live Trapping – Population Thinning Operations

Live trapping during thinning operations (the prairie dog colony and the associated burrows generally remain) does not require any additional pre-capture monitoring or wildlife surveys to assess for non-target species impact prior to trapping other than those required to satisfy existing and/or future U.S. Fish and Wildlife Service or State of Colorado requirements for sensitive, threatened, or endangered species (such as burrowing owls).

5.6.2. Live Trapping – Complete Removal

Because other species of wildlife can often be found within prairie dog burrows, if the prairie dogs are all to be removed from a site and the burrows destroyed, a non-target species presence / absence survey must be conducted. If non-target species are identified, a mitigation plan should be developed including such options as relocation and/or ways to avoid negatively impacting those species.

5.6.3. Fumigation

Because other species of wildlife can often be found within prairie dog burrows, if any prairie dog burrows are to be fumigated, a non-target species presence/absence survey must be conducted. If

non-target species are identified, a mitigation plan should be developed including such options as relocation and/or ways to avoid negatively impacting those species.

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Appendix A – Noxious Weeds

Colorado Noxious Weed List

The following plants are noxious weeds in the State of Colorado:

- Absinth wormwood (*Artemisia absinthium*)
- African rue (*Peganum harmala*)
- Black henbane (*Hyoscyamus niger*)
- Black nightshade (*Solanum nigrum*)
- Blue mustard (*Chorispora tenella*)
- Bouncingbet (*Saponaria officinalis*)
- Bull thistle (*Cirsium vulgare*)
- Camelthorn (*Alhagi pseudalhagi*)
- Canada thistle (*Cirsium arvense*)
- Chicory (*Cichorium intybus*)
- Chinese clematis (*Clematis orientalis*)
- Coast tarweed (*Madia sativa*)
- Common burdock (*Arctium minus*)
- Common crupina (*Crupina vulgaris*)
- Common groundsel (*Senecio vulgaris*)
- Common mullein (*Verbascum thapsus*)
- Common St. Johnswort (*Hypericum perforatum*)
- Common tansy (*Tanacetum vulgare*)
- Common teasel (*Dipsacus fullonum*)
- Cypress spurge (*Euphorbia cyparissias*)
- Dalmatian toadflax, broad-leaved (*Linaria dalmatica*)
- Dalmation toadflax, narrow-leaved (*L. genistifolia*)
- Dame's rocket (*Hesperis matronalis*)
- Diffuse knapweed (*Centaurea diffusa*)
- Cheatgrass (*Bromus tectorum*)
- Dyer's woad (*Isatis tinctoria*)
- Eurasian watermilfoil (*Myriophyllum spicatum*)
- Field bindweed (*Convolvulus arvensis*)
- Flixweed (*Descurainia sophia*)
- Giant salvinia (*Salvinia molesta*)
- Green foxtail (*Setaria viridis*)
- Hairy nightshade (*Solanum sarrachoides*)
- Halogeton (*Halogeton glomeratus*)
- Hoary cress (*Cardaria draba*)
- Houndstongue (*Cynoglossum officinale*)
- Hydrilla (*Hydrilla hydrilla*)
- Johnsongrass (*Sorghum halepense*)
- Jointed goatgrass (*Aegilops cylindrica*)
- Kochia (*Kochia scoparia*)
- Leafy spurge (*Euphorbia esula*)
- Mayweed chamomile (*Anthemis cotula*)
- Meadow knapweed (*Centaurea pratensis*)
- Mediterranean sage (*Salvia aethiopis*)
- Medusahead rye (*Taeniatherum caput-medusae*)
- Moth mullein (*Verbascum blattaria*)
- Musk thistle (*Carduus nutans*)
- Myrtle spurge (*Euphorbia myrsinites*)
- Orange hawkweed (*Hieracium aurantiacum*)
- Oxeye daisy (*Chrysanthemum leucanthemum*)
- Perennial pepperweed (*Lepidium latifolium*)
- Perennial sowthistle (*Sonchus arvensis*)
- Plumeless thistle (*Carduus acanthoides*)
- Poison hemlock (*Conium maculatum*)
- Puncturevine (*Tribulus terrestris*)
- Purple loosestrife (*Lythrum salicaria*)
- Quackgrass (*Elytrigia repens*)
- Redstem filaree (*Erodium cicutarium*)
- Rush skeletonweed (*Chondrilla juncea*)
- Russian knapweed (*Centaurea repens*)
- Russian-olive (*Elaeagnus angustifolia*)
- Russian thistle (*Salsola collina* and *S. iberica*)
- Saltcedar (*Tamarix parviflora* and *T. ramosissima*)
- Scentless chamomile (*Anthemis arvensis*)
- Scotch thistle (*Onopordum acanthium* and *O. tauricum*)
- Sericea lespedeza (*Lespedeza cuneata*)
- Shepherdspurse (*Capsella bursa-pastoris*)
- Spotted knapweed (*Centaurea maculosa*)
- Spurred anoda (*Anoda cristata*)
- Squarrose knapweed (*Centaurea virgata*)
- Sulfur cinquefoil (*Potentilla recta*)
- Swainsonpea (*Sphaerophysa salsula*)
- Tansy ragwort (*Senecio jacobaea*)
- Velvetleaf (*Abutilon theophrasti*)
- Venice mallow (*Hibiscus trionum*)
- Wild caraway (*Carum carvi*)
- Wild mustard (*Brassica kaber*)
- Wild oats (*Avena fatua*)
- Wild proso millet (*Panicum miliaceum*)
- Yellow foxtail (*Setaria glauca*)
- Yellow nutsedge (Cyperus esculentus)
- Yellow starthistle (Centaurea solstitialis)
- Yellow toadflax (*Linaria vulgaris*)

Field Bindweed

Colorado lists field bindweed as a noxious weed. The presence of field bindweed is indicative of extreme overpopulation and lack of balance between prairie dogs and their ecosystem. Field bindweed is very aggressive and, in conjunction with the high levels of surface disturbance often created by prairie dogs, is often highly successful at out competing beneficial native vegetation. Creating a mat of aboveground vines and leaves during the summer, field bindweed precludes most other plants from being able to obtain moisture or sunlight for growth.

Although large areas of bindweed appear lush and green during the spring and summer months, very little root structure provides any soil stabilization. Vines often spread several feet away from the parent stem leaving large amounts of bare soil between each individual plant. These roots are not fibrous; rather, they consist of taproots and lateral shoots that primarily serve to absorb water and store carbohydrates.

Because field bindweed senesces in the fall, all aboveground vegetation dies which ultimately leaves the site nearly 100 percent bare soil until late spring. Because of the nature of field bindweed growth and development, areas primarily consisting of this plant are left vulnerable to severe surface erosion by wind or precipitation run-off. In bindweed fields where prairie dogs are present, erosion problems can often be exacerbated by the fact that prairie dogs dig up bindweed roots for sustenance and thereby further increase soil disturbance and decrease soil stabilization.

Appendix B - Soils Definitions

Obtained from Sampson and Baber (1974) and Price and Amen (1980)

6 **Arvada clay loam, 0 to 2 percent slopes**
This soil is deep, well drained and mildly to severely alkaline, particularly in the deeper layers. Permeability is slow, available water capacity is moderate, effective rooting depth is at least 60 inches, runoff is slow, water erosion is slight, and wind erosion is moderate. Vegetation is reportedly difficult to establish on this soil due to excess salts and sodium. Only plants that tolerate saline-alkaline conditions should be planted on these soils.

27 **Denver clay loam, 5 to 9 percent slopes**
This soil is on high terraces, hill slopes and fans and is deep, well drained and mildly to moderately alkaline. Permeability is slow, available water capacity is high, effective rooting depth is at least 60 inches, runoff is moderate, water erosion is moderate, and wind erosion is moderate. Vegetation is difficult to establish and maintain in this complex because of the amount of clay and rock fragments, which makes tillage and rooting difficult.

29, 30 **Denver-Kutch clay loam, 5 to 15 percent slopes**
This soil type is on hill slopes and is moderately deep, well-drained, and mildly to moderately alkaline. Permeability is slow, available water capacity is low to high, runoff is moderate to rapid (increases with slope), water erosion is a moderate to severe hazard (increases with slope), and soil blowing is a slight to moderate hazard (generally increases with slope). Typically, this soil is used for grazing, pasture, and open space. Vegetation is difficult to establish and maintain in this complex because of the amount of clay, which makes tillage and rooting difficult.

60 **Haverson loam, 0 to 3 percent slopes**
This soil is deep and well drained. The surface layer is typically six inches of a neutral loam. The underlying layer is moderately alkaline clay and gravel loam about 40 inches thick. The lower layer is mildly alkaline, very gravelly loamy sand. Permeability is moderately slow, availability water capacity is high, runoff is slow, water erosion is slight, and wind erosion is moderate.

79 **Leyden-Nunn-Rooney complex, 9 to 30 percent slopes**
Leyden soil is 35 percent, Nunn soil is 30 percent, and Rooney soil is 20 percent of the complex. Generally, soil conditions across the complex vary significantly. Soils range from shallow to deep and well drained. The texture varies from between cobbly clay loam, gravelly clay loam, and cobbly sandy loam. Permeability is slow to moderately rapid, available water capacity is low to high, effective rooting depth is 4 to 60+ inches, runoff is rapid, water erosion is severe, and wind erosion is slight. Vegetation is reportedly difficult to establish and maintain in this complex due to the slope, rocky texture, and shallowness of good soil to deeper rock layers. It is recommended that mulch, organic matter, fertilizers, and supplemental irrigation be used to enhance vegetation establishment.

80 **Leyden-Primen-Standley cobbly clay loam, 15 to 50 percent slopes**
These soils vary from shallow to deep and all are well drained. Permeability is slow, available water capacity varies from low to high, effective rooting depth is at least 10 inches depending on the shallowness of the bedrock, runoff is rapid, water erosion is a severe hazard, and wind erosion is a slight hazard. Vegetation is reportedly difficult to establish and maintain in this complex due to the rocks, clay texture, and shallowness to bedrock.

92, 93, 94 **Manzanola clay loam, 5 to 25 percent slope**
These soils are deep, well drained, and mildly to moderately alkaline. Permeability is slow, available water capacity is high, effective rooting depth is at least 60 inches, runoff is moderate to rapid (increases with slope), water erosion can be moderate to severe (increases with slope), and wind erosion can be moderate. This soil is typically used for grazing and wildlife habitat. Vegetation is difficult to establish and maintain in these soils because of the clay and the extreme slope. It is recommended that mulch, organic matter, fertilizers, and supplemental irrigation be used to enhance vegetation establishment.

96 **Manzanola-Renohill-Stoneham complex, 9 to 15 percent slopes**
Soils of this complex are on hills, ridges, and knobs. The soils are at least moderately deep, well drained, generally mildly to moderately alkaline, of calcareous, clayey or loamy material, and may be composed of rock fragments. Permeability is slow, available water capacity is low to high, effective rooting depth 20+ inches, runoff is rapid, water erosion is severe, and wind erosion is a slight to moderate hazard. This soil is typically used for grazing and wildlife habitat. Vegetation is difficult to establish and maintain in these soils because of the slope and depth to rock. It is recommended that mulch, organic matter, fertilizers, and supplemental irrigation be used to enhance vegetation establishment.

102, 103 **Nunn clay loam, 0 to 5 percent slopes**
This soil is deep and well drained. Cobble, large rocks, or gravel may be found on the surface. Permeability is slow, runoff is slow to medium (increases with increase in slope), water erosion hazard is slight to moderate (increases with increase in slope), and wind erosion is slight. This soil is typically used for cropland (irrigated and dryland) and native pasture. Vegetation is difficult to establish and maintain in this complex because of the amount of clay, which makes tillage and rooting difficult.

105, 106, 107 **Nunn-Urban land complex, 0 to 9 percent slopes**
This complex is deep, well drained, and composed primarily of clay loam (neutral at the surface and gradually more alkaline in deeper layers). Permeability is slow, available water capacity is high, effective rooting depth is at least 60 inches, runoff is slow to medium (increases with slope), water erosion is slight to moderate (increases with slope) and wind erosion is slight. Soils of this complex are used primarily for urban development or grazing. Vegetation is difficult to establish and maintain in this complex because of the amount of clay, which makes tillage and rooting difficult. It is recommended that mulch, organic

matter, fertilizers, and supplemental irrigation be used to enhance vegetation establishment.

133 **Renohill-Manzanola clay loam, 9 to 15 percent slopes**
These soils are moderately deep, well drained, and neutral to mildly alkaline. Permeability is slow, available water capacity is low to high, effective rooting depth is 20-60 inches or more, runoff is rapid, water erosion is a severe hazard, and wind erosion is a slight to moderate hazard. Proper grazing use and a planned grazing system are needed to maintain the quality and quantity of the desirable plants and to prevent erosion. Vegetation is difficult to establish and maintain because of the slope and amount of rock, which makes tillage and rooting difficult.

134 **Renohill-Midway complex, 9 to 15 percent slopes**
This complex is shallow to moderately deep and well drained. Permeability is slow, available water capacity is low, effective rooting depth is 6 to 40 inches, runoff is rapid and water erosion can be severe. The complex is used primarily for grazing and recreation.

149 **Standley-Nunn gravelly clay loams, 0 to 5 percent slopes**
These soils are deep, well drained, neutral to mildly alkaline, and gravelly clay to gravelly clay loam. Permeability is slow, available water capacity is high, effective rooting depth is 60 inches or more, runoff is slow to moderate, water erosion is a slight to moderate hazard, and wind erosion is slight. Proper grazing use and a planned grazing system are needed to maintain the quality and quantity of the desirable plants and to prevent erosion. Vegetation is difficult to establish and maintain in this soil because of the amount of small stones and clay, which makes tillage and rooting difficult.

162, 163 **Ulm-Urban land complex, 3 to 9 percent slopes**
The Ulm portion of the complex is deep and well drained. Permeability is slow, available water capacity is high, effective rooting depth is 60 inches or more, runoff is moderate, water erosion is moderate, and wind erosion is slight. The Urban portion of the complex is generally pavement, buildings, or other manmade structures wherein permeability is slow or impermeable and runoff is rapid. Most of the complex is used for community development. Vegetation is difficult to establish and maintain in this soil because of the amount of clay, which makes tillage and rooting difficult.

AdB **Arvada loam, 0 to 3 percent slopes**
This soil is deep and well drained. Permeability is slow, available water capacity is slow, effective rooting depth is very shallow, runoff is moderate and water erosion is a moderate hazard.

HlD **Heldt clay, 3 to 9 percent slopes**
This soil is deep and well drained. Permeability is slow, available water capacity is high, effective rooting depth is 60 inches or more, runoff is slow to moderate and water erosion is a slight hazard.

NuB **Nunn clay loam, 1 to 3 percent slopes**

This soil is deep and well drained. Cobble, large rocks, or gravel may be found on the surface. Permeability is slow, runoff is moderate, water erosion hazard is moderate, and wind erosion is slight. This soil is typically used for cropland (irrigated and dryland) and native pasture. Vegetation is difficult to establish and maintain in this complex because of the amount of clay, which makes tillage and rooting difficult.

PlB & PlC **Platner loam, 0 to 5 percent slopes**
This soil is moderately deep and well drained. Permeability is slow, available water capacity is high, runoff is slow to moderate (increasing with slope), water erosion is a slight to moderate hazard (increasing with slope), and wind erosion is a severe hazard particularly under bare soil conditions.

ReD **Renohill loam, 3 to 9 percent slopes**
This soil is shallow but well drained. Permeability is slow, available water capacity is moderate, effective rooting depth is only about 28 inches, runoff is moderate to severe, water erosion hazard is severe, and wind erosion hazard is severe.

ShF **Samsil-Shingle complex, 3 to 35 percent slopes**
These soils are thin, have slow to moderate permeability, available water capacity is low, runoff is rapid, and the erosion hazard is severe.

UlC, UlD **Ulm loam, 3 to 9 percent slopes**
This soil is thin but well-drained. Permeability is slow, available water capacity is moderate, runoff is moderate and gully and sheet erosion is severe, especially if vegetation is lacking (gullies form rapidly), and wind erosion is moderate. The soil has moderate to good fertility.

Wt **Wet alluvial land**
These areas are wet at a depth of 2 feet most of the year and are commonly wet to the surface during the growing season. Vegetation typically includes cattails and sedges.

Appendix C – Published Habitat Selection Guidelines for Black-tailed Prairie Dogs

Roe K.A. and C.M. Roe. 2003. Habitat selection guidelines for black-tailed prairie dog relocations. Wildlife Society Bulletin 31(4): 1246-1253.

Appendix D – Rating Criteria for Habitat Evaluation Table

For each parcel, prairie dog suitability was determined from an evaluation table through which attributes of the parcels were rated. The average of all attributes determines the parcel's overall prairie dog ecosystem suitability. A value of zero signifies that the parcel is completely unsuitable for an ecologically balanced prairie dog ecosystem. A value of five signifies that the parcel is very suitable for an ecologically balanced prairie dog ecosystem. A value of 1-4 signifies a gradation from low suitability to high suitability for an ecologically balanced prairie dog ecosystem.

Soil Type

0 = high erosion hazard (wind and/or water), high runoff potential, shallow soil layers to bedrock, extremely rocky, high clay, and very difficult to establish vegetation

1 – 4 = gradations between 0 and 5

5 = low potential for erosion, low runoff potential, deep soil, little to no rock, little to no clay, and easy to establish vegetation

Amount of Bare Soil

0 = 100%

1 = 75 – 99%

2 = 50 – 74%

3 = 25 – 49%

4 = 1 – 24%

5 = none

Noxious Weed Infestation

0 = 100% of vegetation within the prairie dog colony

1 = 75 – 99% of vegetation within the prairie dog colony

2 = 50 – 74% of vegetation within the prairie dog colony

3 = 25 – 49% of vegetation within the prairie dog colony

4 = 1 – 24% of vegetation within the prairie dog colony

5 = 0%

Suitable Vegetative Cover

0 = 0% of vegetation within the current prairie dog colony

1 = 1 – 24% of vegetation within the current prairie dog colony

2 = 25 – 49% of vegetation within the current prairie dog colony

3 = 50 – 74% of vegetation the current prairie dog colony

4 = 75 – 99% of vegetation the current prairie dog colony

5 = 100%

Slope

0 = greater than 45°

1 = $36 – 45^{o}$

2 = $26 – 35^{o}$

3 = $11 – 25^{o}$

4 = $6 – 10^{o}$

5 = less than 5° (flat)

Current "Developed" Land Use

0 = Incompatible (golf course, park, etc.)

1-2 = *Does not apply for this attribute*

3 = Grazing (if vegetation is midgrass rather than shortgrass prairie and/or density and extent of prairie dogs is: 1) causing an increase in noxious weeds; 2) causing an increase in bare soil, 3) precluding normal production within any vegetative community; and/or 4) such that they are on winter pasture and are clipping vital vegetative biomass for wintering cattle)

4 = *Does not apply for this attribute*

5 = None

Adjacent Land Use / Neighboring Landowner Concerns

0 = No barrier between colony and incompatible adjacent land use such as riparian corridor, pond, wetland, golf course, park, residential subdivisions, city or private landscaping, etc…

1 = Manmade barrier that is not a visual barrier (can see through it), at least three feet high with chicken wire or other hardware cloth buried at least six feet deep

2 = Vegetative barrier (dense vegetation that provides almost 100% reduction in visibility between 0 – 18 inches from the ground surface) or is a manmade barrier that you cannot see through, is at least three feet high, and is buried at least six feet deep

3 = Impenetrable natural barrier between colony and incompatible adjacent land use that precludes the majority, if not all, prairie dog movement (ex. river, rock face, etc…)

4 = Distance greater than 0.5 miles separates the colony and incompatible adjacent land use

5 = No incompatible adjacent land use

Associated Species

0 = None

1 = Generalist species (such as cottontail rabbits and deer mice)

2-4 = Increasing number of documented associated species that otherwise would not exist on or near the Parcel without the prairie dog colony

5 = Provides habitat within the colony for at least one of the following species: Burrowing Owl, Ferruginous Hawk, Mountain Plover, or black-footed ferret

Parcel Purpose for Wildlife

0 = Parcel was obtained for riparian, wetland, or pond/lake attributes and the associated wildlife of those habitats, etc… that are otherwise not compatible with the modifications to those habitats associated with prairie dog colonies
OR
Parcel was obtained for conservation/preservation of mid- or tall-grass prairie attributes including, but not limited to, vegetation and wildlife (such as songbirds, small mammals, deer, etc.)

1-2 = *no criteria*

3 = Parcel was obtained simply for open space within development – it doesn't matter what wildlife is on it, if any

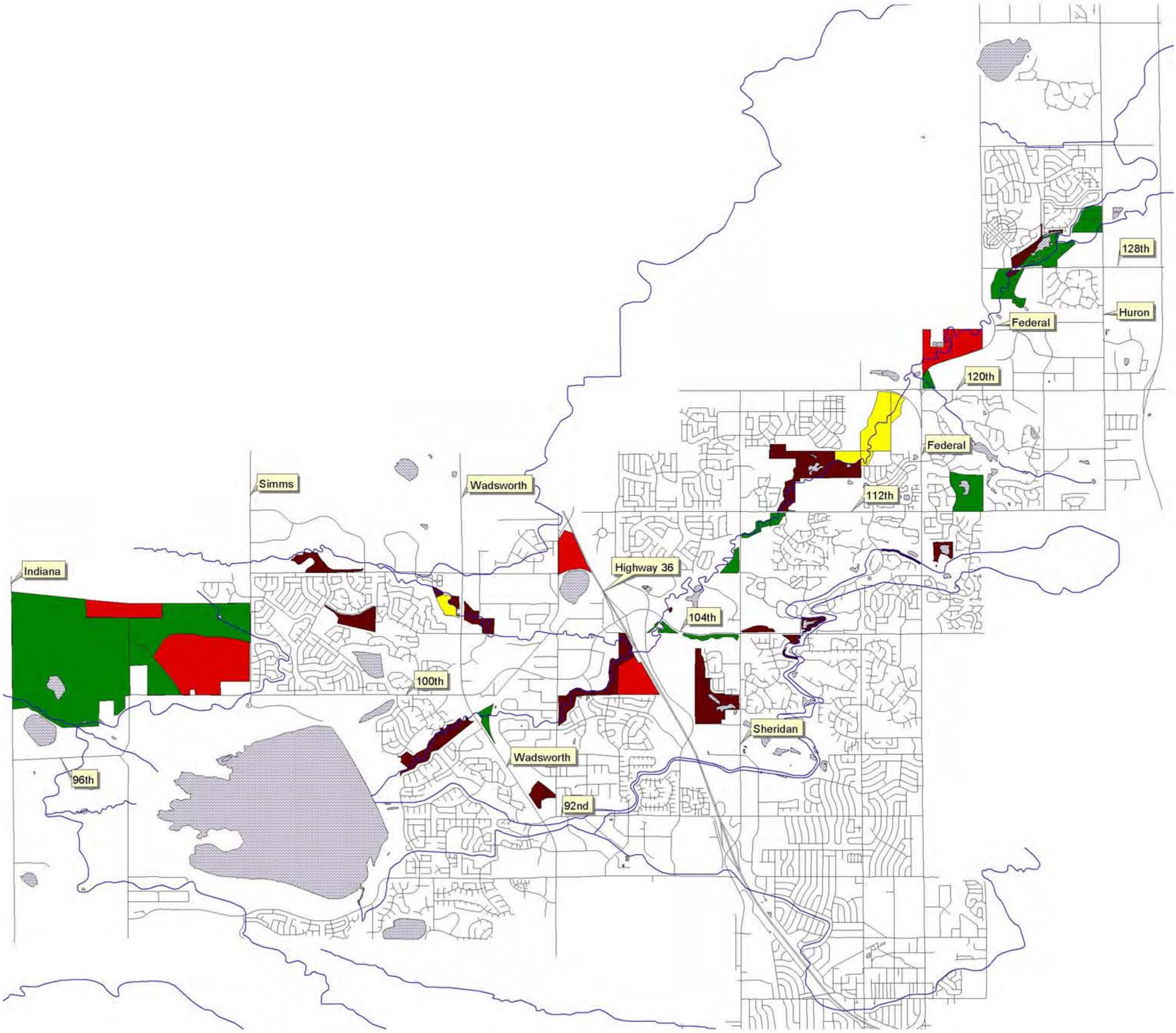
4 = Parcel was obtained for shortgrass prairie conservation/preservation with or without prairie dogs

5 = Parcel was obtained strictly as prairie dog habitat

WESTMINSTER

Prairie Dog Management Plan

Land Management Designations



N
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LEGEND

Streams
Streets
Lakes & Ponds

Land Use Designation
NPD
PDCA
PEA
UCA

Roe Ecological Services, LLC

Map Created 01/04/05

Beaver Management Plan

City of Westminster
Open Space
2008

Beaver Management Plan
City of Westminster
2008

Purpose of a Beaver Management Plan page 1

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Purpose of a Beaver Management Plan

In 1985, The City of Westminster initiated their Open Space program which began the purchase and preservation of undeveloped natural areas throughout the city. The Open Space Program Policy Statement (13-5-1) reads "In the broadest sense, the objective of the Open Space Program is to promote quality of life for the citizens of Westminster through the preservation and protection of the quality of the natural environment which has given Westminster much of its character…" Open Space properties, therefore, are to be managed in a way that promotes the quality of the natural ecosystem. Establishing and maintaining wildlife habitat is a key goal in open space management, as is the protection of the natural resources. Sometimes, multiple goals are difficult to attain when dealing with a certain issue. Beaver management is one of those issues. Managers are sometimes faced with the choice of allowing beavers to inhabit an area with the knowledge that trees may be lost or protect the trees by eliminating the beavers in that area.

Beavers can be a valuable and desirable animal to have in an open space environment and at the same time they can be harmful to the existing natural resources. These benefits and detriments can often occur simultaneously at a single location. Because of the varying degrees of tolerance levels among people to beaver activity, there are bound to be disagreements on how best to "deal" with beaver conflicts.

This document is intended to be a foundation for future management decisions based on current scientific data and City of Westminster Open Space standards. This plan is not meant to provide a blanket policy for beaver management. Rather, this plan gives management options that staff can choose from when having to take action. Wildlife management is a fluid science and not every management option will work or be right for the given situation.

Beaver (*Castor canadensis*)

Biology of the Beaver

The beaver (Castor Canadensis) is North America's largest rodent. Adult beavers typically weigh 45 to 60 pounds, but have been known to grow to 100 pounds. Wild beavers live about 11 years, unless they are trapped or killed by predators. Beavers are aquatic mammals with large webbed hind feet ideal for swimming, and hand-like front paws that allow them to manipulate objects with great dexterity. They have excellent senses of hearing and smell, and rely on these senses more than their less developed sense of eyesight. When swimming underwater a protective transparent membrane will cover their eyes, and flaps close to keep water out of their nostrils and ears.

Beavers are monogamous and mate for life. They do not breed until they are two to three years old. They have a gestation period of 4 months and will have one litter of 1 - 6 kits per

year. Each established beaver "colony" consists of adult parents, and two years of offspring. Only the adult female breeds. The average number of beavers in an established family is typically six or seven beavers.

Once a beaver reaches the age of two they will usually leave the colony to find a mate and establish a colony of their own. This is the most very dangerous time in the life of a beaver. Not only can they be killed by predators or cars, other beavers will attack them if they enter their ponds. Beavers have been noted to travel ten or more miles searching for a place to live.

Beaver dams are created as a protection against predators and to provide easy access to food during winter. Beavers always work at night and are prolific builders, carrying mud and stones with their fore-paws and timber between their teeth. Beavers usually can re-build a dam overnight if it has been breached, thereby making this management option obsolete. Beavers predictably select sites to build their dams based primarily on topography and food supply. Preferred sites for damming will be in areas where the dam will flood a large flat area and there are plenty of desirable woody plants for food in the vicinity. Streams that are more than two feet deep or have strong currents are not generally dammed. Beavers often situate their dams where there are constrictions in the stream flow (natural or manmade).

Each beaver colony will usually establish one large pond which where they will build their lodge. In addition to this primary pond other smaller dams up and downstream are usually built to create smaller ponds. These smaller ponds permit safe travel for the beaver as it seeks out new food supplies. The average beaver colony will dam a half-mile length of a small stream.

To obtain food and building materials, beavers are well known for their ability to topple large trees using nothing but their specially adapted incisor teeth and powerful lower jaw

muscles. Beaver teeth never stop growing, so they do not become too worn despite years of chewing hardwoods. Their four front teeth (incisors) are self-sharpening due to hard orange enamel on the front of the tooth and a softer dentin on the back. Therefore as beavers chew wood the softer backside of the tooth wears faster, creating a chisel-like cutting surface.

Beavers are aquatic mammals with large webbed hind feet ideal for swimming, and hand-like front paws that allow them to manipulate objects with great dexterity. They have excellent senses of hearing and smell, and rely on these senses more than their less developed sense of eyesight. When swimming underwater a protective transparent membrane will cover their eyes, and flaps close to keep water out of their nostrils and ears.

Beaver felled trees along Big Dry Creek, 2008

Benefits and Problems Relating to Beaver Activity

The beaver is an important mammal to Colorado, as well as to North America, from both a historical perspective and from an aesthetic perspective. Beaver can be among the most beneficial of the county's wildlife. They create favorable wetland habitat for a variety of wildlife species including fish, birds, amphibians, reptiles, and mammals. This variety of wildlife is in turn valued for recreational, scientific, educational and aesthetic purposes. This increase in biodiversity of wildlife is a great asset to the open space ecosystem. Wildlife observation is an important product of the open space that is highly valued by trail users and the residents.

Beaver activity is also helpful in retaining storm water runoff and improves water quality by trapping sediment, nutrients, and pollutants. The dams act as natural check dams during floods and high water, reducing erosion and slowing the water enough to deposit solids. The higher water behind the dam also creates additional shoreline and enables water-loving plants and trees to start and thrive.

Beaver activity can also have detrimental affects. Their actions can sometimes lead to flooding of roads and trails, the loss of trees and shrubs, and the destruction of both public and private property. Their impacts often occur suddenly and dramatically. Beavers are usually not noticed in an area until valuable trees have been felled or flooding along trails occurs. Often, when flooding occurs along trails, it is necessary to breach the dam using equipment or by hand. Although this can be a quick fix solution, the dams are usually re-built back up overnight.

Beaver dam on Big Dry Creek, 2008

Policy for Choosing Beaver Management Options

Beaver activity emanating from city-owned open space and resulting in conflict and/or natural resource damage will be evaluated by the Department of Parks, Recreation and Libraries for the existence of, or potential of:

- impact to public health and safety
- unacceptable loss of natural resources
- impact to public and private property
- impact to public infrastructure

The significance of these impacts will determine the type of management action taken. Any action taken will be based on proven wildlife management techniques, appropriate animal welfare concerns, and applicable laws and regulations.

It is important to remember that one function of open space lands is to provide habitat for wildlife. These areas are one of the few places left in the metro area where wildlife can live. In most cases, some level of loss of trees on open space lands is an accepted consequence of trying to achieve a balanced ecosystem.

The City of Westminster recognizes beaver as a natural and desirable component of the environment because of their contribution to the quality and diversity of natural habitat. However, it is also recognized that conflicts between beaver and humans arise when beaver activity impacts public health and safety, natural resources, private property, or public infrastructure.

The Colorado Division of Wildlife (CDOW) has issued the following statement concerning the management of beavers. "All wildlife in Colorado is the property of the State and owned by the people. Beavers are defined as "furbearers" under the CDOW rules and regulations, therefore, allowing private landowners permission to manage beavers in accordance with state laws and CDOW regulations. CDOW rules and regulations allow for the "take" of beaver year round as necessary to protect private property." The City of Westminster Open Space will work cooperatively with CDOW personnel, and other officials, when necessary, to manage beavers according to Westminster's Beaver Management Plan.

All instances of beaver activity which impact the Big Dry Creek corridor will be reviewed by the Open Space management staff. Reports may come from several sources including any open space staff, residents, trail users, public officials or private individuals. All reports will be investigated by staff to verify location and collect basic information. New data will be added to the Beavers and Big Dry Creek Inventory which was completed in 2008.

It is the aim of the beaver management plan to identify new areas of beaver activity as soon as possible. New locations will be checked for real and potential natural resource damage, potential for damaging floods, location in a "beaver-free zone", and private/public property damage. Where existing or potential negative impacts are identified, open space staff will contact appropriate parties who are likely to be involved in resolving any conflicts. Those contacted may include: appropriate Department and Division Heads, POST committee, appropriate city staff, affected property owners, Division of Wildlife personnel, and any other affected personnel.

Discussions with affected parties will determine the level of impact that is acceptable. It will be the primary goal of the City of Westminster's beaver management plan to coexist with beaver wherever that is possible while, at the same time, protecting the natural resources. Where significant damage to natural resources or threats to human safety are demonstrated or inevitable, staff will take action to modify or eliminate beaver activities.

Beaver damage along Big Dry Creek, 2008

Beaver Management Actions

The following actions and strategies may be used to resolve various kinds of beaver damage and conflicts, within and contiguous to the Big Dry Creek corridor. They are written in the form of guidelines to allow for flexibility as experience improves our knowledge and abilities. Problems between beavers, open space natural resources, and public or private property may be resolved by implementing one or more of the following actions.

The least intrusive actions will always be attempted first, where those actions fit the circumstances. More intrusive actions, up to and including live-trapping and euthanasia of the animal, will be done only when no other alternatives are available.

1. Tree Protection

Along Big Dry Creek, the most available and sought after tree by the beaver is the Plains Cottonwood. The semi-arid climate of Colorado makes it very difficult for trees to grow and thrive without supplemental irrigation. These trees along Big Dry Creek have managed to survive over the years by tapping into the creek's water table. Because of the climatic factors and the overall small population of these native trees, any loss of trees along Big Dry Creek is dramatic.

Protecting trees is not 100% fool-proof all of the time, but the elimination of the beaver's food source is one of the most effective means of beaver control. Tree cutting by beavers can be prevented by the placement of hardware cloth or fencing fabric around the base of trees. Although not fool-proof, this technique has shown to be relatively effective and inexpensive, with only a small visual impact. Individual trees can be spared from beaver gnawing by placing wire cylinders around the base of their trunks. The purpose of this heavy wire cylinder is simply to keep the beaver from getting to the tree. The cylinders can be made from 3 to 4 foot tall galvanized wire mesh. The fencing should extend 2 feet above

the highest snow level to prevent winter chewing. It generally does need to be anchored to the ground. Cut the bottom to fit a sloping ground, or to protect prominent roots from chewing. Leaving a few inches of space between the tree and the wire allows for tree trunk growth. Replace as needed with a larger diameter cylinder to allow for trunk expansion.

Although this method is relatively effective in protecting trees, it is very labor intensive. Location of the tree along the bank, size of tree, and accessibility are all factors that present challenges of effectively applying the tree wrap. As the tree grows, this wrap then needs to be manually widened to allow for the natural growth of the tree.

Protected trees using tree wrap, 2008

2. Beaver Tree Mitigation Policy

The cottonwood trees that currently live along Big Dry Creek are the primary food source target for the beavers. Most of these trees are decades old and have established themselves

despite a semi-arid climate. A tree mitigation, or replacement, policy would help offset the loss of trees by beavers. Although much smaller in size to the trees that are felled, these trees would provide the same benefits for future generations.

Any tree that is harvested by beavers along BDC would be replaced at a 1:1 ratio somewhere along the BDC corridor within a year. Example: A 6" cottonwood that is felled by a beaver would be replaced with 6 – 1" cottonwoods within 1 year in a suitable location along BDC. All trees that are planted would also be protected with wire mesh at the same time.

Felled cottonwoods along Big Dry Creek, 2008

3. Establishment of Beaver-Free Zones

There may be areas along the BDC corridor where staff determines that no beavers would be acceptable to inhabit. These zones may be determined based on flooding potential, historical significance, visual impact from trail users, or other criteria.

Once these zones have been established, all trees located in these zones would be protected by the use of wire mesh. Any beaver activity within these zones would immediately be addressed using dam destruction, trapping, and/or euthanasia of the beavers.

4. Water Level Control Devices

Water level control devices can be used in areas where the flooding of water behind the dam becomes an issue. Although this does not address the issue of losing trees, it is an option to be used regulating the water height in the beaver pond. A number of individuals and groups have developed a variety of devices which attempt to control the water level in beaver ponds. The devices consist of some type of conduit, either rigid PVC plastic, corrugated plastic tubing, metal pipe, or fabricated wooden box or steel mesh cylinder. The conduit is used in conjunction with metal screening or fencing which is arranged to prevent beaver from plugging the conduit. Depending upon its design, the device is placed in or near a culvert pipe, bridge, road ditch, or beaver dam. Beaver continue to dam against the device, however, the devices are designed to maintain water flow in spite of the beaver's efforts.

The success of water level control devices appears to depend upon site conditions, watershed size, and the persistence of individual beaver. Where an acceptable level of impounded water can be determined, and where site conditions are suitable, these devices provide a good means for coexistence with beaver. With experience, Open Space staff will

develop criteria and techniques for the successful use of water level control devices in the open space. This is most likely to be true where:

a.) watershed size is relatively small,

b.) the topography of the site is such that there is a sufficient elevational difference between the pond water level and the facility that requires protection,

c.) the topography allows for the temporary storage of excess water near the beaver pond after heavy rains.

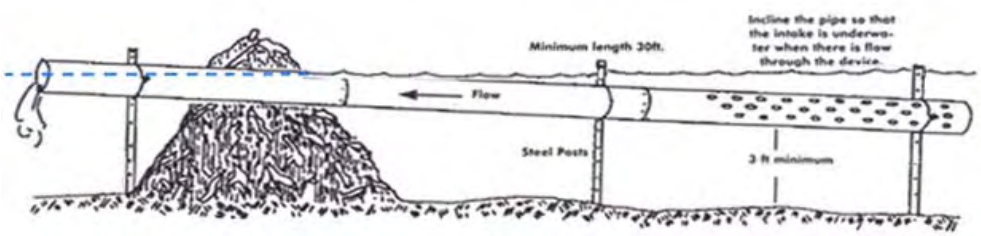

Diagram of water level control device for beaver dams, 2008

5. Live Trapping and Relocation

Where it can be determined that a.) the impacts of beaver activity cannot be tolerated and, b.) other strategies or devices are not effective or appropriate, then the animal(s) will be removed from the site and relocated.

Relocation of beavers is accomplished by a state licensed contractor. The contractor usually has relocation sites for the beavers in the foothills and mountains. Relocations are only allowed by CDOW between June and September. Although this can be a good option for positive public relations, it can be expensive and is not reliable for large beaver population reduction. There are only a few licensed contractors in Colorado and they are usually in high demand for the services throughout the summer. Licensed contractors will

be used to perform any relocation services. These contractors will be responsible for all aspects of relocation including finding appropriate relocation sites. To the extent possible, beaver family units will be relocated as a group. It should be noted that relocation of problem animals does not guarantee that new beavers won't re-inhabit the original beaver location.

Trapped beaver ready for relocation, 2008

6. Destruction of Animals

Where it can be determined that a.) the impacts of beaver activity cannot be tolerated, b.) available strategies and devices have not proven effective or appropriate, and c.) live-trapping and relocation is not possible, then problem animals will be destroyed.

This decision will be made by the POST committee after a review of all the facts and data. If this management route is chosen, City Council will be notified prior to the control. The City of Westminster Open Space staff will be responsible for initiating this process with a licensed contractor and overseeing any kill-trapping that becomes necessary. The most humane methods of euthanasia will be used by a licensed contractor. In most cases, entire beaver colonies will be targeted for removal as opposed to only portions of the colony.

Beavers live-trapped, 2008

7. Monitoring Actions

a.) Monitoring Beaver Activities in Problem Areas

Beaver activity in such areas will be inspected at least weekly by Open Space staff or volunteers, so that required management actions can be properly planned and implemented.

b.) Monitor Water Level Control Devices

Water level control devices will be inspected weekly following installation by Open Space staff or volunteers to ensure that they are functioning effectively. After a month of weekly inspections, monthly inspections will occur as long as beaver are active at a particular site.

c.) Monitor Beaver Population

The current inventory will be updated every 3 years. Newly affected areas will be identified. Currently active sites will be evaluated for impacts to sensitive resources. Estimates of the park's beaver population could be made from the GIS system, if and when that becomes necessary.

Cottonwoods along Big Dry Creek, 2008

WESTMINSTER

Coyote Management Plan

2009

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City of Westminster
Coyote Management Plan

I. PURPOSE

The purpose of this document is to provide a management strategy to be used by staff that aims at reducing human/coyote conflicts within the City of Westminster. Public safety is the City's the number one concern, and coyotes will be managed with human safety as a priority. While the City employs educational outreach tools as the primary tool in managing human/coyote conflicts, the City recognizes that there are situations where immediate lethal control may be necessary. This plan focuses on changing and adapting the behavior of the coyote through human interaction.

II. COYOTE BIOLOGY/BEHAVIOR

Canis latrans is the scientific name for coyote and it means barking dog. They are usually less than three feet tall and have erect, pointed ears, a slender muzzle and a bushy tail. Coyotes are brownish gray with a light gray to cream-colored belly. However, color can vary from nearly black to nearly white. Male coyotes can weigh 25 to 45 pounds while female coyotes weigh 22 to 35 pounds. Coyotes usually live an average of six to eight years in the wild.

Coyotes breed in January and February and have a gestation period of approximately 63 days. The young are usually born in March, April or May. While the average coyote litter is five or six pups, the reproductive potential of female coyotes is generally connected with population density and can range from 3 pups per litter in large populations to 12 pups per litter in smaller populations. Urban coyotes may make their dens in storm drains, under storage sheds, or in holes dug in vacant lots, parks, golf courses and similar sites. Coyotes are most active at night and in early morning, but can be seen any time during the day.

The coyote is one of the most adaptive of all wildlife species. Coyotes are found throughout North America from the remote regions of the mountains and prairies to highly urbanized areas. One of the keys to the coyote's success is its varied behavior and diet. It is an opportunistic feeder and will eat almost anything. Coyotes not only feed in the wild on deer, rodents, carrion, fruits, and insects, but also on domestic livestock, poultry, cats and dogs. Coyotes that have adapted to human population expansion or dispersed into developed suburban landscapes unoccupied by other coyotes tend to thrive in such environments. The ready supply of food, water and shelter helps coyotes survive in the suburbs and makes them tend to lose their fear of humans. Suburban coyotes have access to rodents, rabbits, household garbage, compost piles, pets, pet food, and water from ponds and landscape irrigation. Coyotes are extremely cautious of humans in areas where they are harassed, hunted or trapped.

However, in suburban areas, where they have lost their fear of humans, coyotes may associate people and their pets with an easy and dependable source of food. This has led to an increase in human/coyote as well as pet/coyote confrontations. Educating the public about coyotes and their behavior is a vital component of the Coyote Management Plan.

II. COYOTE EDUCATION OUTREACH

The education of the public is an important tool in this plan for humans and coyotes to coexist in a safe environment. The City of Westminster and the Colorado Division of Wildlife (CDOW) will work together to provide education and information to citizens on how to coexist with coyotes successfully. Human behavior is a large factor in the success of this program as we have the ability to change and adapt a coyote's behavior.

Examples of the education outreach:

1. Educational brochures will be made available in all city facilities.

2. Informational post cards will be mailed by CDOW to neighborhoods with 2human/coyote conflicts.

3. Coyote information will be made available to the City Edition and the City of Westminster website.

4. Coyote information will be part of the public service announcements (PSA) on Channel 8.

5. Educational human/wildlife conflict signs will be posted in appropriate parks and open spaces.

6. A link to the CDOW will be provided on the City of Westminster website.

7. Education programs for schools, HOAs, and other groups will be available by both CDOW and City of Westminster staff.

IV. COYOTE HAZING

One of the basic issues with urban coyotes is that they have lost their fear of humans. Over the years, coyotes have had more contact with humans because of habitat Encroachment and food supply issues. This has led to more coyote/human conflicts and abnormal behavior of the coyote. One of the solutions to this problem is to reinstall the coyote's fear of humans again. Coyote hazing is a program designed to help accomplish that. The coyote hazing program is divided into two parts—citizen and employee.

The citizen portion of the hazing program consists of implementing actions without the use of weapons or bodily harm to the coyote. Some examples of this would be shouting, clapping hands, whistles, or throwing rocks in a coyote's vicinity.

The employee portion of the hazing program would be used by staff and/or volunteers who have gone through a training program. These people may have the authority to elevate the hazing program by using sling shots, paint ball and pepper spray guns, etc. These actions are intended not to harm the coyote but rather to increase its fear of humans.

A. Coyote Hazing Techniques for Citizens

1. Shouting and clapping of hands
2. Use of a whistle or air horn
3. Running or bicycling toward a coyote
4. Throwing objects in the coyote's vicinity

B. <u>Coyote Hazing Techniques for Employees/Volunteers</u>

1. OC spray (pepper spray)
2. Sling shot to propel rocks
3. Paint ball guns
4. Sub munitions
5. Pepper ball guns
6. Cracker rounds
7. Less than lethal rounds, bean bags, rubber buck shot

V. MONITORING PROGRAM AND DEFINITIONS

One of the tools associated with this plan will be a monitoring program that would receive input from both the public and employees. The purpose of this monitoring program is to document where coyotes are frequently seen, how many coyotes are within the City of Westminster, to help identify dangerous coyotes, and to give staff an understanding of where the City needs to focus the management plan.

A standard monitoring form would be available on the City of Westminster's website that explains the different types of interaction. Citizens would be ncouraged to call a designated telephone number and be directed to give specific information. The following definitions have been defined by CDOW as the proper terms to be used when dealing with coyote issues. They are intended to easily identify the proper interactions between humans and coyotes.

A. <u>Interaction Definitions</u>

1. **<u>Observation</u>** - Noticing tracks, scat or vocalizations of coyotes in an area.

2. **<u>Sighting</u>** -A visual observation of a coyote made from a distance.

3. **<u>Encounter</u>**- An unexpected direct meeting between a human and a coyote without incident. A coyote may be in close proximity to a human but does not create an unsafe situation.

4. **Incident** - A conflict between a human and a coyote where a coyote exhibits behavior creating an unsafe situation. A coyote may show aggression towards a human without any physical contact. Example: A coyote who is within attacking distance (10') and does not back off, may bare his teeth, growls, etc.

5. **Attack** – A direct, aggressive physical contact by a coyote on a human or a pet on a leash. Example: A coyote who makes physical contact with a human or a pet on leash.

B. Coyote Behavior Definitions

It is important, based on the level of interaction between a coyote and a human, to identify a coyote as either a nuisance coyote or a dangerous coyote. The City of Westminster will only take lethal control actions on a dangerous coyote. These are the two terms that will be used when considering management levels.

1. **Nuisance Coyote**

A coyote may be defined as nuisance using the following guidelines:

a) A coyote that has been involved in a sighting and/or encounter and,

b) A coyote that may frequently associate with humans or human-related food sources, and may exhibit little wariness of the presence of people and,

2. **Dangerous Coyote**

A coyote may be defined as dangerous using the following guidelines:

a) A coyote that attacks/kills pets that are on-leash, off-leash in a dog park, and/or on private property and,

b) A coyote that has been involved in an incident and/or attack.

VI. CITY OF WESTMINSTER RESPONSES TO COYOTE/HUMAN INTERACTIONS

After staff has been notified of the specific coyote/human interaction, the following responses by appropriate City of Westminster staff will be implemented.

A. <u>To Observations, Sightings, and Encounters</u>:

1. Document caller's information.
2. Provide caller with information on urban wildlife and ways to mitigate conflicts.
3. Mail caller additional information or refer to City or state website.
4. Explain to caller the coyote hazing techniques for citizens.

B. <u>To Incidents and Attacks:</u>

1. Document caller's information.
2. Notify the CDOW.

3. Determine if lethal control is appropriate and initiate.

4. Notify City of Westminster's Public Information Officer with facts and information.

VII. CITYOF WESTMINSTER RESPONSE TO COYOTE/PET ENCOUNTERS

It is important for pet owners to be aware of the potential for coyote/pet interactions. Coyotes see pets as both prey and competition. Pet owners need to keep their pets on leash and under voice control at all times when in coyote habitat. There are three separate scenarios in which a pet could be attacked and/or killed by a coyote.

A. While Off Leash on Public Property

Pets are required to be on a leash within the City of Westminster except at the off-leash dog parks. Even when in the off-leash dog park, pets are required to be under voice command at all times. Pets should never be allowed to run free when coyotes are present.

City of Westminster Response

The City of Westminster will take no lethal action if a pet is attacked and/or killed while off leash. The exception may be if the attack occurred within a COW off-leash dog park.

B. While On Leash on Public Property

Even when on leash, pets may be attacked and/or killed by coyotes. This will be considered an incident or attack by definition.

City of Westminster Response

If a pet is attacked and/or killed by a coyote while on leash, the City of Westminster may consider this type of aggression as an incident/attack and lethal control actions may be initiated. See section VII.

C. While On Private Property

Pets may be attacked and/or killed while on their owner's property.

City of Westminster Response

If a pet is attacked and/or killed while on private property, the City of Westminster may consider this type of aggression by a coyote as an incident/attack and lethal control actions may be initiated. See section VII.

VIII. LETHAL CONTROL

The City may implement a program of lethal control when interactions between humans and coyotes threaten human safety. There are two different situations where lethal control of a coyote may be needed – immediate and post incident/attack.

A. Immediate Lethal Control – This is a situation where a coyote is jeopardizing human safety at the present moment. Where coyotes are posing an immediate safety threat to humans and some type of defense is necessary at that moment, Westminster Police Officers may take immediate lethal control actions. This is a situation where a decision is made on the spot by the police officer and does not need approval by a higher authority or CDOW.

B. Post-Attack Lethal Control – This is a situation where an incident/attack has already occurred. If a report of an incident/attack is verified, Staff will immediately contact CDOW and the appropriate City of Westminster personnel with the information. CDOW will have the authority to use lethal control on the specific coyote involved in the incident/attack and will carry out any lethal control actions. If CDOW is unable to perform the lethal control actions, an outside contractor may be hired. All information and facts will be forwarded to the City of Westminster Public Information Officer.

Lethal Control Steps

1. An incident or attack is reported by a citizen and verified by City of Westminster Staff.

2. Staff will immediately contact CDOW along with appropriate personnel in the City Manager's Office, the Police Department, and the Parks, Recreation and Libraries Department.

3. A decision may be made by CDOW and CMO to use lethal actions concerning the specific dangerous coyote. CDOW will implement these

lethal control actions. If CDOW is unable to perform the lethal control actions, an outside contractor may be hired.

4. All information will be forwarded to the City of Westminster Public Information Officer.

IX. ORDINANCES

There are both State of Colorado and City of Westminster ordinances that will be followed with the Coyote Management Plan.

State of Colorado ordinances:

33-1-106 gives the Wildlife Commission the authority to regulate the circumstances under which wildlife may be taken and to determine the disposition of usable portions of wildlife.

33-1-105(1)(h) gives the Wildlife Commission the authority to provide for destruction of any wildlife that poses a threat to public health, safety, or welfare.

33-6-107(9) permits any person, any member of such person's family, or any employee of the person to hunt, trap, or take coyotes on land owned or leased by the person without securing licenses to do so, but only when such wildlife is causing damage to crops, real or personal property, or livestock.

Wildlife Commission **Regulation 303 (A)** prohibits the relocation of coyotes without a permit. Studies have shown that relocation is not an effective solution to coyote conflicts. The Colorado Division of Wildlife (CDOW) generally will not authorize the relocation of coyotes.

33-6-205 gives federal, state, county or municipal departments of health the ability to grant an exemption to Amendment 14 to take (by use of leg hold traps, snares, instant kill body-gripping design traps or poisons) wildlife for the purpose of protecting human health and safety.

City of Westminster ordinances:

6-2-9: FIREARMS: (1224 2001 3070)

(A) It shall be unlawful for any person to intentionally, knowingly or recklessly discharge firearms, deadly weapons or destructive devices of any kind or description within the limits of the City; provided, however, that this shall not apply to police officers in the discharge of their duties.

"Firearm" shall mean any instrument or device used in the propulsion or discharge of shot, slugs, shells, cartridges, bullets or other harmful objects

or projectiles by the action of gunpowder exploded or burned within it, or by the action of compressed air within it, or by the power or action of springs, and including what are commonly know as air rifles, air pistols and B-B guns.

13-1-3: USE REGULATIONS: (796 847 1889 2811) It shall be unlawful for any person to fail to comply with the following:

R) Weapons. Discharge, fire, or shoot any firearm, air gun, slingshot or bow and arrow or other projectile or projectile launching device on any park except at places designated and posted specifically for such purposes.

(S) Fauna - Disturbing Wildlife. Take, seize, molest, injure or hunt any bird, reptile, fish or animal in any park or community building, or portion thereof unless posted specifically for that purpose or with the expressed written consent of the Director, and in compliance with the game, fish and wildlife laws of the State of Colorado.

Typical shortgrass prairie

F. THE SHORTGRASS PRAIRIE ECOSYSTEM

The City of Westminster owns and manages almost 3,000 acres of open space land. Many of these acres are remnants of a shortgrass prairie ecosystem that at one time were part of a large, continuous prairie that covered most of the land now known as the Denver metro area. The prairie ecosystem is a national treasure for its role in the creation of our nation, but it is also important ecologically as a biome of astounding diversity and ecological significance. The subtle beauties of prairie grasses and wildflowers remain one of the great unappreciated beauties of nature. It is the intent of the City of Westminster's Open Space Program to preserve these properties and to enhance and restore the shortgrass prairie ecosystem.

The shortgrass prairie lies along the eastern edge of the Rocky Mountains, from New Mexico north to Alberta. Storm fronts traveling east across the continent from the Pacific Ocean lose their moisture as they climb over the Rockies, and the resulting rain shadow creates the driest conditions found on the Great Plains. These semi-arid conditions support only limited plant growth, and the ankle-high vegetation of the shortgrass prairie is the result.

ECO FACT: The Colorado shortgrass prairie ecosystem supports more than 100 threatened, endangered, or declining plant and animal species.

Shortgrass prairie is dominated by two low-growing warmseason grasses, blue grama and buffalograss. Western wheatgrass is also present, along with taller vegetation such as prickly-pear, yucca, winterfat, and cholla. Pockets of mixed-grass prairie (including needle-and-thread and side-oats grama) and tallgrass prairie (including big bluestem, little bluestem, and switchgrass) can be found where moisture is adequate.

The shortgrass prairie landscape has been shaped over time by the forces of climate, grazing, and fire. Precipitation, for example, was lower and more unpredictable than in either the mixed-grass or tallgrass prairies. Droughts were not uncommon, and vegetation growth was variable from year to year. These climatic conditions still persist today. Another force shaping the prairie is grazing. Before widespread settlement by European-Americans, a major grazing force came from the expanding, contracting, and shifting prairie dog colonies and bison herds. The impact of their grazing and trampling was spread unevenly over the landscape. The result of these activities was that, at any given time, some areas were grazed intensively and others not at all, creating a diversity of habitat conditions across the landscape.

Fire has long been an important ingredient in the health of the prairie ecosystem. Although fires were probably not as frequent in shortgrass prairies because of the lack of tall, dense grass as fuel, it still served as a way of removing woody vegetation along with old growth. Native grasses are revitalized after fire has eliminated the competition from other vegetative species. Today, humans still use fire as a way of restoring and improving prairie habitats.

Restoring and maintaining a vital shortgrass prairie ecosystem is an important aspect in open space management. The wildlife diversity that a shortgrass prairie supports makes it a rare and unique natural resource located in an urban city like Westminster. Proper stewardship is needed to not only enhance this environment but also to keep this ecosystem in balance.

Blue grama grass

Management and Restoration of Shortgrass Prairie

In order for these grasslands to stay vital and support a wide diversity of wildlife, best management practices of these properties need to be followed. The City of Westminster has both large tracts of grasslands in the western part of the city and also small pockets of grasslands amid residential areas. The management of these sights will differ according to size and location.

- Mowing of open space properties will be kept to a minimum. Most native shortgrass species spread by way of seed distribution so it is important to let grasslands go to seed before any type of grazing, haying, or burning is used. Mowing may be used along fencelines, trails, and/or curblines on open space sites for aesthetic and fire safety purposes.

- On large open space tracts, the use of fire and/or grazing may be used to promote healthy grasslands. Best management practices would always be followed when using fire and/or grazing. These practices would effectively control noxious weeds as well as increasing the vigor of native plants. If fire is used as a tool, it would be managed through the City of Westminster Fire Department.

- Noxious weeds will compete against native grasses. An integrated noxious weed control plan will be used in shortgrass prairie ecosystems. See Weed Management Section for details.

Re-Seeding Efforts on Big Dry Creek Open Space

There will be times when open space properties are damaged to the point where restoration practices need to be implemented. The damage could be caused by prairie dog overpopulation, construction projects, or adverse weather conditions. It is important that proper restoration practices are followed to ensure the best chance of success. The following methods will be used during restoration of shortgrass prairie projects.

- *Timing* – The "planting window" for native shortgrass species is between October 1 and April 30. Most, if not all, open space sites will not have irrigation. Planting in the fall will allow the seeds to take advantage of any winter and spring snowfall.

- *Planting* – Native grass seed will establish most successfully if it is "drilled" into the soil about 1/4 to 3/8 inches deep. No-till drills will plant the seed in the soil without the need of breaking-up the soil. This allows any existing native vegetation to keep growing along with the newly planted seed.

- *Weeds* – Weeds will more than likely appear before any grass seedlings. There are countless seeds in the soil waiting for an opportunity to grow. If weeds get too tall or thick, they can be cut at a six or eight inch height. Herbicides should not be used until grass plants are well-established. If wildflowers and/or shrubs are sown with the grasses, then <u>all</u> herbicide use is precluded.

- *Seed* – Native grass species should be the first choice in any revegetation project in open space sites. Native grasses possess traits – accrued over thousands of years of evolution – that make them desirable for long-term survival here. Although the mix of grass seed may vary from site to site, the following shortgrass species, recommended by the Jefferson County Conservation District, will be used when planting:

  blue grama
  buffalograss
  western wheatgrass
  Canby bluegrass
  Arizona fescue
  sandberg bluegrass
  slender wheatgrass
  little bluestem

- *Patience* – It may take at least two growing seasons on non-irrigated plantings before any reasonable judgment of establishment success can be made. It's not uncommon to witness good stands developing even later, however. Native grasses are the products of thousands of years of survival and may lay in the ground for years before the right conditions will initiate germination.

ECO FACT: Prairie plants have adapted to harsh environments by growing massive, underground root systems, some more than 7 feet in length.

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WESTMINSTER HILLS OPEN SPACE

The Westminster Hills Open Space is a large tract of land comprising approximately 1,000 acres on the western edge of the City of Westminster. Purchased as open space in the early 1990's for its open views, wildlife habitat, and native vegetation, this site stood as the benchmark for all other open space areas within the City. Soon after acquisition of the property, this site was designated as a prairie dog habitat in an effort to save and relocate prairie dogs from other developments within the City. Over the years, the prairie dog population on this site steadily increased and eventually exceeded the carrying capacity of the site. Soil erosion and noxious weed infestations soon became serious issues on this site. After an outbreak of bubonic plague and a major reduction in the prairie dog population in 2009, this site is targeted for native grass revegetation and a return to a balanced ecosystem.

Westminster Hills Open Space circa 1998

Westminster Hills Open Space 2009

G. RIPARIAN ZONE ECOSYSTEMS

The word "riparian" is derived from Latin *ripa*, meaning river bank, and is characterized as the interface between land and a flowing surface water body. Plant communities along the river margins are called riparian vegetation, characterized by native, hydrophilic plants. Riparian zones, including wetlands, are significant in ecology and environmental management due to their role in soil conservation, wildlife and plant biodiversity, and the influence they have on aquatic ecosystems. These zones are important natural biofilters by protecting aquatic environments from excessive sedimentation, polluted surface runoff and erosion.

ECO FACT: A riparian zone can trap up to 90% of sediments being transported in the stream.

Stream corridors provide a transportation highway for a wide diversity of wildlife and facilitate nutrient transfer. In addition to the many moisture-loving plants that grow in riparian zones, a variety of animals make use of the special environment found in this waterside environment. Riparian zones serve as valuable foraging grounds for large mammals while attracting insects that fish, birds, and amphibians feed upon. The biodiversity that riparian zones encourage makes them a valuable part of the ecosystem.

Big Dry Creek Open Space

THREATS TO RIPARIAN ZONES

- Riparian areas are threatened by large-scale destruction with expanding urban, agricultural and residential neighborhoods.
- Impervious surfaces in urban areas can destroy riparian areas as more water flows quickly into streams and other water bodies.
- Construction activities, if not carefully monitored, can cause excessive sediment to be washed into water bodies, where it can smother fish spawning beds and injure aquatic life.
- Shoreline modification through hardening (i.e. with protective walls) and vegetation removal around lakes and wetlands reduces riparian habitat.
- Invasive species such as Russian-olive, Tamarisk, and Purple Loosestrife threaten riparian areas by out-competing native plants and generally providing inferior wildlife habitat and food. They may also substantially alter the natural hydrology of streams and wetlands, for example, by clogging up water channels.
- Pollution from automobiles, industries, household chemicals, fertilizers and sewage threatens riparian areas. Toxic chemicals may kill off beneficial plants and animals, and excess nutrients can cause algae blooms that rob the water of oxygen.

FEDERAL WETLAND PROTECTION REGULATION

Section 404 of the Clean Water Act (CWA) establishes a program to protect wetlands by regulating the discharge of dredged or fill material into wetland waters of the United States. Activities in waters of the United States regulated under this program include fill for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports) and mining projects. Section 404 requires a permit before dredged or fill material may be discharged into waters of the United States, unless the activity is exempt from Section 404 regulation (e.g. certain farming and forestry activities.)

The basic premise of the program is that no discharge of dredged or fill material may be permitted if:
(1) a practicable alternative exists that is less damaging to the aquatic environment, or
(2) the nation's waters would be significantly degraded..

ECO FACT: More than one-third of the nation's threatened & endangered species live only in wetlands.

In other words, when you apply for a permit, you must show that you have, to the extent practicable:

- Taken steps to avoid wetland impacts;
- Minimized potential impacts on wetlands;
- Provided compensation for any remaining unavoidable impacts.

Proposed activities are regulated through a permit review process. An *individual permit* is required for potentially significant impacts. Individual permits are reviewed by the U.S. Army Corps of Engineers, which evaluates applications under a public interest review, as well as the environmental criteria set forth in the CWA Section 404(b)(1) Guidelines. However, for most discharges that will have only minimal adverse effects, a *general permit* may be suitable. General permits are issued on a nationwide, regional, or State basis for particular categories of activities. The general permit process eliminates individual review and allows certain activities to proceed with little or no delay, provided that the general or specific conditions for the general permit are met. For example, minor road activities, utility line backfill, and bedding are activities that can be considered for a general permit. States also have a role in Section 404 decisions, through State program general permits, water quality certification, or program assumption.

Yellow-headed blackbird at Mower Reservoir

RIPARIAN ZONE MANAGEMENT PRACTICES

The City of Westminster has preserved many riparian zone habitats through the Open Space program. They range in size and diversity and they all have a vital role in the overall open space experience. Riparian zones have a large impact on wildlife species, vegetative species, and ecological health and need to be managed in ways that preserve and promote their well being. Proper management of these areas will include the following guidelines:

- Shorelines and streambanks will be protected from erosion using natural methods whenever possible.
- Invasive vegetative species will be controlled and eliminated whenever possible. See Integrated Pest Management Plan.
- Sediment control measures will be implemented to prevent sediment from entering watersheds.
- Only native species of vegetation will be used for planting and revegetation projects.
- Wildlife nesting sites will be enhanced and protected.
- Native tree species will be protected wherever possible from potential beaver damage.
- Proper water quality procedures will be followed to insure high water quality standards

H. WOODY VEGETATION

Native stands of trees as well as woody shrublands are vital to the ecology of our Open Space properties. Westminster strives to provide sound stewardship for these areas, and management decisions will be made in a manner to best protect, maintain and preserve them. Natural stands of trees and shrublands are quite limited within our City, and for this reason they provide unique environmental, social and aesthetic benefits for our community. These wooded habitats are a critical source of food and shelter for wildlife populations, and it is important that we maintain these areas by preventing unnecessary destruction and promoting native plantings where appropriate.

Plains Cottonwoods near Standley Lake

Environmental Benefits

Large trees play an important role in improving the environment. Their broad spreading canopies cool and moderate temperatures. The leaves of trees act as natural filters for our air. Dust and other particulates collect on leaves later to be washed to the ground by precipitation. Harmful pollutants such as ozone, carbon monoxide, and sulfur dioxide are taken in by the leaves of trees while oxygen is released. Carbon is pulled from the atmosphere and sequestered within the large trunks and branches of trees. During storm events, trees act as a buffer from powerful winds. Woody plants intercept rain water, store some of it, and reduce storm runoff and the possibility of flooding. The dense root systems of well established shrubs along the banks of creeks hold together stream banks and prevent erosion during high flow periods. Our natural stands of trees and shrubs offer so many important benefits to our City's environment, and it is important to remember these often unnoticed contributions.

ECO FACT: One tree can remove 26 pounds of carbon dioxide from the atmosphere annually, equaling 11,000 miles of car emissions.

Aesthetic and Social Benefits

Wooded natural areas within Westminster are worth a great deal to our residents. It can be difficult to precisely measure the emotional and social benefits of these areas, but it is quite easy to present the examples. Whether it is the scenic view of a bald eagle perched atop a massive cottonwood on the horizon, or the quality experience a family can have enjoying the outdoors in the shade of native willows. These areas have the potential to provide a powerful connection to nature, and Westminster recognizes how valuable this is to our community.

Residents often form connections with individual large trees or even entire natural areas. This bond is often shared by entire communities bringing together neighbors with common appreciation for what they feel are their pieces of nature. An emotional attachment by a large number of people to a City's public natural area can be a very powerful and beneficial tool for volunteer programs, community outreach, and preservation.

Interaction with Wildlife

Stands of trees and the shelter of smaller woody plants provide a wide range of benefits for wildlife. The upper branches of trees serve as a secure nesting site for large raptors, and the decaying trunks of dead trees provide the shelter needed for species of cavity nesting birds. Many smaller mammals also take advantage of the rotting hollows of downed trees, and the dense twisting branches of shrublands act as a safe haven for many creatures. The ever busy beaver fells trees and collects smaller twigs and stems from riparian shrubs to modify an area to suit his well being.

Several trees and shrubs produce food for animals. Migratory birds clean off the persistent berries of hawthorn trees and the fleshy fruits of the American plum provide a late summer treat for foxes, coyotes and raccoons. Dead and dying trees are typically infested with native bark beetles and wood borers that serve as a food source for animals.

It is important to note that it is not just living trees that provide food and shelter for wildlife, but it is also extremely important for the ecosystem to allow dead standing trees as well as downed logs and debris to remain within our Open Space areas.

Bald Eagle perched in a Plains Cottonwood

Protection and Preservation

There are times when some form of land disturbance must take place upon the grounds of an Open Space property. Planning for disturbance will consider all options to minimize disturbance to trees and shrublands. Prior to the initiation of these events all efforts will be made to protect and preserve woody plants. Wooded areas or notable individual trees will be fenced off to delineate allowed areas of disturbance in an effort to preserve established plants and limit damage to critical root zones. Penalties for unauthorized damages will be enforced, and any woody plants removed or destroyed will be replaced at the expense of the violator to the standards set by Open Space staff.

There are times when nature may pose a threat to our native vegetation, and each of these situations will need to be evaluated on a case by case basis to decide the best response necessary. It is encouraged to allow natural processes to run their course, but there will be instances where actions must be taken to control losses or serious damages to woody plants. Some examples of these cases are as follows: invasion of non-native species, outbreak of a threatening insect or disease, beaver activity, etc.

ECO FACT: Standing dead trees, or snags, provide food, safe nesting sites, roosting platforms, hunting perches, display stations, and foraging sites for at least 50 different species of birds and mammals.

Tree Maintenance and Public Safety

The safety of the public is always held as a top priority for our community, and the maintenance of Open Space woody plants will revolve around this principal. Trimming or removal of trees of and shrubs will only take place when there is deemed to be some threat to public safety. Trails will be monitored for obstruction by vegetation, and tree deadwood with the potential to strike these areas will be assessed for risk. As dead trees and branches are highly desired within our Open Space properties, only those deemed to by a serious threat to a high use area will be mitigated. Downed limbs, tree leaves and other tree debris will be left on site to promote nutrient cycling, seed germination, and wildlife shelter.

Our Native Plants

Based on funding, it is the intention of the Open Space program to promote the health and establishment of vegetation that is considered to be native to Colorado. New plantings will consist of approved plant materials, and use of non-native trees or shrubs will not be permitted. Existing non-native trees and shrubs will be allowed to remain within a natural area only if they are determined to hold little threat to the natural balance of that ecosystem. There are often arguments of which trees and shrubs are truly native specific areas, and we've considered many sources to determine what is right for our properties. Below is a list of trees followed by a list of shrubs determined to suit our Open Space properties.

Westminster Open Space Trees

Acer glabrum – Rocky Mountain Maple
Acer grandidentatum – Bigtooth Maple
Acer negundo – Boxelder
Alnus tenuifolia – Thinleaf Alder
Betula nana – Bog Birch
Betula occidentalis – Western River Birch
Celtis laevigata var. reticulata – Netleaf Hackberry
Crataegus rivularis – River Hawthorn
Crataegus salinga – Black Hawthorn
Fraxinus anamola –Singleleaf Ash
Juniperus monosperma – Oneseed Juniper
Juniperus scopulorum – Rocky Mountain Juniper
Malus communis – Common Apple
Pinus edulis – Pinyon Pine
Pinus ponderosa – Ponderosa Pine
Pinus strobiformis Western White Pine
Populus angustifolia – Narrowleaf Cottonwood
Populus sargentii – Plains Cottonwood
Populus x acuminata – Lanceleaf Cottonwood
Prunus americana – American Plum
Ptelea trifoliata – Wafer Ash
Quercus gambelii – Gambel's Oak
Quercus undulata – Wavyleaf Oak
Quercus turbinella – Shrub Live Oak

Salix amygdaloides – Peachleaf Willow
Sorbus scopulina – Greene's Mountain Ash

Westminster Open Space Shrubs

Amelanchier alnifolia – Western Serviceberry
Amorpha canescens – Leadplant
Artemisia cana – Silver Sagebrush
Artemisia tridentate – Mountain Sagebrush
Atriplex canescens – Fourwing Saltbrush
Cercocarpus intricatus – Little-leaf Mountain Mahogany
Cercocarpus ledifolius - Curl-leaf Mountain Mahogany
Cercocarpus montanus – True Mountain Mahogany
Chamaebatiaria millefolium – Fernbush
Chrysothamnus greenei – Greene's Rabbitbrush
Chrysothamnus nauseosus – Rubber Rabbitbrush
Chrysothamnus viscidiflorus – Yellow Rabbitbrush
Ephedra viridis – Mormon Tea
Fallugia paradoxa – Apache Plume
Forestiera neomexicana – New Mexican Privet
Holodiscus dumosus – Mountain Spirea
Jamesia americana – Cliffbush
Juniperus communis – Common Juniper
Krascheninnikovia lanata – Winterfat
Lonicera involucrate – Twinberry Honeysuckle
Mahonia repens – Oregon-grape Holly
Pentaphylloides floribunda – Shrubby Cinquefoil
Peraphyllum ramosissimum – Squaw Apple
Philadelphus lewisii – Lewis' Mockorange
Physocarpus monogynus – Mountain Ninebark
Physocarpus opulifolius – Common Ninebark
Prunus besseyi – Western Sandcherry
Prunus virginiana – Chokecherry
Purshia tridentata – Antelope Bitterbrush
Rhus glabra – Smooth Sumac
Rhus trilobata – Threeleaf Sumac
Ribes aureum – Golden Currant
Rosa woodsii – Wood's Rose
Rubus deliciosus – Boulder Raspberry

Salix spp. – Native Willow Species
Shepherdia argentea – Silver Buffaloberry
Symphoricarpos albus – Common Snowberry

ECO FACT: Snowberry is unlike almost any other plant in the world because of its white berries.

American Plum at Hyland Ponds Open Space

I. INTEGRATED PEST MANAGEMENT

Purpose of a Weed Management Plan

One of the most serious and fastest growing problems in the West today is the spread and establishment of invasive non-native plants. Noxious weed infestations have contributed to the loss of agricultural productivity and ecological functions on both public and private lands, including some of Westminster's most valuable and productive wildlife habitat. Noxious weeds pose a serious threat to the integrity of our natural resources. These non-native plants compete aggressively against native species for nutrients, water, and space. If left unchecked, these noxious weeds have a tremendous capacity to invade native plant communities and suppress or eliminate their ability to survive.

The City of Westminster Open Space properties were purchased with the intent of preserving lands in their most natural habitat. These lands provide a wide range of plant and animal interactions and this biological diversity is critical to the overall environmental and economic value of the Open Space properties.

Common Teasel and Russian-olive along Big Dry Creek

The City of Westminster will strive to be a Colorado leader in the management and control of noxious weeds through the establishment of an Integrated Pest Management (IPM) Plan. This plan will use a combination of public education, prevention, and a complete integrated approach of weed control to accomplish set goals. The purpose of this plan is to provide a decision making guide for effective noxious weed control and determine management strategies for noxious weed control on all City of Westminster open space properties.

Action taken will consist of:

* Define the open space property boundaries.
* Inventory and map the property for weeds.
* Formulate management goals and objectives.
* Set priorities for weed management.
* Select management actions.
* Develop an integrated weed management plan.
* Develop a monitoring plan.

ECO FACT: Field Bindweed seed can stay alive up to 50 years.

What is a Noxious Weed???

"Noxious weed" means an alien plant or parts of an alien plant that have been designated by rule as being noxious or has been declared a noxious weed by a local advisory board, and meets one or more of the following criteria (Colorado Revised Statutes 35-5.5-103):

- Aggressively invades or is detrimental to economic crops or native plant communities.
- Is poisonous to livestock.
- Is a carrier of detrimental insects, diseases, or parasites.
- The direct or indirect effect of the presence of this plant is detrimental to the environmentally sound management of natural or agricultural ecosystems.

Colorado State Weed Law

In recognition of the economic and ecological impacts of weeds, the State of Colorado adopted the Colorado Weed Management Act (also known as

the Colorado Noxious Weed Act) in 1990, amended in 1996. The act requires landowners and managers to manage noxious weeds if those weeds are likely to damage neighboring lands. The act stipulates that:

1. Each county and municipality in Colorado must adopt a Noxious Weed Management Plan for its jurisdiction.

2. Each county and municipality's governing body shall appoint an undesirable weed management advisory board.

3. As a part of its Noxious Weed Management Plan each county or municipality must form a designated noxious weed species list for its area in which the management plan would target.

Landowners and managers are responsible for controlling these identified damaging species. If they fail to do so, the county or municipality may legally enter the property, control weeds, and charge the landowner for the cost of control work.

Colorado Noxious Weed List

The State of Colorado, in an effort to efficiently control and eradicate specific noxious weeds, has formed a Colorado Noxious Weed List. The State of Colorado recognizes that some noxious weed species have established populations past the point of reasonable eradication. Therefore, this list is aimed at prioritizing which weeds should be targeted for control first.

List A species in Colorado that are designated by the Commissioner for *eradication*:

A – List

African rue
(*Peganum harmala*)

Camelthorn
(*Alhagi pseudalhagi*)

Common crupina
(*Crupina vulgaris*)

Cypress spurge
(*Euphorbia cyparissias*)

Dyer's woad
(*Isatis tinctoria*)

Giant salvinia
(*Salvinia molesta*)

Hydrilla
(*Hydrilla verticillata*)

Meadow knapweed
(*Centaurea pratensis*)

Mediterranean sage
(*Salvia aethiopis*)

Medusahead
(*Taeniatherum caput-medusae*)

Myrtle spurge
(*Euphorbia myrsinites*)

Orange hawkweed
(*Hieracium aurant*)

Purple loosestrife
(*Lythrum salicaria*)

Rush skeletonweed
(*Chondrilla juncea*)

Sericea lespedeza
(*Lespedeza cuneata*)

Squarrose knapweed
(*Centaurea virgata*)

Tansy ragwort
(*Senecio jacobaea*)

Yellow starthistle
(*Centaurea solstitialis*)

ECO FACT: Purple loosestrife can produce 2-3 million seeds per plant every year.

List B weed species are species for which the Commissioner, in consultation with the state noxious weed advisory committee, local governments, and other interested parties, develops and implements state noxious weed management plans designed to *stop the continued spread of these species*:

B - LIST

Absinth wormwood
(*Artemisia absinthium*)

Black henbane
(*Hyoscyamus niger*)

Bouncingbet
(*Saponaria officinalis*)

Bull thistle
(*Cirsium vulgare*)

Canada thistle
(*Cirsium arvense*)

Chinese clematis
(*Clematis orientalis*)

Common tansy
(*Tanacetum vulgare*)

Common teasel
(*Dipsacus fullonum*)

Corn chamomile
(*Anthemis arvensis*)

Diffuse knapweed
(*Centaurea diffusa*)

Eurasian watermilfoil
(*Myriophyllum spicatum*)

Hoary cress
(*Cardaria draba*)

Houndstongue
(*Cynoglossum officinale*)

Jointed goatgrass
(*Aegilops cylindrica*)

Leafy spurge
(*Euphorbia esula*)

Mayweed chamomile
(*Anthemis cotula*)

Moth mullein
(*Verbascum blattaria*)

Musk thistle
(Carduus nutans)

Oxeye daisy
(*Chrysanthemum leucanthemum*)

Perennial pepperweed
(*Lepidium latifolium*)

Plumeless thistle
(*Carduus acanth..*)

Quackgrass
(*Elytrigia repens*)

Russian knapweed
(*Acroptilon repens*)

Russian-olive
(*Elaeagnus angustifolia*)

Salt cedar
(*Tamarix chinensis*)

Scentless chamomile
(*Matricaria perforate*)

Scotch thistle
(*Onopordum acanthium*)

Spotted knapweed
(*Centaurea maculosa*)

Spurred anoda
(*Anoda cristata*)

Sulfur cinquefoil
(*Potentilla recta*)

Venice mallow
(*Hibiscus trionum*)

Wild caraway
(*Carum carvi*)

Yellow nutsedge
(*Cyperus esculentus*)

Yellow toadflax
(*Linaria vulgaris*)

List C weed species are species for which the Commissioner, in consultation with the state noxious weed advisory committee, local governments, and other interested parties, will develop and implement state noxious weed management plans designed to support the efforts of local governing bodies to facilitate more effective integrated weed management on private and public lands. *The goal of such plans will not be to stop the continued spread of these species but to provide additional education, research, and biological control resources to jurisdictions that choose to require management of List C species.*

C – List

Chicory
(*Cichorium intybus*)

Common burdock
(*Arctium minus*)

Common mullein
(*Verbascum thapsus*)

Common St. Johnswort
(*Hypericum perforatum*)

Downy brome
(*Bromus tectorum*)

Field bindweed
(*Convolvulus arvensis*)

Halogeton
(*Halogeton glomeratus*)

Johnsongrass
(*Sorghum halepense*)

Perennial sowthistle
(*Sonchus arvensis*)

Poison hemlock
(*Conium maculatum*)

Puncturevine
(*Tribulus terrestris*)

Redstem filaree
(*Erodium cicutarium*)

Velvetleaf
(*Abutilon theophrasti*)

Wild proso millet
(*Panicum miliaceum*)

ECO FACT: Alien weeds are spreading and invading nearly 1,730,000 acres of the U.S. wildlife habitat each year.

Russian-olives

Just like field bindweed, Canadian thistle, and common teasel, Russian-olives can be found on the State's noxious weed list. Once heavily planted as windbreak species and ornamentals, these trees will establish very easily along riparian corridors. Their heavy seed production allows Russian-olives to populate entire streambanks and through time this species will easily exclude all other tree species from the area.

The Big Dry Creek corridor is a prime example of this occurrence. As Russian-olives take over riparian corridors throughout the City, this lack of bio-diversity is evident in not only tree species but also wildlife species. Native trees provide shelter and food for many insects, birds, and animals that cannot thrive in areas dominated by Russian-olives. Research has shown that the total number of bird species using Russian-olives has greatly declined.

It is ecologically important to eliminate Russian-olives in our open space sites and replace them with native trees. The City of Westminster has formulated a Russian-olive termination (ROT) program designed to use volunteer staff to cut down the trees and then chip them up for mulch. This program was started in the mid 1990's and has eliminated thousands of Russian-olives in open space. This is an ongoing endeavor, with success noted in areas along Walnut Creek, Hyland Ponds, and Big Dry Creek Open Space.

ECO FACT: Russian olives support lower densities and species diversification of breeding birds than do native tree species.

Before Russian-olive control

After Russian-olive control

IPM – Integrated Pest Management Plan

This is a management strategy that focuses on a long-term prevention, suppression, and the ability to slow or stop the spread of noxious weed species within the City of Westminster. This strategy will minimize the impact on the ecosystem, human health, and non target plant species. It is important to recognize weeds did not appear overnight and any management strategy should be viewed as an ongoing persistent approach.

Integration is the combination of many different methods of treatment designed to work cooperatively to stress, suppress and potentially eradicate the undesirable weed species. Treatment methods used in an IPM include **Prevention, Mechanical, Physical, Chemical, Cultural, and Biological** practices. These methods are chosen based on criteria dealing with economic cost, environmental impacts, and aesthetic damage the treatment methods may likely cause.

The objective of an IPM program is not necessarily the total eradication of a targeted noxious weed, but rather the suppression of the weed population below the level at which is considered acceptable by Colorado State Law.

ECO FACT: An estimated 5,000 alien plant species now exist in natural ecosystems, where they compete against the native plant species.

Goals of the IPM Plan:

- Develop Integrated Management Programs for target weed species on all Westminster Open Space properties. Selected control methods will be based upon the capabilities of staff, equipment, and resource availability.

- Develop preventative measures for Open Space properties to prevent the introduction and establishment of noxious weeds.

- Create an educational program that will effectively communicate the impacts of noxious weeds to the citizens and landowners of Westminster.

- Establish an open space noxious weed priority list.

- Develop and maintain a noxious weed inventory through GPS mapping of all Westminster Open Space properties to establish population densities and monitor control effectiveness.

- Maintain targeted noxious weeds at or below levels considered by staff to be acceptable.

- Ensure that all proper staff members are educated regarding current weed laws, herbicide handling, proper personal protective equipment, and herbicide application procedures.

- Increase the involvement of our Open Space volunteer program focusing on assisting in noxious weed control.

- Insure the Open Space advisory board is kept informed as to the progress of the IPM program.

- Establish a public education program concerning noxious weeds and IPM management practices.

Prevention

The most important weed management action is to prevent weeds from becoming established in the first place. It is difficult for noxious weeds to establish themselves in areas where the native plant population is healthy and vigorous. Weeds specialize in colonizing highly disturbed ground. Weeds possess a number of physical traits that allow them to arrive at disturbed sites sooner and grow faster than other plants. With these advantages they are able to outcompete native species. Any disturbance of the native plant community will open the door for the invasion of noxious weeds. Utility and sewer line repairs, construction projects, off-road vehicles, social trails and various other disturbances are examples that cause negative impacts on Westminster's native plant communities.

These preventative practices should be followed on all Westminster Open Space and Native Grassland properties:

- Any disturbances of Open Space and native grasslands should not be permitted unless absolutely required.

- If disturbance is required, proper revegetation techniques must be used in order to reclaim the land to its original condition.

- Avoid transporting weed seeds which are stuck on clothing, or gear. Avoid driving in noxious weed infested areas. Limit driving to trails and roads when possible.

- Inspect equipment for weed seeds before it enters the property. Require that such equipment be cleaned first to remove weed seeds before being allowed entry. Clean equipment which has been used in weed infested areas before moving it to another area.

- Any hay or straw mulch used for seeding or erosion control purposes must be certified weed-free by the State of Colorado.

- Any seed used must be certified weed-free by state of Colorado.

Mechanical/Physical

- **Mowing** – Mowing is effective in preventing tall, erect biennial weed species such as teasel from setting seed when other control techniques are not feasible. It also prevents the "tumbling" action of certain weed species such as diffuse knapweed, kochia and Russian thistle that spreads seeds of these species across wide areas. Mowing can weaken weed plants by depleting root and rhizome reserves through repeated mowing. Limitations include site accessibility, seed dispersal from mow equipment, root stalk in some weeds will continue to repopulate, and mowing alone will not eliminate noxious weeds.

- **Pulling** – Hand pulling of noxious weeds can be an effective control method of small infestations when combined with additional techniques. Westminster volunteers can assist in this form of control.

- **Cutting** – Westminster volunteers have established a (ROT) Russian Olive Terminators program to help combat the Russian Olive tree that has substantially infested riparian areas throughout the city. Trees are cut with chain saws and chipped on site while stump cambium is treated chemically. Common Teasel is also cut in mid July prior to seed formation. Salt Cedar is immediately cut and removed whenever sited in the City of Westminster. Cutting usually is accompanied by additional methods to be completely effective.

- **Prescribed Burning** – Prescribed burning is a complicated yet valuable tool in noxious weed management.

- **Grazing** – Land managers can use cattle, sheep and goats to selectively graze certain weed species, thereby weakening them. There is a need to manage the intensity and duration of livestock grazing carefully to avoid overgrazing, and allow desirable species to recover from grazing impacts.

ECO FACT: Goats are valuable weed management tools as they prefer to eat thistle over native grasses when it is present.

Chemical

Chemical herbicides will always be the last alternative to weed control and will be used in combination with other options. Although herbicides may have a distinct usefulness in the management of noxious weed populations, it is important to remember that more is not necessarily better as weeds may develop resistance to a particular herbicide over time. The IPM is designed around the fact that one method of management isn't likely to work by itself and the control of noxious weeds must be approached by a system of management options. Herbicides alone are not the answer, and it will take combined methods over several years to have a positive effect.

The following issues will be carefully considered before using herbicides:

- The protection of non-target organisms, as well as the depth of the water table and distance to surface water bodies. Certain herbicides may not be used around or on water.
- The target weed species and its biological composition.
- Anticipated weather conditions: Wind speed, precipitation forecast, temperature extremes.
- Herbicides must be applied in conformance with the label. With herbicides, the label is the law, and applying an herbicide beyond the bounds specified on the label is illegal.
- Toxicity to humans and wildlife.

Cultural

The City of Westminster is committed to re-establishing native plant communities on disturbed or depleted areas so desirable plants can prevent or reduce weed infestation. One way to combat the problem of invasive noxious weeds is through cultural methods such as using native plants in landscaping, revegetation, and reclamation efforts. Revegetation efforts are an integral part of our IPM program, and will continue to develop into the future.

Biological

When non-native weeds are introduced or become established in a new region, they come without the natural enemies that are present in their native ranges. Without these natural checks present, the weeds can sometimes out-compete the native vegetation. Reintroducing biological control agents can restore the natural balance missing in the altered ecosystem. Biological control alone will probably not totally eradicate a noxious weed population and should be used in combination with other management options.

A small percentage of noxious weeds have biological control organisms available for treatment. These noxious weed species have biological control programs allowed in Colorado:

- Leafy spurge
- Diffuse and spotted knapweed
- Russian thistle
- Puncture vine
- Musk thistle
- Yellow and Dalmatian toadflax
- Bull thistle
- Canada thistle
- Russian knapweed
- Purple loosestrife

ECO FACT: The infestation of tens of thousands of acres by the noxious weed tansy ragwort, was reduced by 90% by the insect Ragwort Flea Beetle in California in the 1980's.

Education

The education of the public in noxious weed control is a vital component of an Integrated Weed Management approach. The public must understand the importance of controlling noxious weeds on both public and private lands. Public support of a sound management plan is crucial to the overall success. The following are some aspects that should be a part of the noxious weed educational program:

- Press Releases
- Signage
- Westminster local channel 8
- Brochures and educational materials
- Staff presentations for the public

Stewardship

It is the combined responsibility of both the staff and citizens of Westminster to be actively concerned for the condition of open space. A committed staff and community are vital to the overall success of preserving healthy ecosystems. Good stewardship should be based upon concern, cooperation, knowledge, responsibility, and promotion of the City of Westminster Open Space program.

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