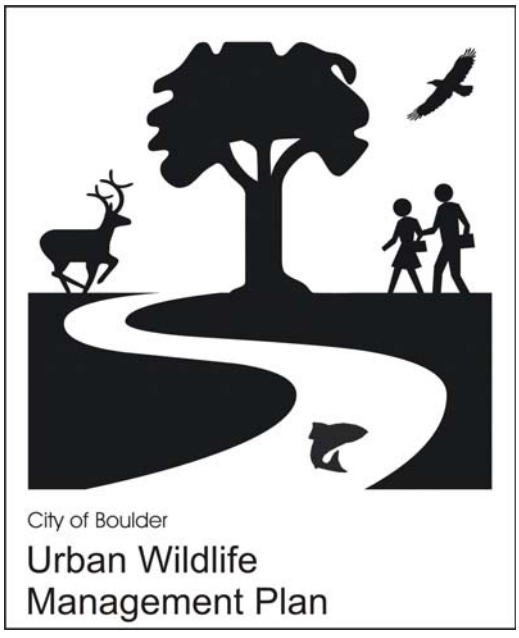
City of Boulder
Urban Wildlife Management Plan

Black-Tailed Prairie Dog Component

Final
Accepted by City Council August 29, 2006



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Executive Summary

The black-tailed prairie dog is an important part of the prairie grassland ecosystem that surrounds Boulder. Where they occur, prairie dogs have far-reaching ecological effects upon the landscape. Prairie dog towns provide habitat for several species and an abundant prey base for predators such as ferruginous hawks, golden eagles, coyotes, bobcats, badgers and, historically, the black-footed ferret. Their burrowing activities affect many plants and animals.

The city of Boulder has been in the practice of protecting and managing prairie dogs and grassland habitat through its Open Space and Mountain Parks program (OSMP) since 1977. Today, over 20,000 acres of grassland habitat is permanently protected from development and 5,000 of those acres are permanently dedicated as Habitat Conservation Areas (HCAs) for the conservation of prairie dogs. Similarly, Boulder County has dedicated about 5,000 acres of public land to the conservation of prairie dogs. Of the prairie dog habitat set aside by public agencies in Colorado, the lands identified as prairie dog HCAs by the city of Boulder and Boulder County may represent as much as 70% of the total.

Prairie dogs occur within the city primarily along the edges of protected open space and on small, fragmented parcels. As colonies grow and deplete the resources on one site, they disperse to other sites and establish new colonies. Prairie dogs will readily move from one site to adjacent properties and forage on lawns and established landscaping. Prairie dogs can both cause damage to landscaping and building infrastructure in the urban area and also be a safety hazard where they occur on public park lands.

For the past 100 years, Boulder has been a national leader in both the protection of open space and in creating urban growth boundaries and preventing urban sprawl. The city owns and manages over 40,000 acres of land outside the city dedicated to open space and "greenbelt" protection. The Boulder Valley Comprehensive Plan established strict growth and development boundaries through its Area I, II, and III designations. While Area III is set designated specifically for rural and open space preservation, Areas I and II are the areas designated for human land use and development.

It is largely due to the protection of open space and the proximity of the greenbelt that certain species of wildlife come into the city and inhabit the urban area. Wildlife management issues in the urban area and surrounding natural lands are even more complex given the geographic setting contiguous to hundreds of thousands of acres of county, state, and federally protected natural lands.

Goals and Principles for Wildlife Management

The vision, goals, and guiding principles for wildlife management in Boulder are outlined on pages 6 and 7 of the plan. In general, the city's goals are to provide for the long-term ecological sustainability of wildlife, while proactively reducing conflicts between humans and wildlife. The

city's goals and the plan support and recommend the protection of animal species, not individual animals and emphasize humane, non-lethal control of wildlife whenever possible. The plan recognizes the thousands of acres of natural land in the city's open space system, as well as the county's system, and recommends the continued protection of prairie dogs in HCAs. The objectives of the plan are to conserve prairie dog populations where possible in the urban service areas and to remove them from urban areas where they conflict with other land uses and with humans.

To this end, the plan provides future management direction for the 606 acres of prairie dogs in the urban area only by designating sites within the urban area either for the protection or removal of prairie dogs. (The plan does not include management plans for five acres of occupied land on federal and state property in the service area.) Included in the plan are:

- 149 acres are designated for long-term protection of prairie dogs
- 361 acres are designated for interim protection
- 96 acres are designated for near-term removal (these areas are those where prairie dogs are most in conflict with regulations and public services and facilities.)

Inventory, Management Classification, and Colony Reports

The prairie dogs located on these 611 acres were grouped into 20 different colonies or complexes of colonies based on geographic connectivity. A colony report was developed for each of these areas and summarizes the inventory information, site analysis, and management recommendations for the site (see Appendix A). The plan does not specify which methods will be used to remove prairie dogs from designated sites. Instead, the plan emphasizes the application of the "Six-step" process that was reinforced through the adoption of the city's Wildlife Protection Ordinance in early 2005.

The "Six-step process involves the following decision-making steps for managing prairie dog conflicts: (1) Minimize conflicts through non-removal methods; (2) Remove prairie dogs on only a portion of a site; (3) Evaluate the potential for relocation; (4) Evaluate the potential for donation to animal recovery programs (which can mean trapping and lethal control or live transfer); (5) Evaluate the use of trapping and lethal control through carbon dioxide chambers; and (6) If the above steps are not feasible, apply pesticides to the burrows. However, the plan recognizes that relocation receiving sites are limited (especially as the city and surrounding communities and counties continue to develop) and that lethal control will need to be used to remove prairie dogs and reduce conflicts with human land uses in certain circumstances.

The city has 5,000 acres of HCAs within its OSMP system. When all of these acres are taken in aggregate, these HCAs are 66% occupied by prairie dogs. As part of the city's Grassland Plan, appropriate occupancy rates will be established for these areas. However, it is important to note that an optimal level of occupancy for these species is considered to be 20%.

Management Tools

The UWMP evaluates the costs and benefits of various management tools to protect and/or remove prairie dogs on individual sites. These management tools most likely will need to be

used in combination or "packages." The city will emphasize the use of relocation as the primary means of removing prairie dogs from sites designated for removal in the plan. However, the plan and the "Six-step process" also recognize that relocation receiving sites will not always be available and lethal control will sometimes be required to remove prairie dogs and reduce conflicts with human land uses. In these cases, trapping and gassing through the use of CO_2 chambers will be the preferred method of lethal control.

Costs

Urban prairie dog management will continue to be a part of the city's business costs. It may be less of a priority in some years than others; however, it will continue to cost the city of Boulder time and resources. All management tools cost money. Although the use of burrow fumigants is by far the least costly tool, staff believes it is also the least humane and should be used sparingly and in limited situations (including public safety situations such as at the airport and at the dams) as a technique for managing prairie dogs. Even with the use of lethal control as a method of removal for prairie dogs management costs for the next two years (2007-2008) will be in the range of $160,000 to $275,000 (not including staff time). Without a better balance and use of all methods available for prairie dog mitigation and removal, these costs will continue to be significant.

Implementation

Because of the city's location surrounded by thousands of acres of open space and wildlife, management of urban wildlife and especially prairie dog conflicts will be an ongoing activity for the city organization. The plan identifies several short and long-term actions (see page 53-54) to implement the plan and to take a proactive approach to addressing urban wildlife conflicts and to help maintain an acceptable balance between the presence of wildlife in the city and human land uses. Some of the specific short-term action items that staff recommends include the following:

1. **Develop amendments to Resolution #842 for Council consideration.** This resolution is not consistent with the city's current ordinance in that it identifies relocation as the only preferred method of removing prairie dogs.
2. **Review the Wildlife Protection Ordinance and make recommendations to City Council on possible amendments.** (See page 45) Possible amendments include revisiting burrow destruction restrictions, reviewing the length of time for a lethal control permit for private property, etc.
3. **Work with the Colorado Division of Wildlife (CDOW) and develop recommendations to address inconsistencies in the state's relocation policies and permitting** (See page 52).
4. **Complete the OSMP Grassland Plan and address critical elements such as habitat suitability; and relocation criteria and capacity on OSMP land and in habitat conservation areas (HCAs).**

As part of the UWMP, options are being evaluated on the most effective and efficient way to staff and resource wildlife management. These options will be presented to City Council for consideration prior to the submission of the 2008 budget. One option being evaluated is a

potential “merge” of the city’s wildlife management staff and resources from the various departments dealing with natural resource management. In the interim, it is recommended that the staff team participating in the development of the UWMP begin implementation of the short-term action items.

Phase I of the Urban Wildlife Management Plan

Accepted by the Boulder City Council January 16, 2006

Purpose and Background

The purpose of the Urban Wildlife Management Plan (UWMP) is to establish a vision, guiding principles, and protocols for the management of wildlife in the city of Boulder.

Boulder is situated at the base of the foothills of the Rocky Mountains where the Great Plains mixed and short grass prairies meet the foothill shrublands and montane woodlands of the eastern Rocky Mountains. As you enter the Boulder Valley, you witness the success of a long history of planning and open space preservation when you see a compact and vibrant city surrounded by a vast and diverse greenbelt.

Boulder began its long history of preserving land and natural systems by purchasing Chautauqua Park in 1898. In 1967, a ballot initiative was passed to permanently increase the city sales tax to buy, preserve, and maintain greenbelt land. This ballot initiative created our open space system. Land acquisition and greenbelt protection continues today with the permanent protection of over 40,000 acres of open space and mountain parks surrounding the city.

With the protected system of natural lands surrounding a city, however, comes the conflicts associated with living so close to wildlife. Bear, coyote, deer, fox, prairie dogs, and many other species of wildlife do not recognize city boundaries and are commonly seen in the urban area foraging for food or prey, lounging on someone's deck, rummaging through dumpsters and trash cans, or taking up residence in areas marginally suitable for wildlife habitat.

Boulder has a long history in wildlife management through its OSMP program, but until recently the city has not focused on comprehensive management of wildlife within the urban area. The attitude toward urban wildlife was generally "live and let live" unless conflicts arose between residents and wildlife. If any wildlife posed a concern in the city, the issues were addressed on a case-by-case basis.

Over the past decade, however, as the city builds out and vacant land becomes less common, conflicts between wildlife and human uses of land have become more frequent. While residents have learned to tolerate the conflicts posed by some species such as deer, the presence of other animal species such as prairie dogs and bear pose problems that are less easily resolved through education and tolerance. Many potential conflicts between human uses and wildlife need pre-emptive planning and physical solutions to prevent or minimize harm to either wildlife or to people.

Although conflicts between wildlife and humans in the city have been addressed on a case by case basis, there has not been a comprehensive policy statement or long-term plan for management of wildlife in the urban area. Consequently, wildlife issues have generally been addressed inconsistently and with a lack of clear policy and procedure. Most important, however, the city has generally not been proactive in preventing potential conflicts which can result in higher costs than that of preventive action. The lack of preventive action has sometimes resulted in the use of lethal control which could have been avoided or minimized with better planning. In addition, decision-making at the scale of individual properties and/or species is often difficult, ineffective and inefficient.

The need for the UWMP became most evident over the past few years during the development of the city's Wildlife Protection Ordinance. Concerns were raised by Council during that process about the need for a broader look at wildlife relative to urban land uses when making decisions about the management of wildlife in specific areas or sites. Although Council adopted an ordinance which outlines a policy for the use of lethal control on individual properties, it also directed staff to begin the development of a plan that would allow us to look at and resolve issues in a city-wide context.

The purpose of this plan is to understand the context, benefits and conflicts posed by urban wildlife and to outline a plan for the management of individual species or groups of species. Since most wildlife/human conflicts in the urban area occur out of the context of the natural ecosystem of that species, most urban species management will be addressed on a species by species basis. Where appropriate, the plan will address the management of species on an ecosystem level. The UWMP will: 1) establish policies and procedures for managing wildlife within the city on both public and private land, and 2) outline a set of actions for long-term management of wildlife in the city.

Vision, Goals and Guiding Principles

Boulder's Vision

In Boulder's urban areas, the city will endeavor to provide for diverse, self-sustaining, native wildlife populations in numbers compatible with basic human needs, social and economic values, and long-term ecological sustainability, while proactively reducing conflicts between humans and wildlife.

Guiding Principles

1. The city will emphasize humane, non-lethal control of wildlife when consistent with guiding principles 2-6 and the vision statement.
2. The urban area is primarily intended for the development and support of human land uses and services as described in the Boulder Valley Comprehensive Plan.
3. The city will balance environmental, economic, and social sustainability principles in managing urban wildlife.

4. The community values and supports the protection of wildlife habitat and biological diversity. Urban wildlife management should be compatible with an ecosystem approach to land management.
5. The city will strive to use the best science in understanding and managing urban wildlife.
6. The city will develop clear and easily understood standards, protocols and regulatory processes for managing situations where conflicts arise between wildlife and urban land uses.

Goals for the Urban Wildlife Management Plan

The UWMP will:

- ⇒ provide a clear and easily understood framework for balancing environmental, social, and economic goals when managing wildlife on public and private lands;
- ⇒ prioritize effective strategies and assess the costs for sustainable, long-term management of urban wildlife and its habitat;
- ⇒ establish wildlife management policies and practices that proactively reduce human/wildlife conflicts, reflect overall community values and sustain ecological integrity;
- ⇒ set up a decision-making hierarchy to address wildlife conflict situations in urban areas;
- ⇒ outline a set of strategies for providing on-going education and keeping the public informed about current practices and policies;
- ⇒ integrate urban wildlife management across city departments and coordinate management with other public jurisdictions and agencies; and
- ⇒ assess and inventory areas in the city with the greatest potential for conflict and areas that provide the best opportunity for conservation.

Scope and Process

The geographic scope or study area of the UWMP includes private and public land in the city's urban service area or Area I and Area II as defined in the BVCP. The study area for the UWMP also includes some sites outside the urban service area where planned or existing human uses may conflict with the presence of prairie dogs (e.g. the regional park site in the Planning Reserve, the dams at the Boulder Reservoir, the Valmont Butte, and the 75th St. Wastewater Treatment Plant).

The plan was developed in two phases. The first phase of the plan involved the development of a set of guiding principles for the management of wildlife in the city as well as a vision and set of goals for the plan. This document, **Phase I**, provides a framework to identify and prioritize future work including management plans for species, groups of species and habitat types.

Phase II is the development of species-specific components to the plan, starting with the black-tailed prairie dog component.

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Black-Tailed Prairie Dog Management Component

1
Introduction

Purpose and Objectives of the Prairie Dog Component

The purpose of the prairie dog management component is to identify prairie dog protection opportunities in the urban service area and outline strategies for resolving short and long-term conflicts in the urban service area. There are five primary questions that the plan seeks to address:

- Where in the city should prairie dogs be protected?
- Where should they be removed?
- How can we protect them (in place) and minimize conflicts?
- How should we remove them if necessary?
- How do we balance costs and humane treatment?

The above questions guided development of the following objectives of the component:

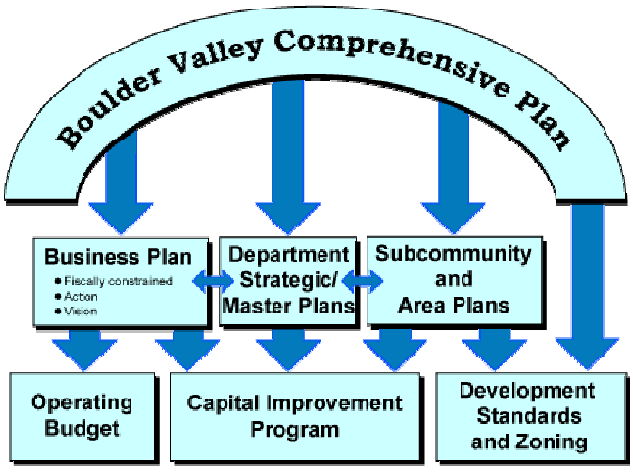
- Develop an inventory and assessment of prairie dogs in the urban area.
- Develop a framework for understanding the conflicts and compatibilities between prairie dogs and human land uses.
- Develop recommended management goals for each colony in the city.
- Review techniques and strategies for meeting management goals and develop a decision-making framework for either protection or removal of prairie dogs.
- Identify costs and prioritize actions for plan implementation.

Relationship to Other City Policies and Plans

Boulder Valley Comprehensive Plan (BVCP)

The BVCP provides the overarching context and broad city policies for more detailed planning which occurs through all other city planning efforts. The BVCP is a joint plan between the city of Boulder and Boulder County, providing shared land use decision-making in the Boulder Valley. The plan sets a course for the future growth and development in the city and the lands just outside the city's boundaries. The plan is developed and adopted by four governing bodies including: the city of Boulder Planning Board, the City Council, the Boulder County Planning Commission, and the Board of County Commissioners.

The BVCP was first adopted in 1970 has been one of the most important tools for managing Boulder's growth by defining the desired land use pattern regarding location, type, and intensity of development in the Boulder Valley. Area designations establish the framework for annexation and service provision. Area I is the area within the city. Area II is the area planned for annexation and service provision within the 15-year planning period. Areas I and II form the city's Service Area. Area III-Rural Preservation Area includes lands designated to remain rural in character. Area III-Planning Reserve is an area where the city and county intend to maintain the option of expanded urban development beyond the planning period.



BVCP Policies Relevant to the Black-Tailed Prairie Dog Component of the Urban Wildlife Management Plan

4.02 Adaptive Management Approach.
The city will employ an adaptive management approach to resource protection and enhancement. An adaptive management approach involves ongoing monitoring of resource conditions, assessment of the effectiveness of management actions, revision of management actions based on new information from research, and learning from experience what works and what does not.

4.06 Natural Ecosystems.
The city and county will protect and restore significant native ecosystems on public and private lands through land use planning, development review, conservation easements, acquisition and public land management practices. The protection and enhancement of biological diversity and habitat for federal endangered and threatened species and state, county and local species of concern will be emphasized. Degraded habitat may be restored and selected extirpated species may be reintroduced as a means of enhancing native flora and fauna in the Boulder Valley.

4.12 Management of Wildlife-Human Conflicts.
The city recognizes the intrinsic value of wildlife in both the urban and rural setting. The city will practice wildlife management to minimize conflicts with residents and urban land uses while identifying, preserving and improving appropriate habitat for wildlife

species in the urban area. When a wildlife species is determined to be a nuisance or a public health hazard, a full range of alternative wildlife management techniques will be considered by the city and county in order to mitigate the problem in a manner that is humane, effective, economical and ecologically responsible. The city recognizes the benefit of coordinating wildlife and wildlife habitat management with other agencies and that management plans should be formulated within a larger ecosystem framework.

Departmental Master and Resource Management Plans

The following departmental master and resource management plans provide guidance for the Prairie Dog Component of the UWMP:

Parks and Recreation Master Plan
Open Space and Mountain Parks
Long Range Management Policies
Grassland Ecosystem Management Plan

City Ordinances

In February of 2005, the Boulder City Council adopted an ordinance which establishes policies and procedures for managing prairie dogs within the city. These ordinances provide a basis for the development of the prairie dog component of the UWMP. The following is the list of subsections from the Boulder Revised Code which have informed this plan:

- Limitation on Lethal Means of Control for Prairie Dogs and Birds (B.R.C. 6-1-11)
- Damaging Prairie Dog Burrows Prohibited (B.R.C. 6-1-12)
- Killing Wild Animals Prohibited (B.R.C. 6-1-12): Prevents the killing of wild animals that are protected by federal or state law.
- Bird Protection Sanctuary Created (B.R.C. 6-1-33)
- Use of Poison Restricted for Lethal Control of Birds (B.R.C. 6-1-34)
- Injuring or Capturing Wild Birds Restricted (B.R.C. 6-1-35)
- Procedures for Obtaining Prairie Dog Lethal Control Permits (B.R.C. 6-1-36)
- Procedures Affecting the Relocation of Prairie Dogs (B.R.C. 6-1-37)
- Fees and Requirements for Issuance of Prairie Dog Lethal Control Permits (B.R.C. 6-1-38)
- Special Permit (B.R.C. 6-1-39)

Prairie Dog Behavior and Ecology

Prairie dogs are ground dwelling members of the squirrel family. There are four species of prairie dogs in the United States. The species that occurs in Boulder and throughout eastern Colorado is the black-tailed prairie dog (*Cynomys ludovicianus*).

Black-tailed prairie dogs live in family groups known as coteries. A coterie is a contiguous, territorial family group that is generally made up of one breeding male, three to four adult

females and 6 or more yearlings and juveniles. Coterie territories are aggressively defended by coterie members. Territory sizes vary and the area covered within the territory provides all the resources needed by the coterie. Colonies consist of a number of coteries.

Prairie dogs build burrows as living quarters. Burrows consist of a series of underground tunnels with several chambers and one or more entrances. At least one chamber is used as the nest or nursery burrow. Burrow entrances are constructed in a way that provides protection from predators, defense against weather and air circulation throughout the burrow. Burrows can be shallow to the surface or more than 10 feet deep.

Unlike some other rodents, prairie dogs are not prolific breeders. Prairie dogs only breed once per year, usually not until their second year and each female is fertile only for a day. Also, in any specific breeding season only about half of the adult females in a colony produce young. Litters are normally three to four pups, however, only about half survive their first year, mainly due to infanticide. Breeding season begins in February, and in May, the young emerge from the burrows. In the spring, there are tremendous social, physiological and evolutionary pressures on year-old males to disperse.

Prairie dogs, unlike some other burrowing animals (e.g. pocket gophers), do not "travel" underground. All dispersal and movement activities are above ground. In urban areas, barriers such as roads, buildings, and parking lots significantly influence and limit dispersal.

Black-tailed prairie dogs' diet varies throughout the year, but consists mainly of grasses in the spring and summer and cactus and plant roots, in the fall and winter. Cannibalism among black-tailed prairie dogs has also been observed; primarily infanticide by lactating females killing the unweaned offspring of coterie mates. This most often occurs when mothers are out foraging and the nursery burrow is left unprotected. When food resources are limited, mothers must spend more time and go further away from the nursery burrow to forage. This provides greater opportunities for infanticide to occur. Under these circumstances offspring survival may be minimal. Dispersing males also cannibalize the young in coteries they are able to invade.

In order to detect and avoid predators, prairie dogs clip all tall vegetation. In these cases, they may or may not consume the plants. They avoid areas of tall dense vegetation. Therefore, visual barriers (that cannot be clipped) act as deterrents to colony expansion and dispersal. However, since burrows typically have more than one opening, visual barriers that are not several feet deep, can be breached, coincidentally, by normal burrowing activity.

Prairie Dogs in the Grassland Ecosystem Context

Black-tailed prairie dogs are an important species in functioning short and mid-grass prairies. They are referred to as "keystone" species because of their influence on the areas they inhabit. Their feeding and clipping behavior alters the composition and structure of the vegetation of the area. Their burrowing activities aerate the soil and bring sub-soils and minerals to the surface. The burrows themselves provide homes to burrowing owls, rattlesnakes, rabbits, a variety of insects, tiger salamanders and other wildlife. They serve as important prey for raptors, coyotes, foxes, badgers and the endangered black-footed ferret.

On large, intact, native grasslands, where the vegetation evolved with the prairie dogs, the plants have adapted massive root systems to withstand long term "grazing" by prairie dogs and, consequently, plant diversity is generally high. When resources become too limited on a particular coterie territory, the territory may be abandoned with the coterie establishing a new territory at the edge of the colony where there are adequate resources for natural distribution and patches of grasslands are able to recover.

Plague

Plague is an infectious disease that was inadvertently introduced from Asia into the North American prairie ecosystem around 1900. Its causative bacterium, *Yersinia pestis*, is found in fleas. In wild animals plague is generally referred to as sylvatic plague and it has been identified in over 70 species of mammals in the United States. A significant number of these mammals "carry" plague, but do not always succumb to it. Prairie dogs on the other hand are very susceptible to sylvatic plague. Due to their social nature, entire prairie dog colonies can be killed by plague in a matter of a few days.

Plague can be transmitted to humans by flea bites or by exposure to infected pets. There are two types of plague that can occur in humans. Both are caused by *Yersinia pestis*, but they are transmitted differently and their symptoms differ. Pneumonic plague affects the lungs and is transmitted when a person breathes in *Y. pestis* particles in the air (such as when an infected pet sneezes). Bubonic plague is transmitted through the bite of an infected flea or exposure to infected material through a break in the skin. Pneumonic plague can be transmitted directly from person to person (e.g. coughing, sneezing, etc.); bubonic plague cannot.

Both types are rare, but bubonic plague is more common than pneumonic plague. According to the Centers for Disease Control and Prevention (CDC), one to forty human cases in the United States were reported annually (average = thirteen cases) by western states between 1971 and 1995. A CDC fact sheet points out, "The number of human plague infections is low when compared to diseases caused by other agents, yet plague invokes an intense, irrational fear, disproportionate to its transmission potential in the post-antibiotic/vaccination era". Colorado Department of Public Health and Environment statistics indicate fifty-one human plague cases in Colorado since 1957. Of those, only seven cases were directly linked to prairie dogs or other rodents; one of those was fatal. If diagnosed early, plague can be cured and symptoms treated with antibiotics.

Conflicts with Human Land Uses

Although an important species in native short and mid-grass prairies, prairie dogs are often considered a nuisance in urban and agricultural environments. Due to the dispersal activities of prairie dogs and the significant lack of predators in the urban environment, prairie dogs are often in conflict with urban land uses. Prairie dogs can cause costly damage to agricultural crops, landscaping, earthen dams, airports, and golf courses.

Historically, Colorado had over 27,000,000 acres of potential habitat for prairie dogs. However the past 100 years, much of the historic range of the black-tailed prairie dog has been converted

to agricultural, residential, industrial, and commercial land uses. In farmed ground prairie dogs can decimate or destroy a crop of alfalfa, grains or hay. Around the turn of the century, the United States government sponsored prairie dog poisoning programs to reduce competition with livestock and farmers. This program, which continues today, peaked in Colorado in 1921 when approximately 80,000 acres were poisoned.

Expanding urban areas, especially the rapidly growing Front Range in Colorado, has seen the conversion of prairie dog towns into human land uses--as housing and commercial development replaces grasslands. Urbanization along the Front Range has fragmented prairie dog colonies, hemming the remaining animals into ever-smaller parcels.

Prairie dogs occur within the city primarily along the edges of protected open space and on small, fragmented parcels. Prairie dog colonies are not static. As colonies grow and deplete the resources on one site, they disperse to other sites and establish new colonies. Prairie dogs will readily move from one site to adjacent properties and forage on lawns and established landscaping. Sites within Boulder that are currently unaffected by prairie dogs may be affected next year after the breeding season.

Vegetation on urban sites is generally non-native and plant diversity is low. Urban sites, therefore, are less able to withstand constant foliage consumption by prairie dogs. Furthermore, because the colonies are bounded by either unsuitable habitat or no habitat at all (roads), coteries are restricted to their current locations for extended periods of time. Prairie dogs do not hibernate and, therefore, their impacts to the vegetation are year round. Often this results in significant weedy areas or areas of bare soil and can result in soil erosion. While infanticide and cannibalism may provide a mechanism for population self-regulation by prairie dogs, the decreased number and assortment of predators in urban areas may also lead to or exacerbate the issues of limited food resources for urban prairie dogs. In these areas their ecosystem is extremely modified and simplified.

In addition to causing damage, prairie dogs can be a safety hazard. Many of the prairie dog colonies within Boulder are located in transportation right-of-ways. As the colonies expand, they sometimes disperse across roads causing potential hazards to themselves and motorists.

Prairie Dog Management in the Urban Service Area

Boulder's involvement in management of prairie dogs in the urban service area began in 1998. Concerns about the protection of prairie dogs arose from several incidents in Boulder and in some surrounding communities where large colonies of prairie dogs were poisoned to make room for new development. The loss of prairie dog colonies in the area prompted community concern over the lack of protection for the species. In addition, the United States Fish and Wildlife Service (the Service) reviewed a petition in the late 1990s to list the black-tailed prairie dog as a threatened species. Although the Service found that the species was warranted for listing, the listing was precluded by other, higher priorities. This means that, currently, the black-tailed prairie dog receives no protection under the federal Endangered Species Act.

City staff received direction from City Council in August 1998 to address prairie dog protection within the city. In January 2000, Council adopted an emergency ordinance (Section 6-1-11, "Poisoning Animals Prohibited", B.R.C. 1981) and Resolution No. 842 concerning the protection and management of black-tailed prairie dogs. The ordinance prohibited the poisoning of prairie dogs within Boulder and on all city-owned or managed properties.

After adoption of the ordinance in January 2000, a few incidences occurred which tested the effectiveness of the new code. Grading activities on some private development sites impacted prairie dog habitat, however, it could not be proven that any prairie dogs were actually harmed. To address this loophole in the code, Council adopted Ordinance No. 7133 on July 17, 2001 which prohibited the destruction of prairie dog burrows.

In 2003, the city was notified by the Colorado Department of Agriculture that the city's ordinances which prohibit prairie dog and bird poisoning were preempted by state law regarding commercial pesticide applicators. The state's position was that our ordinances need to be either repealed or amended.

On January 18, 2005, City Council adopted the final Wildlife Protection Ordinance. The ordinance limits the use of lethal control on prairie dogs by requiring land owners to obtain a permit to kill prairie dogs on a site within the city. In order for a permit to be issued, the landowner must satisfactorily demonstrate that all non-lethal options for managing prairie dogs on a site are not feasible. The foundation of the ordinance is a "Six-step" decision-making process for managing prairie dogs on a site. The process prioritizes the following actions for managing prairie dogs on a case-by-case basis:

Step 1. Minimize conflicts with the wildlife through non-removal methods.

Step 2. Remove animals on a portion of the site where conflicts are occurring.

Step 3. Evaluate potential for relocation.

Step 4. Consider animal recovery programs (ferret or raptor).

Step 5. Evaluate trapping and individual euthanasia.

Step 6. If earlier steps are not feasible and pesticides must be used:

- Pay into city habitat mitigation fund
- Post notice on property of pesticide application

The Open Space and Mountain Park Department's Role in Protecting Prairie Dogs

As early as the the1890's Boulder began acquiring and managing what was to become a system of over 40,000 acres of natural and agricultural areas. In the 1950s Boulder established physical limits for the provision of city services and soon thereafter defined its urban growth boundaries. Boulder is viewed as a pioneer in taking action to balance human impacts and urbanization with protection of natural and rural areas. Furthermore, the city has developed management plans, practices, and policies specifically for prairie dogs since the late 1970s. This body of work has been used by other municipalities and land management agencies as starting points for a great deal of the work that has been done for prairie dogs along the Colorado Front Range.

The preeminent method for conservation of prairie dogs remains the protection of prairie dog habitat through public land acquisition. Based on recent research by city staff today there are roughly 14,222 acres of prairie dog habitat that have been set aside for protection by public lands management agencies in the state of Colorado (see chart below).

City	Acres Dedicated for the Protection of Prairie Dogs	Percent of Total
Arvada	155	1.1%
BOULDER (City)	**5,000**	**35%**
Boulder County	5,000	35%
Broomfield	325	2.3%
Buckley AFB	460	3.0%
Ft. Collins	2,065	14.5%
Highlands Ranch	40	.3%
Jefferson County	63	.4%
Louisville	80	.6%
Pawnee	Not less than 200 acres	at least 1.4%
Rocky Flats National Wildlife Refuge	Up to 750 acres (when refuge is established)	5.3%
Rocky Mountain Arsenal National Wildlife Refuge	Not less than 200 acres	at least 1.4%
Total	**Approximately 14,222**	

It is possible that there are other areas that have been set aside for prairie dogs, however, regardless of the overall total, over 10,000 acres are being protected in Boulder County—mostly by the city of Boulder and Boulder County's open space programs. Boulder contributes a significant percentage of the grasslands designated for black-tailed prairie dog conservation and is a leader in black-tailed prairie dog habitat protection. Of the prairie dog habitat set aside by public agencies in Colorado, the lands identified as prairie dog Habitat Conservation Areas (HCAs) by the city of Boulder and Boulder County may represent as much as 70% of the total.

The OSMP Black Tailed Prairie Dog Habitat Conservation Plan

The city's Open Space and Mountain Parks Department (OSMP) and the Parks and Recreation Department protect numerous acres of grasslands and populations of prairie dogs in the Boulder Valley. In 1996, the Open Space Board of Trustees approved a Black Tailed Prairie Dog Habitat Conservation Plan (the BTPD plan) for city natural lands that was developed over an eighteen month period with extensive public involvement. The goal of this plan is to protect, preserve and enhance habitat suitable for black-tailed prairie dogs in the overall context of functioning grassland ecosystems.

One of the most important elements of the BTPD plan is that it identifies the places where prairie dogs are most likely to be successfully conserved in the context of social and ecological constraints. It is a plan that results in the protection of individual prairie dogs and prairie dog colonies in the context of burrowing owls, raptors, other species associated with prairie dogs as well as grasslands *undisturbed* by prairie dogs. Grasslands without prairie dogs are also important as a distinct and critical habitat supporting plants, animals and ecological communities that do not occur where prairie dogs are active.

The BTPD plan is implemented through a system of HCAs[1] and a set of management policies. Management policies, like this element of the Urban Wildlife Management Plan (UWMP) address issues of containment/exclusion, population control, response to plague, education and monitoring. The system of prairie dog habitat conservation areas established by the BTPD plan includes 5,000 acres mostly on OSMP. The prairie dog HCAs range in size from six to almost three thousand acres.

Over the past decade, the HCAs on OSMP have filled up and prairie dog populations have spread to other OSMP lands. OSMP accepted many prairie dogs from relocators who were stymied by state regulations restricting their ability to move prairie dogs across county lines. These reintroductions from off OSMP lands contributed to the establishment of new colonies in and out of HCAs.

As of the most recent annual mapping (fall 2005) there were approximately 4,000 acres of active prairie dog colonies on city of Boulder OSMP lands. About 1,500 acres were in the HCAs. Of the 2,400 acres outside the HCAs, about 900 acres were mapped on lands that were acquired since 1996 and not yet integrated into the plan. The remaining 1,400 acres of active prairie dog colonies were mapped on lands not designated as habitat conservation areas. OSMP managers face questions similar to managers of urban lands in trying to determine how to respond to the expansion of prairie dogs outside of areas identified for their conservation and how to set levels at which to manage prairie dogs within the HCAs. Given current population levels outside of HCAs and density of animals with the HCAs, OSMP is no longer accepting prairie dogs from relocation projects. Biologists and managers face a significant challenge in managing prairie dog populations in the context of grassland ecosystems.

[1] The term prairie dog "habitat conservation area" was used in the 1996 plan to clarify that the city sought to manage for the long term sustainability of habitat. In 2005 the OSMP Visitor Master Plan created a system of "habitat conservation areas" to guide patterns of visitor use. While there is some overlap in the two HCA designations, they are different.

During the development of the BTPD plan, the OSMP recognized the need to place prairie dog habitat conservation within a more comprehensive grassland-based approach. With a decade of experience implementing the BTPD plan and the benefit of other agencies' experience, staff is now ready to update and revise prairie dog habitat conservation as part of the development of OSMP Grassland Ecosystem Management Plan (Grassland Plan) over the next year.

OSMP Acquisition of Property for Prairie Dog Conservation

The mission of the OSMP is *to protect the natural environment and land resources that characterize Boulder and foster appreciation and use that sustain the natural values of the land for current and future generations*. OSMP is the city department that acquires and manages lands with the conservation of native species and ecological systems as a primary goal. Although other city programs such as Parks and Recreation, Utilities and Transportation also purchase land, their focus is upon providing other community services.

In the BTPD plan, fee acquisition was not identified as an appropriate conservation or conflict reduction strategy for lands in the urban service area. However, 210 acres of existing prairie dog colonies were identified for long term protected status. Over half of this amount (120 acres) is part of the existing habitat conservation areas around Boulder Reservoir. Consequently, the plan recommends new protected status for about ninety acres; fifty are privately owned and forty are public lands. Some of the publicly owned lands are county and state rights-of-way. The city may seek to acquire some level of interest in the lands (e.g. conservation easement) in order to ensure appropriate prairie dog management of areas which fall outside city control.

Some members of the community have suggested that additional lands should be purchased for prairie dog habitat conservation as an alternative to removal. It is the experience of OSMP Real Estate Services Division that grassland acquisitions generally fit into two categories: those already occupied by prairie dogs, and those with few or no prairie dogs because of active agricultural management (irrigation, annual plowing, and prairie dog control). While the acquisitions of grasslands occupied by prairie dogs may not provide receiving sites for relocations; these land purchases do reflect the city's focus on broad open space goals rather than individual species. Purchasing lands for a single species would represent a significant shift away from policy guidance provided by City Council during the discussions of OSMP's six year Acquisition and Management Plan (2005-2011) in 2005. Furthermore, given that the average per acre cost of land in the Boulder Valley is over $30,000, it is important that OSMP properties be able to provide a range of conservation values and other community services. Removal areas in the UWMP area have zoning/land use designations, current land uses, and per acre costs that are inconsistent with the purchase of those properties as OSMP lands under BVCP guidance and OSMP's Acquisition and Management Plan.

The acquisition of lands for prairie dog conservation on the eastern plains of Colorado has been suggested by some as a beneficial strategy to compensate for impacts along the Front Range. The approach of purchasing large blocks of habitat to compensate for incremental impacts has been used in the past to compensate for environmental impacts to wetlands and habitat for endangered species. Colorado's Shortgrass Prairie Initiative is an example of a program that offsets habitat loss in shortgrass prairie resulting from transportation improvements by

safeguarding large blocks of prairie that are home to a number of imperiled species. While such a program might provide the city with a way to protect habitat of significant conservation value for prairie dogs and prairie ecosystems, it would require support of the commissioners in the county where these lands were acquired if the protected areas were to become receiving areas for prairie dogs relocated from Boulder. Funding a program that conserved land far from Boulder may not be viewed as a priority by community members or decision makers without support from the respective county commissioners.

Since the completion of the BTPD plan in 1996, approximately 18,000 acres of OSMP lands have been acquired. About 900 acres of these grassland purchases were mapped in the fall of 2005 as being occupied by prairie dogs.

The BTPD plan describes a set of policies to determine the role that newly acquired properties would play in the conservation of prairie dogs. The policies identify specific steps to be taken during property negotiation, an evaluation outline to determine the ecological suitability of the land as prairie dog habitat, and others questions to determine if the site is appropriate for the establishment of an HCA. Applying these procedures to the lands acquired during the past decade may be the most cost-effective way to increase the extent of formally recognized prairie dog habitat conservation areas in the broader context of grassland conservation. This also does not require the city to raise or expend funds specifically for prairie dogs or to acquire properties within the service area that have been identified for urban land uses.

Intergovernmental Relationships

Federal Authority

Black-tailed prairie dogs *(Cynomys ludovicianus)* are native to the Great Plains. Once abundant, less than two percent of the pre-settlement range of the black-tailed prairie dog (prairie dog) remains today. Due to their decline, in 1998, three environmental groups petitioned the United States Fish and Wildlife Service (Service) to list the prairie dog as a threatened species under the Endangered Species Act.

The factors contributing to the decline of the prairie include:

- Habitat conversion to urban and agricultural uses
- Habitat fragmentation
- Unregulated shooting
- Unregulated poisoning
- Susceptibility to sylvatic plague
- Inadequate regulatory mechanisms (at the state level)

In 2000, the Service issued their finding, indicating that the threatened status was warranted, but precluded its listing, citing other higher priorities. Since that time, the prairie dog has been removed from candidacy for listing.

Federal permits for wild to wild relocation are required by the Food and Drug Administration. In addition, there are Federal Aviation Administration (FAA) requirements related to airport safety that require airport operators to take measures to ensure runways, taxiways and areas adjacent are free of holes and obstructions. The FAA also requires operators to control to the extent possible rodent populations or populations of other prey animals that may attract raptors and increase the potential for aircraft collisions with birds.

State Authority

In the state of Colorado, prairie dogs are considered both a small game (wildlife) species and a pest species. Their management and control is mainly predicated by Title 35 (Agriculture) and Title 33 (Wildlife and Parks and Outdoor Recreation) of the Colorado Revised Statutes (C.R.S.). Under Title 35, the Colorado Department of Agriculture has primary authority and responsibility.

C.R.S. Title 35 defines prairie dogs as destructive rodent pests and generally populations of prairie dogs as a public nuisance. Authority is granted to county commissioners to require eradication of prairie dogs on private lands. If private property owners in such counties do not comply, the county is authorized to carry out the eradication itself and bill the property owner or place a lien on the property if the owner does not pay. C.R.S. Title 35 further requires state and federal landowners to control or eradicate prairie dogs on lands owned by them, to the extent possible. And finally, Title 35 also prohibits the relocation of prairie dogs from one county to another with out the permission of the receiving county's commissioners and the state wildlife commission. Article 10 of Title 35 describes the processes by which permits and licenses are procured for the purposes of poisoning prairie dogs in Colorado.

C.R.S. Title 33 defines prairie dogs as small game. This title establishes the licensing requirements, seasons and manners of take by which prairie dogs can be hunted. C.R.S. 33 also describes the exemption for these requirements if damage to property or crops is occurring. Title 33 spells out the requirements for trapping, possessing, transporting and releasing prairie dogs. A permit or license from the Colorado Division of Wildlife is required to trap, possess, transport and/or release prairie dogs. However C.R.S 33-6-107(9) precludes the need for a permit or license to kill prairie dogs if they are causing damage to property. This provision is the premise for prairie dog lethal control throughout the state.

City Authority and Responsibility in Wildlife Management

The city has no responsibility to manage populations of prairie dogs or other wildlife and the regulatory authority for managing populations of wildlife in Colorado is the Colorado Division of Wildlife (CDOW) and the Wildlife Commission. However, according to C.R.S. Title 35, the Boulder Board of County Commissioners could require eradication on private property in Boulder County.

Community Perspectives and Values

Prairie dog management issues elicit strong emotions and varying positions in Boulder, particularly in relation to the use of lethal control. There is a very vocal segment of the community that believes that the life of each individual prairie dog is precious and should, to the greatest extent possible, be preserved. The view of another segment of the community, and the one that is reflected in the BVCP, that suggests that environmental, social, and economic sustainability goals of the community should be balanced when making urban wildlife management or any city policy decision. The BVCP also implies that ecological balance and native biodiversity should be the cornerstone of city wildlife management policy and decision-making. In other words, in an urban environment, wildlife protection must be balanced with human needs and developed land uses. This point of view would permit the use of lethal control measures in order to further the objective of ecological balance and preservation.

Although a formal survey or set of interviews was not conducted for this component, staff believes a fair representation of the range of community viewpoints can be summarized from interviews, public meetings, and public hearing that occurred during the development of the Wildlife Protection Ordinance (as adopted in February 2005), public meetings for the UWMP, and informal conversations between staff and various stakeholders over the years.

What staff has found over the past few years is that many values regarding prairie dogs are similar among residents and some are very different and opposing to one another. For example, most community members who have been involved in the urban wildlife discussions over the past few years seem to agree that-

- protection of native ecosystems is important;
- the city should, to the extent possible, prevent the inhumane treatment of animals; and
- the use of poisons should be minimized because poisons cause serious environmental problems.

The fundamental difference in viewpoint among community members over prairie dog management revolves around whether or not individual prairie dogs should be killed and whether or not some lethal control techniques are more humane than others. There appears to be a wide range of viewpoints with regard to-

- the relative importance of protecting individual animals in comparison to protecting functioning grassland ecosystems;
- the definition and relative value of ‘euthanasia’ or lethal control practices other than the use of poisons;
- the value of the city’s public recreational assets (e.g. ballfields and soccer fields) relative to the value of the individual prairie dogs inhabiting these sites; and
- how far the city can go in preventing the use of lethal control on private property.

The general perspective that was endorsed by City Council during the adoption of the Wildlife Protection Ordinance and in Phase I of the UWMP is that all animals should be protected from inhumane treatment to the extent possible. However, the urban area is primarily intended for human land uses and services and individual prairie dogs should not be protected at the expense

of natural ecosystems. If, for example, protecting all prairie dogs means that the integrity and biodiversity of native grasslands is compromised, more humane methods of lethal control (by trapping and use of carbon dioxide gas chambers as opposed to the use of fumitoxins) may serve a valid public purpose.

Over the years, staff has had several discussions with various stakeholder groups (e.g. wildlife advocacy groups, property owners, and recreational user groups) in regard to prairie dog management issues. It has become, clear, however, that consensus on these issues is not probable. This is not an area in which community members speak with a single voice but one in which Council will be called upon to make difficult and controversial decisions. The following is a summary of the various community viewpoints.

- **Prairie Dog Advocate Groups**
  The groups that were involved in the development of the Wildlife Protection Ordinance and those involved in developing the UWMP have expressed a strong viewpoint that no individual animal should ever be killed except to be put out of pain and suffering.

  Prairie dog advocacy groups and some who are in the business of relocating prairie dogs have argued that the city must, to the extent possible, protect individual animals from being killed or from being treated inhumanely. These groups have also expressed the view that relocation of prairie dogs or the construction of barriers should be the primary solutions to the conflicts in the urban area. They have urged the city to use, or obtain for use, as much land as necessary for the protection of these animals.

- **Businesses and Property Owners**
  Most private property owners and business representatives maintain, for the most part, that prairie dogs on private property are in conflict with the current or allowed land uses on the sites. Private landowners express the view that the city must find a way to balance wildlife protection with human needs. Some property owners are willing to accommodate and manage an active prairie dog colony on their sites; however, others are finding it difficult to live with the prairie dogs. Landowners want to be allowed to develop and fully utilize their properties.

  Private property owners express concern with perceived safety, health, and liability issues associated with prairie dogs on their sites. They note that employees and clients continually voice health and safety concerns when prairie dogs reside in close proximity to buildings and public areas. Some landowners feel that the city has a responsibility to deal with prairie dogs that come onto private land from city land and the cost burden associated with this issue should not be the sole responsibility of an affected private landowner.

  Most property owners feel that humane treatment is important; however, they also expressed concern over the relatively high costs of more humane methods of lethal control such as trapping and euthanization and the installation and maintenance costs of effective barriers. Private property owners have also expressed a viewpoint that the current waiting period for lethal control permits is too long.

- **Environmental Groups and Technical Advisors**
  Most of the representatives from these groups have stressed the need to balance various environmental concerns and goals. Technical advisors and members of these organizations emphasize the protection of native species, biodiversity and the health of natural ecosystems. Although there is generally support for the humane treatment of animals, there is no support for elevating the protection of individual animals to the point where it might endanger the health of native grasslands. They expressed concern that current prairie dog populations on city open space lands may be compromising the health of grassland ecosystems.

  Members of these groups feel that urban prairie dogs serve an educational purpose and are important as prey for raptors; however, they assert that prairie dogs need to be managed in order to prevent overpopulation. This view would allow killing some animals where necessary to protect the health and biodiversity of natural ecosystems. They emphasized the need for humane lethal control of animals whenever possible.

Overall, there are a range of perspectives and values in Boulder toward urban wildlife. The following is a summary of those positions:

How the Community Values Wildlife

- **Intrinsic** value of wildlife as living things regardless of their utility to humans.
- **Aesthetic** value associated with the pleasure of seeing and hearing wildlife and of having the diversity of form and texture associated with wildlife habitat soften and modify a landscape otherwise dominated by buildings and roads.
- **Spiritual** value derived from a variety of belief systems wherein encounters with wildlife or the presence of wildlife and habitat holds special meaning about the beauty and value of all life.
- **Ecological value** of that wildlife in the city.
- **Educational** value to teach ecological lessons such as human participation in larger natural systems, energy flow, and predator-prey relationships.
- **Economic** value associated with wildlife and habitat as amenities that attract residents, visitors and businesses and keep property values high.

2
Inventory and Analysis

Inventory

An inventory of the prairie dog colonies in the study area was completed in October of 2005. The inventory was combined with previous information about prairie dogs on other city properties currently outside the service area (e.g. the regional park site in the Planning Reserve, the Boulder Wastewater Treatment Plan, and the Valmont Butte property).

The purpose of the inventory was to obtain accurate colony size, location, and ecological condition assessments of the colonies as well as information concerning surrounding land uses and existing barriers or constraints to colony expansion. Prairie dog densities for each colony were not estimated as part of the study due to the dynamic nature of population densities and to budget limitations. An accurate count of individual prairie dogs in each colony, therefore, is not available.

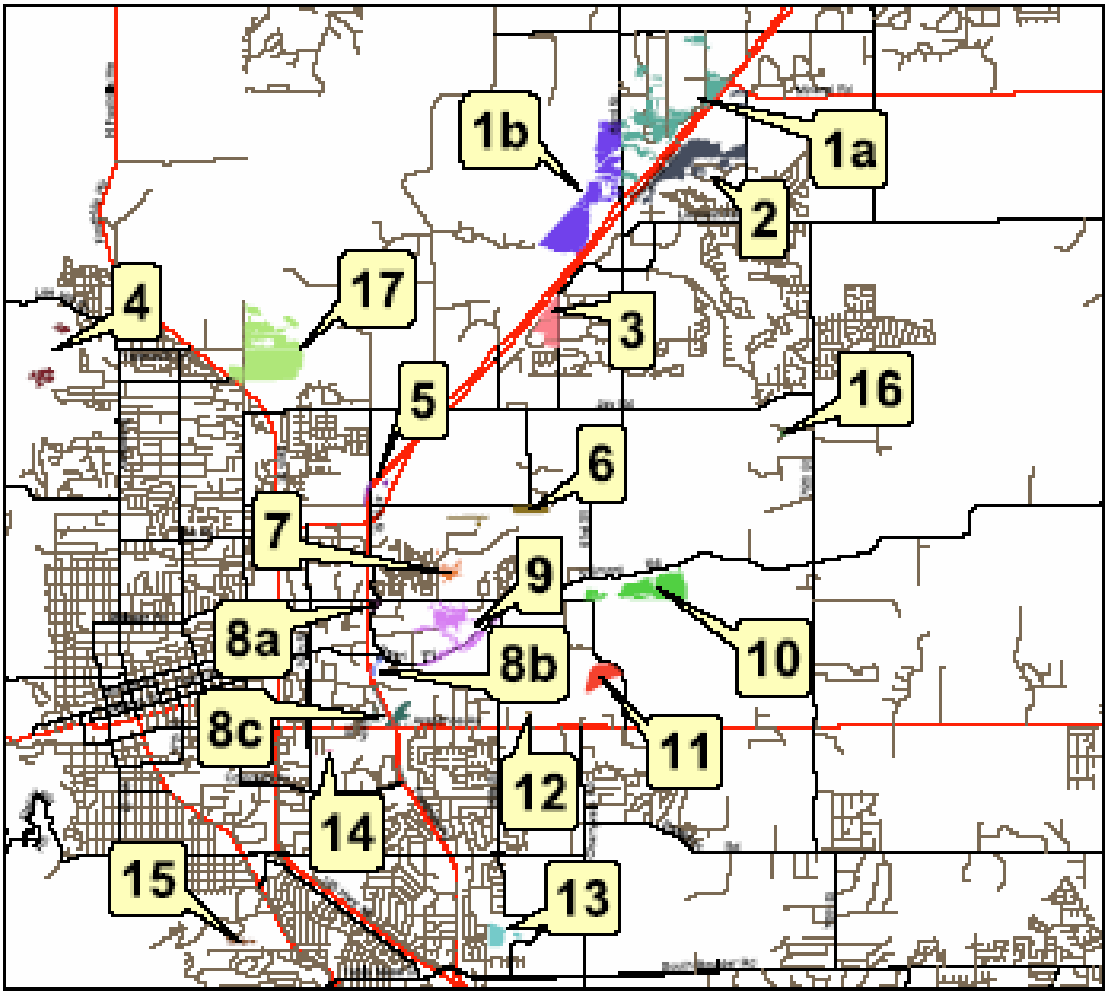
The results of the inventory show approximately 611 acres of prairie dog habitat in the study area under diverse ownership (see map on page 29). The size of colonies ranges from a few hundred square feet to over 100 acres. Of the 611 acres occupied by prairie dogs, 471 acres are publicly owned (including city, county, state, and federal jurisdictions) and 140 acres of habitat are on privately owned land.

It is very difficult to determine the densities or prairie dog numbers that the 611 acres may represent. Research indicates that the densities in these colonies may range anywhere from 13 to 49 prairie dogs per acre. Therefore, very rough estimates would indicate from 7,940 to 29,900 prairie dogs in the urban area. By comparison, it could be estimated that there are roughly 45,500 to 171,500 on OSMP land (2005 mapping)

Condition of Colonies

Most of the prairie dogs in the study area occupy marginal habitat in that the conditions are not optimum and staff does not consider them high-functioning grassland ecosystems. Except for a few colonies, the prairie dogs live in small, densely populated and fragmented areas. (Although density counts were not systematically conducted, site-by-site observations sometimes were recorded about population densities). The marginal sites typically have little to no vegetation throughout much of the year and are dominated by invasive non-native weeds. The sites which still retain somewhat healthier vegetation were generally the larger, less fragmented sites that were not fully inhabited by prairie dogs or sites that were newly inhabited by prairie dogs and retained some of the original manicured landscaping originally developed with the land use.

Colony Group Statistics – Urban Wildlife Management Plan



Group	# of Public Properties (by management)	# of Private Properties (by ownership)	Acres of Public Land	Acres of Private Land	Total Acres
Group 1a	3	1	13	67	80
Group 1b	2	-	142	-	142
Group 2	1	7	110	10	120
Group 3	-	2	-	27	27
Group 4	2	-	13	-	13
Group 5	2	1	2	1	3
Group 6	1	-	n/a	n/a	0
Group 7	1	-	5	-	5
Group 8a	2	-	2	-	2
Group 8b	2	1	2	<.25	2
Group 8c	2	6	9	1	10
Group 9	4	6	40	<1	40
Group 10	2	-	10	-	10
Group 11	-	1	-	22	22
Group 12	-	1	-	<.25	0
Group 13	1	2	1	12	13
Group 14	1	-	0.5	-	0.5
Group 15	1	-	4	-	4
Group 16	1	-	2	-	2
Group 17	1	-	115	-	115
Total		**27**	**470.5**	**140**	**610.5**

For purposes of the analysis and plan recommendations, the 611 acres of prairie dog habitat in the study area were grouped into 20 different colonies or complexes of colonies based on geographic connectivity. Each colony consisted of a grouping of one or several public and/or private parcels. A colony report was developed for each of these areas and summarizes the inventory information, analysis, and management recommendations (*Appendix A*).

Analysis

Assumptions

In establishing a framework for analyzing the twenty colonies and developing management options, staff made some key assumptions. The following is an outline of those assumptions:

1. The primary site condition that influenced the management recommendations is the size of the parcel and the degree to which protection of the prairie dogs on the site will result in the escalation of the level of conflict in and around the site.
2. The city can not ultimately prevent a private property owner from removing prairie dogs from his or her property. In addition, the city does not have jurisdiction over prairie dog management on other public lands. The city, however, can encourage cooperative management arrangements or try to influence wildlife management policies of other jurisdictions.
3. Conflicts that are considered to pose high enough risk to require near-term management actions include: a) public safety related to dams, airports, and play fields; b) new development; c) damage to existing buildings and landscaping, and d) regulatory non-compliance.
4. Conflicts that are considered low risk and do not require prompt removal of prairie dogs from a site include: a) public health related to plague, b) public safety related to roadways and bike paths; and c) potential development of a site in the long-term.

Analysis Framework

In developing management recommendations for each colony, staff analyzed several factors including:

Ownership
Colony condition
Landscape context
Land Use/Nature and level of conflicts

Ownership

Staff considered the type of land ownership underlying the prairie dog colonies and the number of separate public jurisdictions in making management recommendations. The primary assumption regarding prairie dogs on private land is that, ultimately, the city has more control over the protection of prairie dogs on city-owned land than on private land or other public

properties. The assumption that was established during the development of the lethal control ordinance and continues to influence these management recommendations is that the city can not ultimately prevent the removal of prairie dogs from any non-city-owned sites.

The ownership of the parcels is also important in that multiple ownership of parcels within one colony area presents management challenges for several reasons. Where state, county, or federal jurisdictions are involved, the city can not impose regulatory requirements to manage prairie dogs on those parcels. Prairie dog colonies on other public parcels are included in the plan, however, because the city can encourage cooperative arrangements with the agencies. In addition, it is in the city's interest to know where future conflicts with prairie dogs may arise on private or city-owned land. In most cases, the other public agencies have adopted similar management policies and practices for handling prairie dog conflicts and also look to the city for guidance in forming policy or making management decisions.

Colony conditions

Overall, the vegetative condition of a site was not a primary factor in the analysis because most of the sites in the study area were generally degraded and considered marginal habitat. Furthermore, sites which are currently in reasonably good condition will likely become degraded in a short period of time unless there are continual management efforts to restore vegetation to support the colony on the site.

The primary site condition that influenced the management recommendations was the size of the parcel and the degree to which protection of the prairie dogs on the site will result in an escalation in the level of conflict in and around the site.

Landscape Context

The analysis of the colonies included a broader observation of the landscape surrounding the colony. The purpose of looking at this factor was to understand whether the colonies were isolated from larger grassland ecosystems or if they were interconnected with other colonies on natural lands. An understanding of the larger landscape also can provide guidance on the effectiveness of certain management strategies. In some situations, colonies within the city are directly connected to larger colonies outside the city (e.g. Winchester Circle). In situations such as these, removal of the prairie dogs on the private parcels is not a good long-term management strategy by itself as prairie dogs from the adjacent OSMP parcel will continue to move onto the private sites. Removal in these situations must be combined with effective barriers and good site design to minimize the use of on-going removal efforts over the long-term.

Land Use/Nature and Level of Conflicts

The most important consideration in the analysis of individual prairie dog colonies is the nature and level of conflict the prairie dogs pose with either existing or planned land uses on a site. The three primary questions that staff asked in analyzing each colony were-

- What is the existing or planned land use of the site?
- What is the nature of the conflict?
- What is the level of the conflict?

- Can the conflict be substantially mitigated without removing prairie dogs from a site at a reasonable long-term cost?

Nature of Urban Conflicts

Prairie dogs often pose unique wildlife conflicts with human uses in an urban setting primarily because of their burrowing nature and dispersal patterns. Once a prairie dog coterie (or family group) has inhabited a site, the coterie will remain on that site unless it either dies off from disease, predation, or human interference or there are significant deterrents to cause them to leave the area. While many of the conflicts of concern between prairie dogs and human lands are related to the protection of developed property, there are also concerns from the community related to human health and safety. The general types of conflict that were identified by staff are as follows:

Public safety

- Dams – The Northern Colorado Water Conservancy District manages the dams on the east side of the Boulder Reservoir. The district requires that the dam embankments and a buffer area around the dams remain free of prairie dogs to ensure dam stability.
- Airport – The Federal Aviation Administration (FAA) requires that the Boulder Municipal Airport runways remain free of prairie dogs to prevent potential interference with take-off and landing of airplanes. The FAA also requires airport operators to take measures to discourage rodents (prairie dogs are classified in the animal order, "Rodentia") from inhabiting airports, since rodents can attract raptors and other predators that pose a threat to aircraft.
- Roadways and bike paths – Staff has infrequently received complaints from the public of the possible accidents that may occur on roadways and bike paths as a result of prairie dogs crossing paths with bicyclists or motorized vehicles. However, there are no actual documented incidents of this occurring.
- Play fields – Concerns have been raised by staff and recreational user groups of the safety issues involved having prairie dogs and their burrows on open play fields. Burrows and prairie dogs pose a serious trip hazard in these situations.

Damage to built facilities and required landscaping

Most private property owners of existing facilities identify this conflict as their primary concern. The city's land use regulations require development to meet certain landscaping standards. However, once prairie dogs have moved onto a developed property, they tend to damage or destroy much of the landscaping on the site by either burrowing around the root zones of trees and shrubs or consuming herbaceous plant material (sod grasses in particular). Once the landscaping is destroyed, the development may be out of compliance with an existing development agreement or code requirement (properties with site plan agreements are required to maintain a property according to the agreement in perpetuity or until the plan is amended). Continual restoration of impacted landscaping can become costly to a landowner and not likely to succeed if prairie dogs remain on site. Other related conflicts identified by landowners are the impact of burrowing activities

around outdoor lighting, alarm systems and other electrical or fiberoptic infrastructure that may result in severed lines or exposure of the lines to other forces.

New development

Most new development projects require full use of a property for grading, installation of utilities and buildings, and staging of construction equipment. Unless a development site is quite large, it can be difficult to construct new facilities on a site without impacting prairie dogs or their burrows.

Public health/plague

Plague is identified by many community members as a concern where prairie dogs are in close proximity to human activities. Plague is widespread in the western United States and firmly entrenched among wild rodents in North America. It is frequently detected in squirrels, prairie dogs, wood rats, and other species of ground squirrels and chipmunks. Concerns are often raised by the public about the risk of plague because of the close proximity of prairie dogs to buildings and recreational facilities. Issues have also been raised concerning the close proximity of prairie dogs to food production facility and the potential disease risk as a result.

Because of the low incidence of plague occurrence in humans, it is staff's opinion, that plague should not be considered a high level of conflict or strong reason for removing prairie dogs from a site. The causative bacterium (*Yersinia pestis*) is transmitted to people through flea bites and direct contact with infected animals. Several rodent species are host to one or more species of fleas which, when infected, are carriers of plague. These fleas generally do not infest other animals unless their natural hosts are unavailable. Fleas present on prairie dogs and other rodents like the fox squirrels (which are commonly found in backyards) can carry plague, although its frequency is very rare. In order to contract plague, a person would need to have direct contact with an infected flea. This is extremely unlikely. If precautions are taken, the probability of an individual contracting plague, even in active plague areas, is quite low.

Plague cannot be eliminated from our natural environment. Removal of prairie dogs from an area will not totally eliminate the risk of plague.

Regulatory non-compliance

A few of the conflicts listed above can result in non-compliance of a property with local, state, or federal regulations or guidelines. Destruction of landscaping on a site can put a property out of compliance with city landscaping requirements. Prairie dogs in close proximity to a food production facility can be inconsistent with federal food safety guidelines, and, as mentioned above, prairie dogs around the runways put the airport out of compliance with Federal Aviation Administration regulations. In addition, the State Engineer's Office requires that dam faces be kept free of any type of burrowing activity that may compromise dam integrity and safety.

Level and Prioritization of Conflicts

Staff considered the level or potential risk of all the above conflicts in developing management recommendations. While the nature of some conflicts is based on real or documented situations, others are based more on human fear or precaution and, in actuality, present a very low level of risk to humans. Conflicts that were considered to pose high enough risk to require management actions included:

- public safety related to dams, airports, and public playfields;
- new development in the near term;
- damage to existing facilities and landscaping; and
- regulatory non-compliance

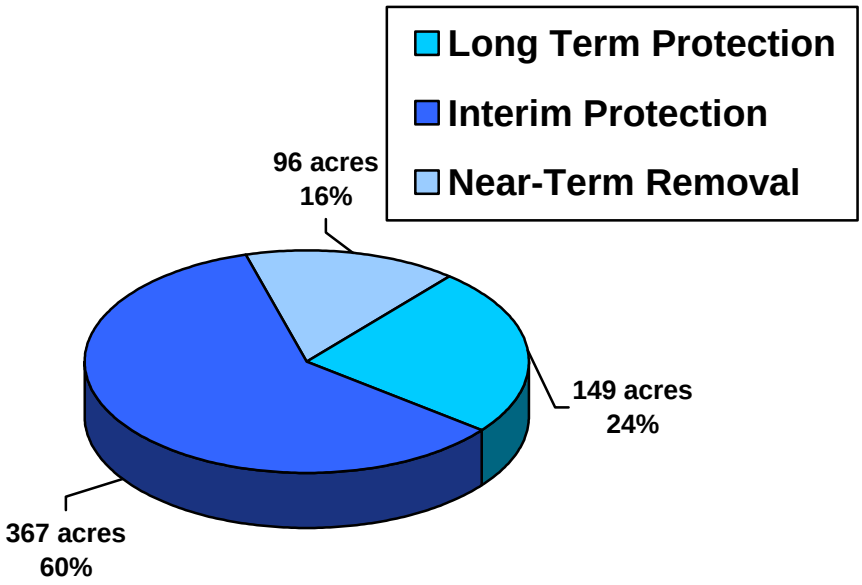
Conflicts that staff assumed were low enough risk not to prompt specific management actions included:

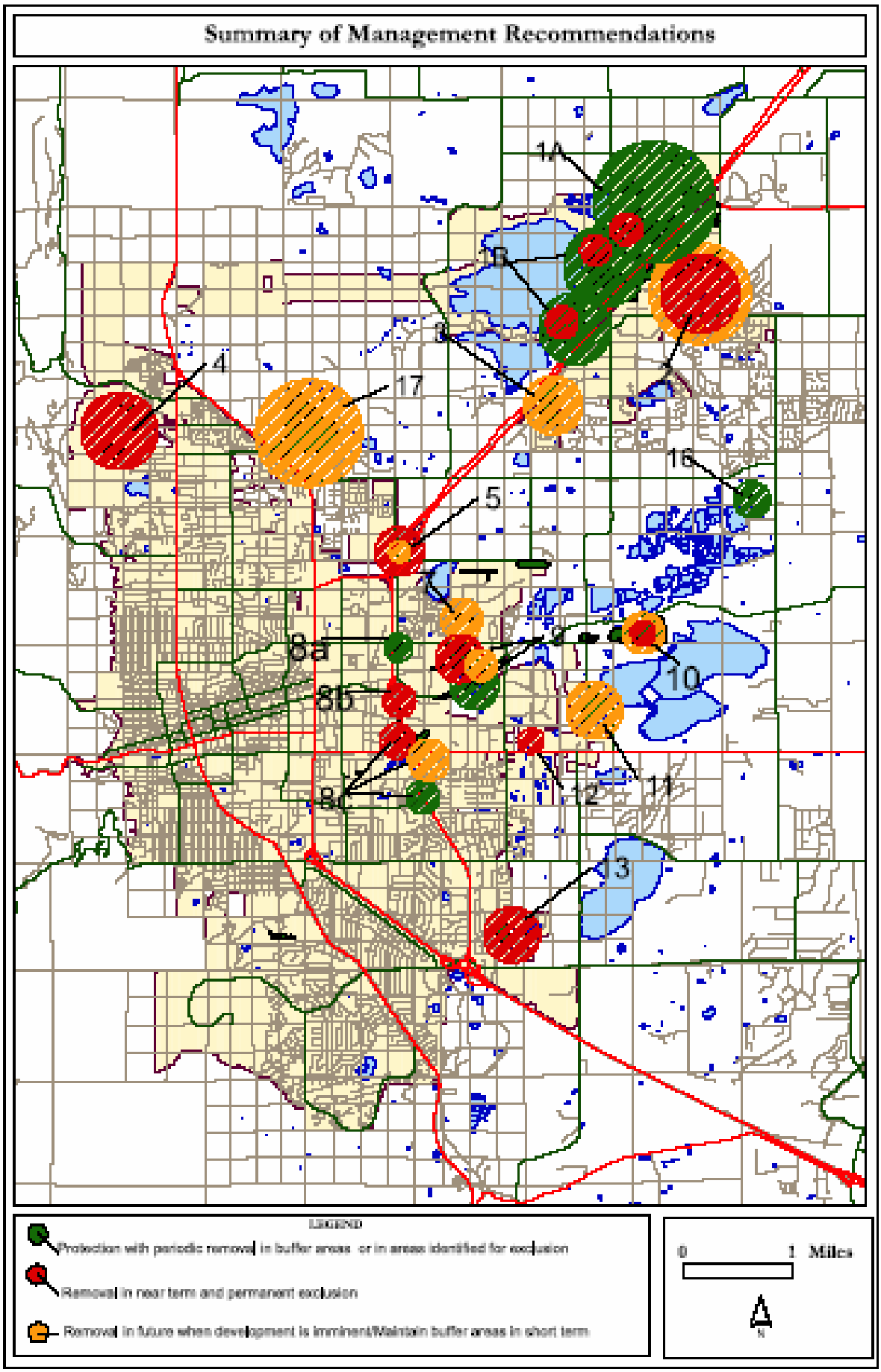
- public health related to plague;
- public safety related to roadways and bike paths; and
- potential new development in the long-term

In terms of property protection, there are conditions where prairie dogs may coexist with existing or planned development while in other situations, development of the property would harm the animal. In these situations, staff considered the cost and effectiveness of barriers on a case-by-case basis.

3
Management Classifications

As a result of the area-by-area analysis, each prairie dog colony complex was designated for either removal or protection. In some cases where conditions were found to vary across an area, a combination of removal and protection was recommended for specific areas. The category "long-term protection" was used to designate areas managed by the city or others where the current and projected land uses are compatible with prairie dog occupation, and where land management practices are either directed specifically for prairie dog protection, or where prairie dogs are treated with "benign neglect". Interim protection is proposed for areas where development is planned but not imminent; protection may occur in the short term, but removal will likely become necessary in the long-term. The analysis and recommendations for each prairie dog area are in a series of Colony Reports in *Appendix A* and summarized on the map and in the chart below.




Summary of Management Recommendations
1A
1B
3
4
17
16
5
8a
8b
8c
10
12
11
13
LEGEND
Protection with periodic removal in buffer areas or in areas identified for exclusion
Removal in near term and permanent exclusion
Removal in future when development is imminent/Maintain buffer areas in short term
0
1 Miles
N

Long-term Protection (approximately 149 acres)

The largest area of longer-term protection consists of approximately 132 acres of active prairie dog colonies on the prairie dog habitat conservation area managed by the Parks and Recreation and OSMP departments on the east side of Boulder Reservoir (colony #1b). Prairie dogs have long occupied city and state road rights-of-way along Pearl and Foothills parkways where they provide opportunities for observation and are not involved in significant conflicts. The analysis for prairie dogs in the rights-of-way of colonies 8a, 8c and 9 suggested that the majority would be appropriately designated for longer-term protection. These road rights-of-way contain about seventeen acres of active prairie dog colonies.

Interim Protection (approximately 361 acres)

Interim protection of areas occupied by prairie dogs was identified as an option where: 1) there are no *current* significant conflicts; 2) natural lands management decisions have not been made; or 3) development plans are unknown or not anticipated for at least six years. The six year timeframe was selected to reflect a typical mid-range planning horizon and is used by the city for capital improvement project planning. The largest area identified for interim protection is the regional park site in the Planning Reserve (colony #17). This site includes 152 acres of currently active prairie dog colonies. The current CIP does not include the development of this site.

There are about 140 acres of prairie dog colonies on OSMP in the study area identified for interim protection. The majority of prairie dog acreage is on properties purchased from IBM in the Gunbarrel area (colony #2). OSMP land interests (conservation easements) with prairie dogs in the study area also includes about three acres near the Boulder Community Hospital at Foothills Parkway and Arapahoe Rd. (colony #8c). These colonies were identified for interim protection because they have not been reviewed as part of the BTPD Plan.

In addition, there are small areas occupied by prairie dogs at the city's wastewater treatment plant on 75th Street (colony #16), in the undeveloped areas of Valmont Park (colonies #7 and #9) and 63 acres of private property identified as candidates for interim protection.

Near-Term Removal (approximately 96 acres)

Removal areas were identified where the presence or activities of prairie dogs are most in conflict with regulations, public services and facilities or landowner preferences. Areas evaluated in the BTPD Plan, but not designated as conservation areas or transition areas were also identified as removal areas.

There are three areas in the study area where removal is a regulatory requirement. Federal regulations require that the runway area of the Boulder Municipal Airport be kept free of prairie dogs (colony #6). There are currently no prairie dogs on the airport site, as the city has been actively monitoring and removing the animals from the site. State dam safety regulations and agreements with the Northern Colorado Water Conservancy

District require that prairie dogs be excluded from an area 100 feet from the base of the two dams at the Boulder Reservoir (colony #1b). There are currently are no prairie dogs in the ten acres affected by this regulation since the area has recently been treated with burrow fumigants. Finally, the federal Environmental Protection Agency has required that prairie dogs be removed from the contaminated tailings portion of the Valmont Butte site estimated at approximately ten acres (colony #10).

Prairie dogs have become active in several parks where their presence and activities are considered incompatible with the intended public uses of these areas. As a result these areas have been identified as removal areas. These include the developed portions of Valmont Park (colony #9), Tom Watson Park (colony #1a) and the East Boulder Community Center (EBCC)(colony #13). Areas occupied by prairie dogs adjacent or near park sites have also been identified as potential removal areas. These include the Hogan-Pancost property south of the EBCC (colony #13), OSMP & Park and Recreation Department lands west of Foothills Community Park (colony #4) and a portion of the state highway right of way east of the Pleasantview soccer complex (colony #5). These areas were identified as removal areas because they pose a significant threat to the city's ability to provide services at nearby parks.

The OSMP lands west of Foothills Community Park were reviewed as part of the BTPD plan and not recommended as a prairie dog habitat conservation area for several reasons, including incompatibility with the planned (at the time) park. It is likely that the owners of the Hogan-Pancost property would support the removal of prairie dogs from their property as they are planning annexation and residential development of the parcel. There are also private properties where the landowners desire to remove prairie dogs due to irreconcilable conflict, such as on going damage to property. Approximately sixteen acres across four sites have been identified as removal areas for this reason.

Some of the larger blocks of prairie dog activity identified for protection or removal are nested in a natural land system (Boulder Reservoir, IBM and the Planning Reserve) where considerable ecological context remains. These areas should be managed in accordance with the BTPD plan which is focused upon preserving and restoring grassland habitat for the prairie dog. Management of these areas may change as the Grassland Plan is developed.

4
Implementation

The objectives of the prairie dog component of the UWMP are to conserve prairie dog populations where possible in the urban service area while reducing conflicts with prairie dogs and other land uses. How the city responds to the conflicts between prairie dogs and other land uses is critical to the success of urban prairie dog management. Balancing prairie dog conservation with conflict reduction will require taking actions that remove the threats to prairie dog conservation and remove sources of conflict. This approach is based upon the assumption that both conflict and threats to conservation will decrease if the sources are removed.

In addition to direct actions, it will be also be necessary to increase staff capacity and work closely with interested members of the community. While these strategies are indirect, they are needed to help prepare the way for direct conservation and conflict reduction strategies.

This plan recommends the use of three complementary pathways to reduce conflict and conserve prairie dog populations. These are: 1) **City Policy Development or Revision,** 2) **Conservation Practices**, and 3) **Intergovernmental Relations**.

City Policy Development and Revision

Existing policies (including laws, regulations, ordinances and plans) guide prairie dog management and conservation. Some aspects of conflict reduction and prairie dog conservation can be addressed best by adjusting and establishing policies. Over the past few years, the city has developed and adopted local policies to address prairie dog conservation. In addition, there are also relevant policies at the state and federal level.

The UWMP – Black-tailed Prairie Dog Component establishes classifications of lands within the urban service area, as either prairie dog "Protection Areas" or "Removal Areas". The intention of these designations is to clearly articulate a recommendation about the suitability of these areas for prairie dogs. These new designations present a new approach to prairie dog management by identifying where prairie dogs should be protected and where they should be removed.

This section of the plan provides a summary of issues associated with integrating the UWMP management designations into existing city regulations, rules, ordinances and policies. The recommendations in this section include both ways of integrating the UWMP into and improving the effectiveness of existing ordinances and policies.

City Council Resolution #842

In January of 2000, the City Council passed "Resolution # 842 Regarding the Protection and Management of Black-Tailed Prairie Dogs." This resolution recognized the importance of prairie dogs both ecologically and as a community value, and that there are large-scale patterns of prairie dog population decline. The resolution also confirmed the city's commitment to the protection of prairie dogs and their habitat and established a goal of eliminating any need for poisoning or extermination. Relocation was identified as the preferred (only) method of removing prairie dogs from a site. The resolution also provided direction for staff to:

- develop a set of policies emphasizing the protection of prairie dog habitat on private and public lands. Furthermore, it directs staff to;
- establish relocation policies so the city will accommodate the prairie dog relocation needs of public and private landowners on open space and other city lands
- take the lead in preparing receiving sites on open space, and insure that appropriate ecological conditions exist for successful relocation.

The resolution represented the City Council's earliest articulation of a vision for prairie dog protection and management outside of the OSMP system. The resolution, however, presents unclear direction about the role of city open space and other city-owned lands as receiving sites for prairie dogs. The resolution provides direction that open space and city-owned lands should be managed as functioning ecological systems. On the other hand, the resolution clearly directs staff to "establish policies such that the City of Boulder will accommodate all prairie dog relocation needs of private and public lands in the city."

Staff experience over the past five years indicates that there will be times when city lands will not be able to accommodate prairie dog relocation. And while staff has repeatedly taken "extra measures" to accommodate relocation requests over the years, it is not clear that these decisions have been reasonable. While prairie dog survival has been good, these relocation projects have had other implications for long term management of city-lands as functioning prairie ecosystems. In attempting to implement the direction in this resolution, the city has found that it cannot always accommodate all relocation needs or manage all prairie dog HCAs in a sustainable manner.

In addition, one key element of the resolution, the prohibition on the use of lethal control, has been superseded by subsequent policies. Although relocation remains the preferred method of removal, both relocation and lethal control are now both allowed by city policy and ordinance.

Action Items:

1) Develop amendments to Resolution #842 for Council consideration that resolve conflicts between the resolution and current policy.

Wildlife Protection Ordinance

The most significant ordinance affecting the management of prairie dogs in the city of Boulder is the Wildlife Protection Ordinance or Chapter 1 of Title 6 of the Boulder Revised Code (6-1 B.R.C. 1981). This chapter includes most of the regulations that deal with relocation and lethal control of prairie dogs and burrow destruction. This chapter limits the conditions under which lethal control or burrow destruction is allowed, and describes the processes for obtaining a permit to allow the use of lethal control. Lethal control permitting requirements are summarized in the table below.

<table>
<tr><th>A
Lethal Control Allowed without Permit</th><th>B
Lethal Control Allowed with Special Permit</th><th>C
Lethal Control Requiring a Permit</th></tr>
<tr><td rowspan="2">Safety or compliance with FAA requirements at an airport
Protection of structural integrity or safety at dam or other structure
Public or utility related projects conducted according to practices designed to minimize harm to animals
Part of research related to animal control or protection</td><td>Owners and occupants of residential lots containing a single residence
Immediate health hazards
Completion or maintenance of public improvement project approved by City Council.</td><td>All others</td></tr>
<tr><td colspan="2">Ongoing or continuous use of lethal control to prevent re-colonization can be included in a lethal control permit. Such a program must begin immediately after the initial prairie dog removal.</td></tr>
</table>

The permitting process for the use of lethal control requires applicants to explore and document alternatives to the use of lethal controls including: non-lethal control, changing land-use or habitat conditions to minimize conflicts, and relocation. Applicants whose situation does not meet the criteria outlined in columns A or B of the table above are required to pay a processing fee of $1,500 for a permit and a mitigation fee of $1,200/acre of active prairie dog habitat lost (unless prairie dogs are donated to a wildlife recovery program). There is a minimum 90-day permit review and public comment period for these applicants. If it is decided that relocation sites are available, the lethal control permit may be delayed for an additional twelve months to allow for relocation.

There are potentially several issues with the current ordinance that may hinder or impede efficient and successful implementation of the UWMP. Some of the preliminary issues that staff has identified include the following:

1. **The current regulations do little to promote or reward voluntary protection of prairie dogs.** Voluntary agreements between the city and a cooperating landowner could be developed to promote protection of prairie dogs and their habitat on non-city property while giving assurances to participating landowners that in specific areas lethal control of prairie dogs would be allowed.

2. **The burrow destruction restrictions may be in opposition to policy of minimizing use of lethal control.** Prohibitions of prairie dog burrow destruction do not allow: a) all landowners to respond to colony expansion onto their property; b) damage associated with relocation; or c) damage to prairie dog burrows that may be incidental to property use or management.

   Vigilant land owners or managers detecting the first establishment of burrows on a property who respond by filling burrows may be able to avoid the use of lethal control, and the expense of the permitting process. In addition if landowners can act without delay to fill or destroy burrows, they are more likely to be successful in discouraging prairie dog from establishing a colony where one is not wanted. The time frame for a lethal control permit (90 days to 15 months) is sufficient time for significant expansion and establishment of prairie dogs, thus increasing the amount of relocation or lethal control that would need to be done in the future.

3. The requirement that an applicant look at options for on-site protection may be inconsistent with UWMP management classification.

Action Item:

2) Review Wildlife Protection Ordinance for possible conflicts with implementation of the UWMP and propose amendments for Council consideration.

3) Continue administration of Wildlife Protection Ordinance and lethal control permitting process.

City of Boulder Land Use Code (Title 9 of the Boulder Revised Code)

Among other things, Boulder's land use code (Title 9, B.R.C., 1981) seeks to promote development that supports and implements the goals of the BVCP. Certain development projects in the city are required to go through the Site Review and approval process as outlined in the Boulder Revised Code. Under that process, project proposals are reviewed and approved if the city finds that they meet a set of criteria relating to site design. One of several criteria applied in the site review process and outlined in subsection 9-2-14(h) of the Boulder Revised Code specifically relates to the protection of prairie dog habitat:

> *No site review application shall be approved unless the approving agency finds that:*
> …
> *(h)(iii) The project provides for the preservation of or mitigation of adverse impacts to natural features, including, without limitation, healthy long-lived trees, significant plant communities, ground and surface water, wetlands, riparian areas, drainage areas, and species on the federal Endangered Species List, "Species of Special Concern in Boulder*

County" designated by Boulder County, ***or prairie dogs (Cynomys ludovicianus) which is a species of local concern, and their habitat****;*

Action Item:

4) Revise site review criteria to eliminate conflicts with the UWMP.

Boulder Valley Comprehensive Plan

The environmental policies of the BVCP describe the interconnectedness of the natural environment, the economy, the built environment and community livability. Prairie dogs affect all these elements and the BVCP environmental policies provided guidance for the approach and recommendations of this plan. The following concepts that have been discussed during the development of the prairie dog component of the UWMP that could be incorporated into the BVCP:

- Natural resource management and biodiversity conservation is often most effectively delivered through the management of natural lands. The Rural Preservation Area (Area III), especially city and county open space, is the primary location for activities associated with the conservation of biological diversity and ecosystems.
- Urban areas play other significant roles that are not always compatible with the conservation of all types of wildlife.
- The urban area is primarily intended for the development and support of human land uses and services described in the BVCP.

Action Item:

5) Consider revisions to the BVCP during the next major update to clarify where biodiversity and ecosystem conservation will be emphasized relative to the planning areas.

Open Space and Mountain Parks Grassland Ecosystem Management Plan

In 1995, the Open Space Board of Trustees (OSBT) approved a Black-Tailed Prairie Dog Habitat Conservation Plan (BTPD). The plan describes the areas of OSMP dedicated to prairie dog conservation, and describes how OSMP conserves prairie dog habitat in the context of broader grassland management. This plan was completed with the intention of developing a more overarching Grassland Plan to balance, agricultural uses, natural resources and visitor use in OSMP grasslands. However due to other priorities including the development of the Forest Ecosystem Management Plan, the Visitor Master Plan and a system-wide vegetation map for OSMP the Grassland Plan has not been completed.

Critical elements of the Grassland Plan such as habitat suitability and relocation criteria are needed to identify relocation opportunities as alternatives to lethal control for the prairie dog component of the UWMP. There is an on-going need to identify relocation opportunities in Boulder County because state law restricts the relocation of prairie dogs across county lines. OSMP grasslands often appear to be the most appropriate places to relocate prairie dogs; however, the BTPD does not include specific standards or criteria for the relocation of prairie dogs. Preliminary criteria that were developed in 2004 remain general. Consequently, requests to relocate prairie dogs to OSMP lands have been addressed on a case-by-case basis.

Action Item:

6) Prioritize the completion of the OSMP Grassland Plan.

Conservation Practices

Land Acquisition

The purpose of the OSMP is to acquire and manage lands with the conservation of native species and ecological systems as a primary goal. Although other city programs such as Parks and Recreation, Utilities and Transportation also purchase land, their focus is upon providing other community services.

Fee acquisition was not identified as an appropriate conservation or conflict reduction strategy for lands in the urban service area. However, as part of this plan 210 acres of existing prairie dog colonies are identified for long-term protection status. Over half of this amount (120 acres) is part of the existing HCAs around Boulder Reservoir. Consequently, the plan recommends new protected status for about 90 acres; 50 are privately owned and 40 are public lands. Some of the publicly-owned lands are county and state rights of way. The city may seek to acquire some level of interest in the lands (e.g. conservation easement) in order to ensure appropriate prairie dog management of areas which fall outside city control.

In addition, as part of the development of the Grassland Plan, the staff can formalize property review procedures to make HCA determinations on newly acquired properties, and apply those procedures to grasslands that have not yet been considered for inclusion in the system of prairie dog HCAs.

Action Items:

7) Develop a prioritized list of easements and other property acquisitions in areas identified for long-term protection in this plan.

8) Develop policy guidance to review properties for inclusion in the OSMP HCA system.

Land Management Practices

Without on-going management of both designated Protection and Removal areas, it is likely that prairie dogs on lands in the service area will be involved in conflicts on site, or spread out to neighboring properties. Continual management of prairie dog colonies is needed on an on-going basis to address soil erosion, noxious weed management and may be needed to address prairie dog population levels. More detailed site-based plans should be developed for public properties and for private properties in cooperation with affected private landowners. In addition to exclusion and removal (both described in the Management Tools section) site-based plans should also include:

- Prairie dog population management procedures
- Inventory for and response to the presence of associated species (e.g. raptors and burrowing owls)
- Vegetation management (weed control response, native plant and soil conservation)
- Monitoring for and responding to disease (e.g. plague)
- Educational or interpretive uses of the site
- The role played by the colony in ongoing management research (e.g. birth control, vegetation impacts, role of prairie dogs ask a keystone species

Although there has been funding for developing and implementing prairie dog and grassland management programs on city natural areas—the funding is limited for this work on other city lands, state and county rights of ways or private property. Some landowners could face significant expense to develop and carry out a plan to either protect or remove prairie dogs. The city could offer free technical assistance or cost-share planning and implementation as a way to educate, encourage, and reward those involved in prairie dog conservation and conflict reduction. The city could also play a role as intermediary, connecting people concerned about prairie dog conservation who are willing to volunteer their labor or donate funds, with people who own the land where prairie dogs live.

Developing management plans would require working with 25 to 40 private landowners and representatives from approximately six city departments as well as Boulder County and the State of Colorado.

Prioritization of Colony Management Plans

Establishing priorities and timing for implementation of colony plans is necessary to minimize the use of lethal control, manage costs, ensure humane treatment (whenever possible and financially reasonable) and protect facilities. Among the three management classifications (long-term protection, interim protection, and removal), implementation of the recommendations on developed or developing public lands is the highest priority for the city. In addition, availability

and capacity of receiving sites will also be considered when assessing priorities for removal areas and interim protection areas.

The following criteria were used to prioritize implementation of colony plans.

1) Current or potential threats to human safety or health (e.g. sports fields)
2) Regulatory Requirements (e.g. dams and airports)
3) Imminent development
4) Long-term costs of inaction
5) Level and type of conflict (e.g. loss of public asset or destruction of mechanical systems)

Removal does not necessarily equate to killing – particularly if removal plans are implemented gradually over time as receiving sites become available. When receiving sites are available, it is the city's intention to move quickly to implement removal from high priority areas. Costs and funding sources associated with this will need to be identified and analyzed.

During times when receiving sites are unavailable and immediate removal is necessary, the city's Six-step process, as outlined on page 17, will be followed. In the meantime, it is assumed that private property owners will apply for lethal control permits and follow the Six-step process. Below is a list of the recommendations for prioritizing removal on public land. Prairie dog removal on private properties will be dictated by landowner decision. In anticipation of this, the staff recommendations include actions to work with property owners.

Priorities for Public Land Removal Areas

Near term (2006 - 2007)

- Tom Watson Park (encroachment into play fields, human safety, loss of public asset and long term costs of inaction)
- Valmont Butte (soil contamination, regulatory requirement)
- South Valmont Park multi-use field buffer area (encroachment into play fields, loss of public asset/investment and long term costs of inaction)
- East Boulder Recreation Center (encroachment into park, loss of public asset/investment and long term costs of inaction)
- Right-of-way at Foothills Parkway and Kalmia (loss of public asset/investment and long term costs of inaction)
- Foothills Community Park (loss of public asset/investment and long term costs of inaction)

Interim Protection/Long-term Removal (2008 or later)

- Gunbarrel Fire Station (long-term costs of inaction)
- Foothills and Pearl (Development, destruction of landscaping and mechanical systems)
- South Valmont Park (development of a public asset)
- North Valmont Park; north of Valmont Road (development of a public asset)

Action Items:

9) Work with other agencies and private property owners to develop site management plans to protect and contain or remove and exclude prairie dogs in accordance with the colony designations.

- Develop site management plans according to the prioritization in the plan by working with agencies and private property owners.
- Work with community groups to identify lands available as receiving sites for prairie dog relocation.

10) Provide technical assistance to city departments to implement the recommendations of the UWMP.

- Coordinate technical assistance for site management plan implementation.
- Develop and administer an annual prairie dog management budget for City Council approval.

11) Conduct annual inventories of prairie dog colonies in the city and prioritize annual removal and relocation efforts.

Intergovernmental Relations

Regional Cooperation and Coordination

Several staff of Front Range communities participate in the Front Range Prairie Dog Working Group (FRWG). This intergovernmental coalition was established by Boulder staff in 2005 at the direction of City Council. The group meets at least quarterly and to share information about prairie dog management.

Action Items:

12) Develop and maintain an on-going list of potential relocation sites in the Front Range in cooperation with other jurisdictions.

13) Continue participation in and management of the Front Range Prairie Dog Working Group.

State of Colorado Policies and Law

The citizens of Colorado own all wildlife in the state. The Colorado Division of Wildlife (CDOW) has primary responsibility for managing wildlife statewide. The management of prairie dogs in Colorado is guided by several planning documents and implemented through educational programming, research, land management, intergovernmental agreements, regulations and administrative directives. State laws and agency actions are sometimes in conflict with Boulder's wildlife goals and management activities. The following is a preliminary list of recommended actions to resolve some of those conflicts:

Senate Bill 111

Colorado Senate Bill 99-111, now codified as state law under C.R.S. 35-7-203, was enacted by the Colorado State Legislature in the spring of 1999 and requires the approval of county commissioners to relocate prairie dogs across county lines. With few exceptions, SB111 has essentially stopped inter-county relocation, whether by public agencies or private parties.

This law is somewhat unusual for Colorado because it provides county commissioners with the authority to make decisions about what would otherwise be legal activities on private lands. In most other cases, many landowners would reject the idea of government officials being able to dictate how they used their lands. In addition, county commissioners in the range of the black-tailed prairie dog are unlikely to approve relocation of prairie dogs to their county for a variety of reasons.

Counties like Boulder are especially affected by this law because of tight land supply. Boulder is a relatively small county, land prices are relatively high, and a large percentage of suitable habitat is already occupied by prairie dogs.

Action Item:

14) Develop a legislative strategy to modify or repeal C.R.S. 35-7-203.

Review and Tracking of Colorado Wildlife Commission Meeting Agendas

Strategic plans and changes to regulations and policies are typically reviewed by the Governor- appointed Wildlife Commission. Agendas and materials for Wildlife Commission meetings are posted on the internet. It could be beneficial for the city to be aware of proposed changes in state regulations or policies that could affect the city's management of prairie dogs.

Action Item:

15) Review the Colorado Wildlife Commission meeting agendas for actions that could affect the city's prairie dog management.

State Relocation Policies

The CDOW Administrative Directive W-17 describes the permitting program for capture and relocation of prairie dogs. The directive was completed in 2000. The CDOW policies for relocation permit review are inconsistent with regard to the attributes of receiving sites to be evaluated and the thresholds for judging a receiving site acceptable. They are also inconsistent with regard to the attributes of sending sites to be evaluated—especially with regard to plague and the treatment of animals originating in colonies where plague has been active.

During the six years since the administrative directive was released, the CDOW and affected parties learned a great deal about relocation and the key attributes important for project success and compliance with CDOW goals and purpose. In response to these changes, and in order to improve the policy, CDOW staff will be working to revise the Administrative Directive W-17. The city of Boulder will participate in review of proposed modifications and provide input on changes to the state policy.

Action Item:

16) Develop recommendations to the CDOW to address inconsistencies in the state's relocation policies and permitting.

Prioritization of Action Items

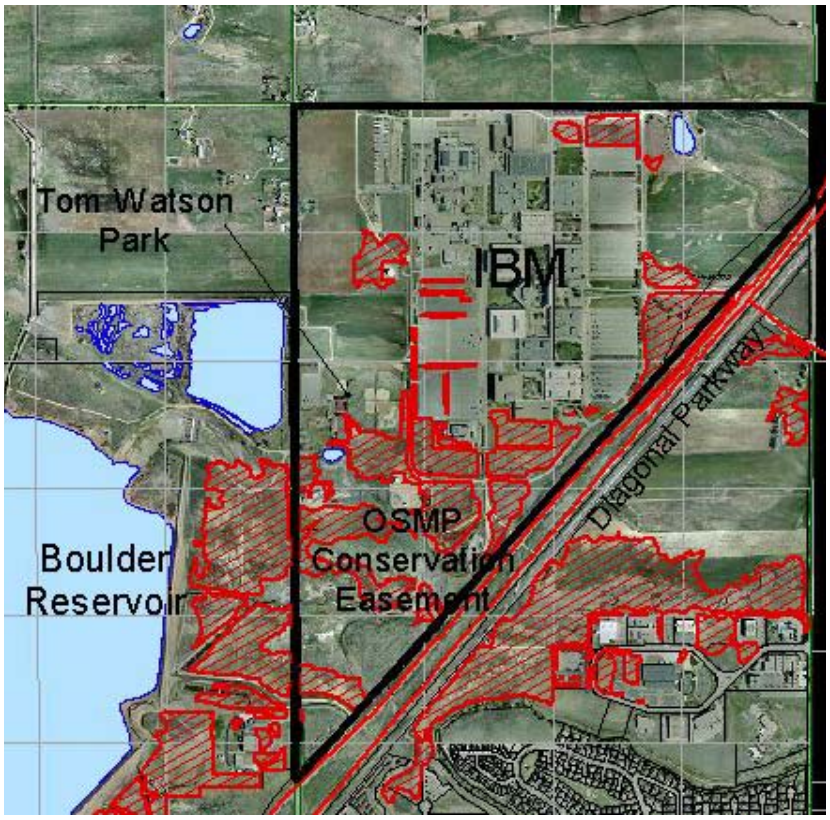
Short-Term Action Items		***Priority***
1)	Develop amendments to Resolution #842 for Council consideration.	1b
2)	Review Wildlife Protection Ordinance for possible amendments.	1c
4)	Revise site review criteria to eliminate conflicts with the UWMP.	1d
6)	Prioritize the completion of the OSMP Grassland Plan.	1e
16)	Develop recommendations to the CDOW to address inconsistencies in the state's relocation policies and permitting.	1h
5)	Consider revisions to the BVCP during the next major update to clarify where biodiversity and ecosystem conservation will be emphasized relative to the planning areas.	3
7)	Develop a prioritized list of easements and other property acquisitions in areas identified for long-term protection.	3
8)	Develop policy guidance to review properties for inclusion in OSMP HCA system.	3
14)	Develop a legislative strategy to modify or repeal C.R.S. 35-7-203.	3

On-Going Action Items		
9)	Work with property owners to develop site management plans to protect and contain or remove and exclude prairie dogs.	1a
10)	Provide technical assistance to city departments to implement UWMP recommendations.	1f
3)	Continue administration of Wildlife Protection Ordinance and lethal control permitting process.	1g
11)	Conduct annual inventories of prairie dog colonies and prioritize annual removal and relocation efforts.	2
12)	Develop and maintain an on-going list of potential relocation sites.	2
13)	Continue participation in and management of the Front Range Prairie Dog Working Group	2
15)	Review the Colorado Wildlife Commission meeting agendas for actions that could affect the city's prairie dog management.	3

The action items listed above with a priority #1 are those work items that need to be addressed in the near future to resolve city policy inconsistencies and prevent some of the current issues from escalating (#1 items are sub-prioritized as 1a through 1h). Priority #2 items are those actions that would improve or enhance our success at managing prairie dogs within the city and would occur on an on-going basis. Priority #3 items are actions that would be helpful to the program but do not necessitate immediate action.

Appendix A:
Colony Reports

Colony #1a
IBM/Tom Watson Park Site



COLONY DESCRIPTION

Colony is approximately 80 acres:

- Open Space & Mtn Parks = 27 acres (conservation easement)
- IBM = 40 acres
- Parks & Recreation = 7 acres (leased from IBM)
- CDOT Right-of-way = 6 acres

Condition of Colony:

- Area is highly visible from major roadway, to IBM staff and park visitors
- All colonies are bounded by commercial buildings, agricultural fields, major roadways, recreational fields, paved parking areas and unsuitable habitat (wetlands) ; opportunities for expansion into suitable habitat are limited
- Expansion of colony results in increased conflicts
- Colonies are dense and fragmented by developed areas
- Vegetation is mostly non-native
- Manicured and irrigated turf and landscaping on TWP

MANAGEMENT CLASSIFICATIONS/ACTION PLAN

OSMP Conservation Easement:
Management objectives will be determined and implemented in the context of the revised Prairie Dog Habitat Conservation component of the OSMP Grassland Plan (PDHCP).
Classification-To be determined

IBM Property:
Because this is private property, this plan can only convey a *recommendation* based on information available. In the context of this plan, preliminary recommendations are:
Classification- **Long Term and Interim Protection** in areas where colonies are compatible with current uses of the site
Classification-**Near Term Removal** in areas (landscaping and mechanical systems) where there are direct conflicts with current uses of the site
Cost-to be determined by private property owner

Parks and Recreation/Tom Watson Park:
Classification- **Near Term Removal** from ball fields, recreation landscapes and play ground areas, site mitigation and exclusion
Cost: (cost based on range of 50-150 animals)

- Removal through relocation-approximately $6,000-$30,000
- Removal through trap/flush, lethal control, $9,000-$12,500 for initial treatment (includes wildlife recovery program)
- Field mitigation-$12,000
- Enhanced buffer/exclusion treatment (10-75 feet) $10,000-$50,000

CDOT Right-of-Way
This plan can only convey a *recommendation* based on information available. In the context of this plan, preliminary recommendations are:
Classification-**Interim Protection** in areas where there are no direct conflicts
Classification-**Removal** if construction or widening is to occur
Cost-to be determined by Colorado Department of Transportation

ANALYSIS FOR MANAGEMENT CLASSIFIACTIONS/ACTION PLAN

Current Land Use/Zoning Designations of Properties

- IBM-Private/Commercial
- Tom Watson Park site leased to City of Boulder - ball fields, tennis/basketball courts and play ground
- City of Boulder Open Space and Mountain Parks (OSMP) Conservation Easement on southern portion of site with no public access; OSMP has land management responsibility.
- OSMP lands were acquired after the Black-tailed Prairie Dog Habitat Conservation Plan (HCP) was adopted and have not been designated as prairie dog habitat conservation areas (PDHCA), transition areas or removal areas.
- CDOT-Colorado department of Transportation Right-of-Way

Colony Conditions

This colony complex is among the largest in the service area. It is comprised of several different colonies. The area is fairly well vegetated, but most of the cover is exotic species, some of which are invasive weeds. Some native vegetation persists in this area—much of which was *not* occupied by prairie dogs at the time of field inventory (October 2005).

Landscape Context

Prairie dog colonies on this site were observed to be very active and described as expanding at the time of the field inventory. Bounded by busy roadways and incompatible uses on several sides, the colonies do not have considerable available habitat for expansion. The colony complex is located near an area with large bodies of open water (Six Mile Reservoir, Boulder Reservoir, Coot Lake), wetlands, prairie dog habitat conservation areas as well as grasslands undisturbed by prairie dogs. It is likely that some predators occur in this area.

Ownership

IBM owns almost the entire colony complex (74 acres). However, the City of Boulder Parks and Recreation Department leases seven acres (Tom Watson Park), and the Open Space and Mountain Parks Department has a conservation easement over 27 acres that gives OSMP management responsibility for that portion of the IBM property. The Colorado Department of Transportation (CDOT) owns about six acres as right of way for the Longmont Diagonal (State Highway 119)

Nature and Level of Conflicts

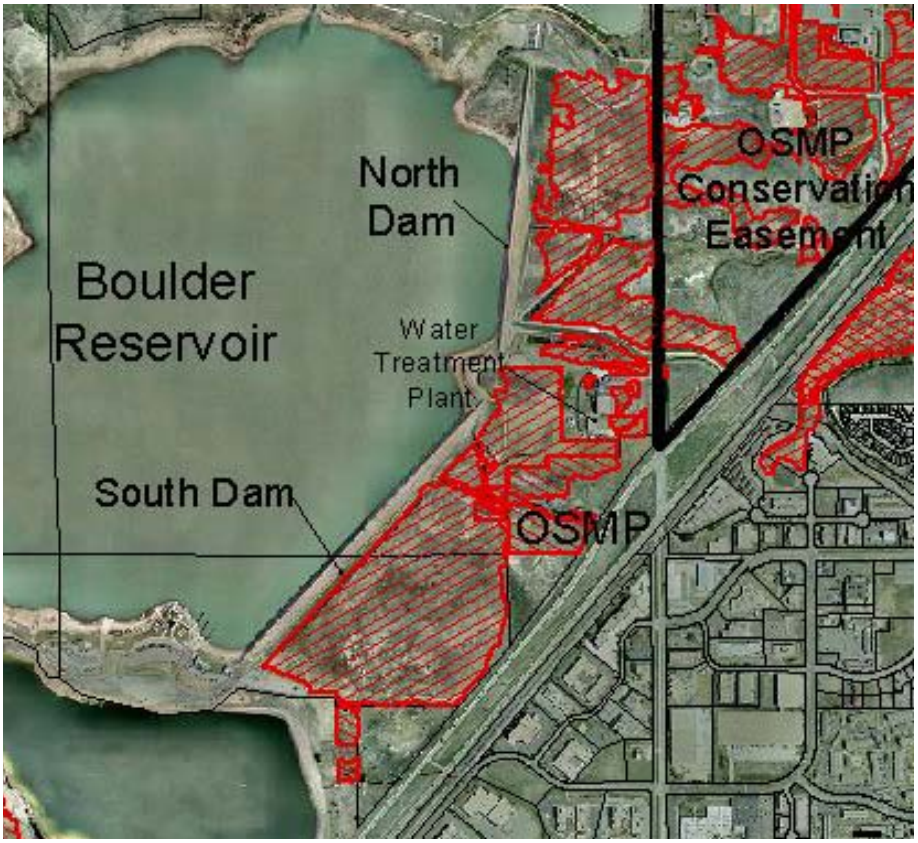
The primary landowner does not appear to have concerns about prairie dog conservation over most of the affected property. IBM property managers wish to exclude prairie dogs from relative small areas of developed landscaping around their "global receiving area", and from areas where prairie dogs threaten buried utilities and other "mechanical systems". Although these conflicts are rated "high" in the UWMP, they are very localized.

The conflicting land uses at Tom Watson Park are more widespread. Public safety issues associated with encroachment onto play ground and ball fields affect the full seven acres of the park. In addition to the loss of playing fields and other public park assets, there are also concerns about the perception of a public health issue associated with plague.

Areas classified as **Removal Areas,** in this colony report, are areas where the presence or activities of prairie dogs are in direct conflict with public services/facilities or landowner preferences. At Tom Watson Park, prairie dogs are incompatible with the intended public use of this site. The ball fields have been closed and have not been programmed for league play because of the potential risks for injuries to the players. This site is not owned by the city but is managed under a Recreation Lease Agreement with IBM.

Areas classified as **Protection, Long *and* Interim**, are areas where there are no *current* conflicts, natural land management decisions have not been made and/or development plans are unknown or not anticipated for at least six years.

Colony #1b
Boulder Reservoir Dams



COLONY DESCRIPTION

Colony is approximately 134 acres:

- Open Space & Mtn Parks = 22 acres
- Parks & Recreation = 120 acres

Condition of Colony:

- Colonies are dense (approximately 20/acre per P&R counts)
- Area is highly visible from major roadway and recreational visitors
- Vegetation is mostly non-native and invasive on dam face
- Vegetation trending toward non-native and invasive in other areas
- Area is part of a larger prairie dog habitat conservation area
- Documented and currently protected burrowing owl nest site(s)
- This area is also significant habitat for other wintering raptors
- Colonies seem to have been resistant to plague events that have occurred in contiguous landscapes in the last 30 years and the area is currently part of ongoing plague research
- Buffer areas immediately east of each of the dam faces are currently managed as prairie dog removal under an agreement with Northern Colorado Water Conservancy District to protect the integrity of the dams

MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Open Space and Mountain Parks:
Classification-**Long Term Protection**

Parks and Recreation:
Classification- **Long Term Protection**
Classification-**Near Term Removal** from 100-200 feet at base of dams/buffer areas under Agreement with Colorado Northern Water Conservancy District to protect dam safety and planned development near of Fire Training Center, south dam
Cost:

- Removal through fumigation-approximately $5,000 annually
- Barrier maintenance-approximately $5,000 annually, does not include periodic capital improvement costs

ANALYSIS FOR MANAGEMENT CLASSIFIACTIONS/ACTION PLAN

Current Land Use/Zoning Designations of Properties

- Designated a Habitat Conservation Area in OSMP HCP
- Designated as a Habitat Protection Area in the Boulder Reservoir Area Management Plan
- Drinking water containment
- Passive recreation
- Boulder Valley Comprehensive Plan natural ecosystem designation

Colony Conditions

This colony complex is among the largest in the service area. The area is expansive and active. Colonies are densely populated, annual counts estimate density averaging about 20 animals per acre. Vegetative cover is approximately 60%, predominately non-native and invasive species. This area is documented habitat for burrowing owls and is significant habitat for wintering raptors. As noted in our annual counts and recent comprehensive report of count data since 1998, this area is important to a variety of vertebrates, including several Colorado threatened Species and Species of Concern. The prairie dog colonies that have been monitored appear to be stable.

Landscape Context

The colonies at this site exist in a highly modified landscape that is dominated by human uses-hiking, biking, dog walking, running, horse back riding and large scale athletic/public events. The colony complex is located near an area with large bodies of open water (Six Mile Reservoir, Boulder Reservoir, Coot Lake), wetlands, prairie dog habitat conservation areas as well as grasslands undisturbed by prairie dogs. It is likely that some predators occur in this area.

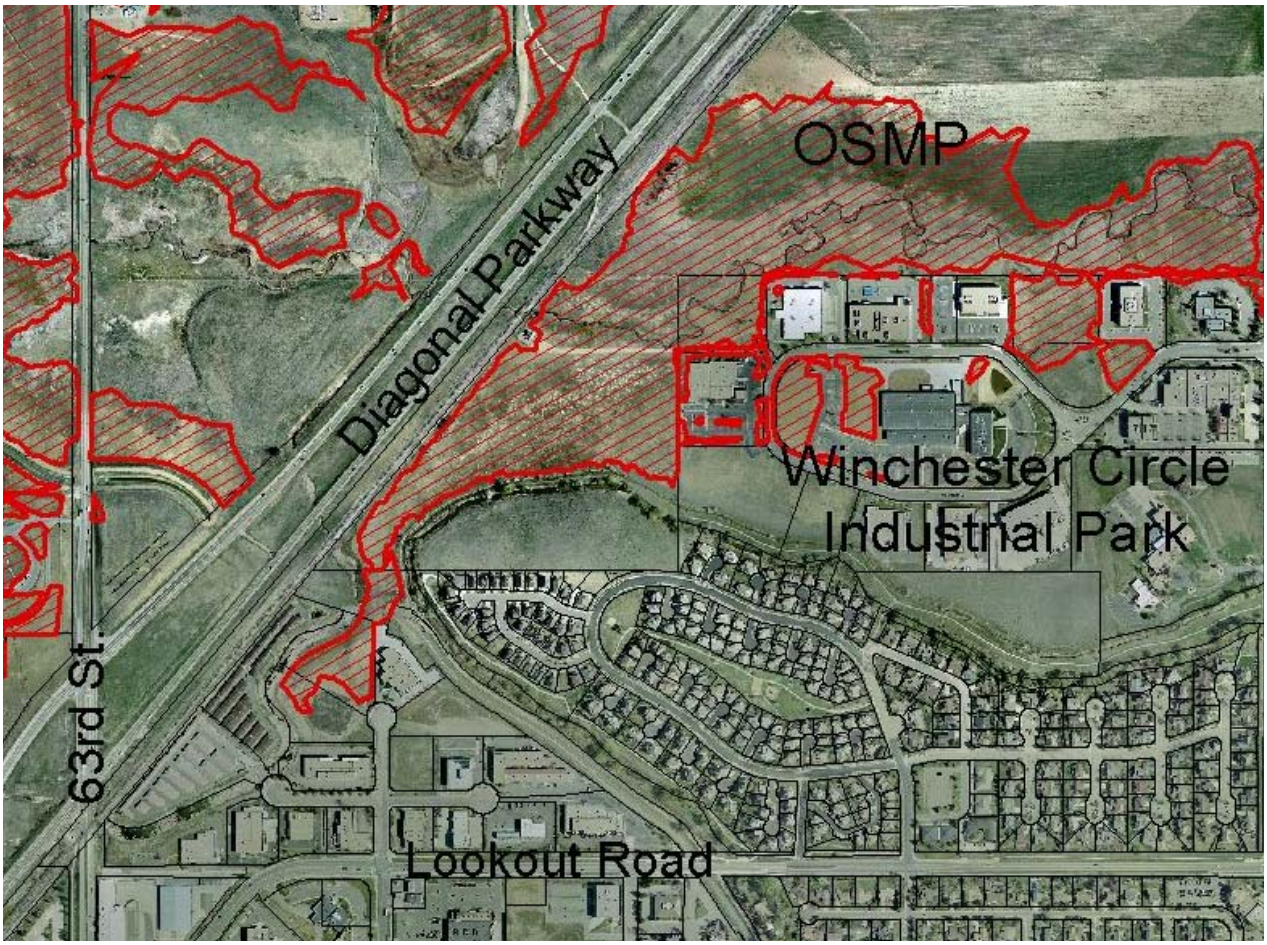
Ownership

The land at this site is owned by the city of Boulder. Approximately 120 acres of this complex is managed by the Parks and Recreation Department and approximately 22 acres is managed by the Open Space and Mountain Parks Department. The buffer area, east of each the dam face, is managed under a cooperative agreement between the city and the Northern Colorado Water Conservancy District. The buffer areas are actively managed to prevent prairie dog occupation to protect the integrity of the dams.

Nature and Level of Conflicts

Areas classified as **Near Term Removal Areas** in this colony report, are areas where the presence or activities of prairie dogs are in direct conflict with public services/ facilities and public safety. The primary conflict at this site has been maintaining the "prairie dog free" buffer areas adjacent to the dam faces. The city continues to work with the Northern Colorado Water Conservancy District to protect public safety and drinking water storage capabilities at the Reservoir, by managing the buffer areas of the dams through active removal, barrier construction and maintenance. A conflict that will need to be managed in the future is the construction and development of the new Fire Training Center that will be located at the south end of the south dam on active prairie dog habitat. Other areas of potential conflict are with adjacent landowners that may be impacted by the expansion of the colonies and/or public health issues associated with the potential exposure to plague.

Colony #2
Winchester Circle



COLONY DESCRIPTION

Colony complex is approximately 120 acres

- Open Space and Mountain Parks = 110 acres
- Private (multiple ownership) = 10 acres

Condition of colony:

- Visible mainly to staff of local businesses
- Private property is mostly manicured turf grass and small (landscape) trees
- Colonies bounded by minor roads, paved parking, buildings and OSMP lands
- OSMP colonies bounded by agricultural fields and major highway
- Colonies on OSMP dominated by mostly non-native and invasive vegetation

MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Open Space & Mountain Parks:
Classification – **Interim Protection**
Area will be analyzed in conjunction with the OSMP Grasslands Plan.

Private:
Classification - **Removal**
It is city staff's understanding that all property owners have agreed with this classification and prefer to have the prairie dogs removed from their land. City staff will work with property owners to develop plans for barriers and other exclusion strategies, including hardscape/xeriscape and barriers. Barriers will need to encompass the entire area on the west and north. Cooperative/coordinated management efforts will be required among private property owners. Preventing prairie dogs from inhabiting currently uncolonized and undeveloped sites should be a priority.

ANALYSIS FOR MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Current Land Use/Zoning Designations of Properties

- Partially developed industrial park, bounded on north and west by OSMP.
- Some development sites vacant
- Adjacent OSMP colonies were acquired after HCP and have not been designated.

Conditions

The colony complex currently occupies approximately 110 acres. Numerous relocations have occurred from various private properties in an attempt to reduce conflicts with development and destruction of landscaping. Prairie dogs currently occupy most of the private property. Some properties to the south have not yet been colonized. The colonies on OSMP are densely populated. Ground cover on OSMP is dominated by introduced grasses and weeds, including bindweed, Canada thistle and diffuse knapweed.

Landscape Context

This densely populated colony complex is separated from other colonies by Foothills Highway on the northwest and 71st Street on the east. Due to dense development, there are no colonies to the south. Colonies are bounded by roads, irrigated and landscaped commercial office parks, light industrial and other undesirable areas. Some portions of private property may be developed in the future. Some undeveloped sites are currently unoccupied. It is likely that some predators exist on the OSMP land.

Ownership

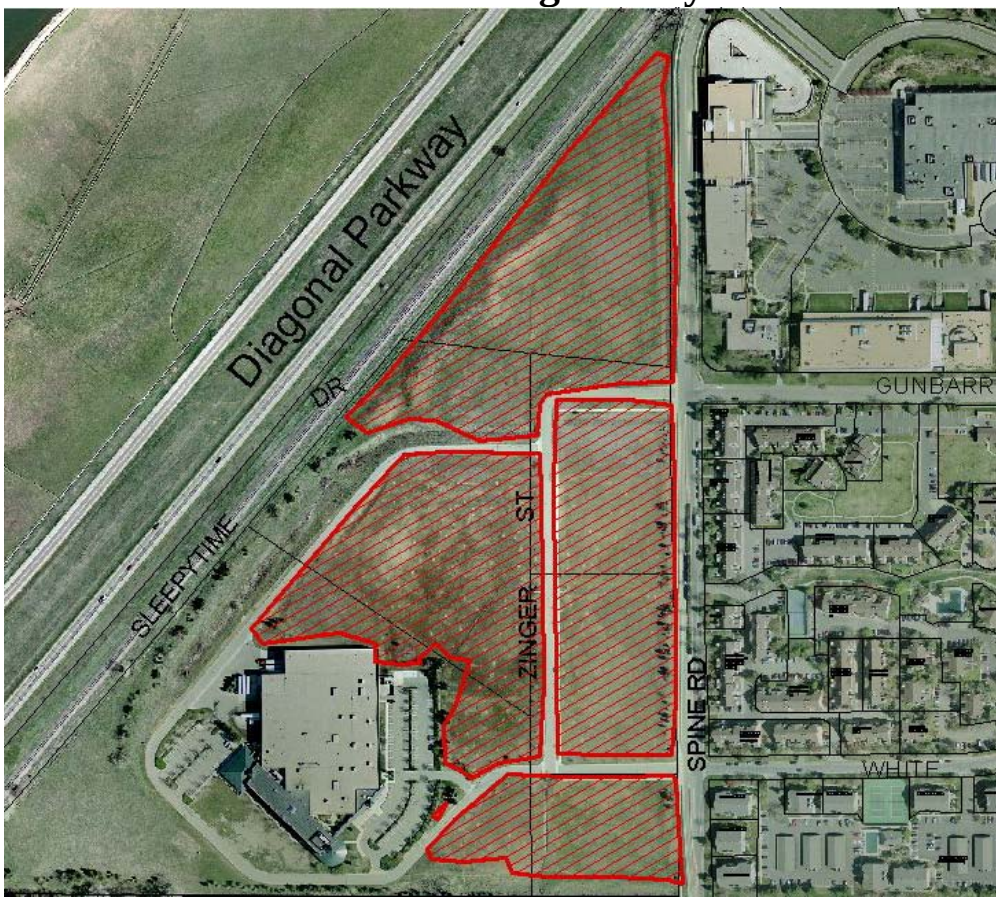
The city of Boulder Open Space and Mountain Parks Department is the primary land owner. Private land, commercial and light industrial is contiguous to the city owned property.

Nature and Level of Conflicts

Areas classified as **Removal Areas**, (private) are areas where the presence or activities of prairie dogs are directly impacting landscaping or may impact future development. There is also the potential for impacts to underground utilities. These are also areas where current landowners have expressed their desire to have the prairie dogs removed.

Areas classified as **Interim Protection Areas** (OSMP) are areas where natural land management decisions have not been made. Some conflict does exist on these areas related to irrigated agricultural fields. Decisions regarding the long term designation of these areas will be made in the context of OSMP's Grassland Plan.

Colony #3
Celestial Seasonings/Valley Lab



COLONY DESCRIPTION

Colony complex is approximately 27 acres, all privately owned:

- Hain-Celestial = 20 acres
- Valley Labs = 40 acres

Condition of Colony:

- All the prairie dogs on these properties are very active and the colony is dense
- The undeveloped grassland area is heavily grazed, weedy, and degraded by long-term prairie dog occupation
- This colony is fairly isolated and not connected to any habitat conservation area
- The colony is highly visible to Celestial visitors and local residents

MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Hain-Celestial & Valley Lab Properties:
Because these are private properties, this plan can only convey a *recommendation* based on information available. In the context of this plan, preliminary recommendations are:
Classification- **Long Term and Interim Protection** in areas where colonies are compatible with current uses of the site. City staff will continue to work closely with property owner representatives on barrier design and containment plans. A determination of what a sustainable population is should be made and that population level maintained. Changes will be recommended to the current code to provide incentives for these property owners to maintain prairie dogs on their property.

Consider **Removal** if development becomes imminent or if federal (FDA) guidelines require removal. Removal should also be considered when relocation sites are available and when prairie dogs have been removed from other higher priority removal areas.

ANALYSIS FOR MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Current Land Use/Zoning Designations of Properties

- Hain-Celestial Seasonings Company has a food production facility on a portion of this site with roughly 20 undeveloped acres owned by the company
- Valley Lab Company owns an adjacent 7 acres of vacant area

Conditions

The colony complex currently occupies approximately 20 acres. Discussions have occurred between Hain-Celestial staff, their neighbors to the south and city staff related to containment strategies. A barrier has been designed and is being erected by Hain-Celestial. Prairie dogs currently occupy most of the property and the colony is densely populated. Ground cover is dominated by introduced grasses and weeds, including bindweed, Canada thistle and yellow sweet clover.

Landscape Context

This densely populated colony complex is separated from other colonies by Foothills Highway on the northwest and commercial/light industrial and residential development on the east. Due to dense residential development, there are no colonies directly south, however, colonies do occur in the area north of Jay Road. The colony is bounded by roads, irrigated and landscaped commercial office parks, light industrial and other undesirable areas. It is unlikely that significant predation occurs at this site. Some portions of the properties may be developed in the future.

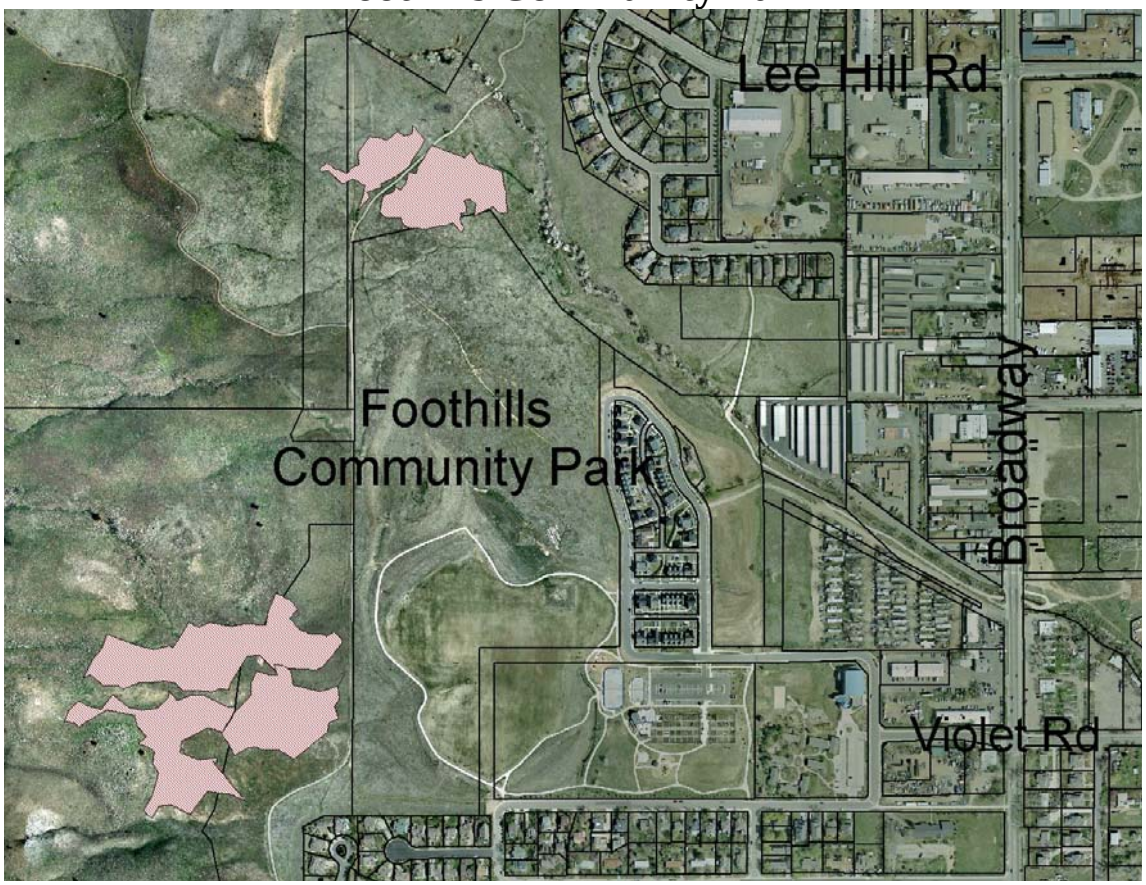
Ownership

The colony occupies land around a privately owned (Hain-Celestial) food production facility with roughly 20 undeveloped acres. There is another 7 acres of privately owned (Valley Lab) vacant land occupied that is part of this complex.

Nature and Level of Conflicts

Encroachment onto surrounding residential land is occurring. Food and Drug Administration regulations and guidelines require a rodent-free buffer zone around food manufacturing facilities. Currently there are no significant issues with the FDA guidelines. There are also Impacts to existing landscaping as the colonies expand onto the lawn areas around the building. Existing development agreement with the city allows considerable expansion of the use on these sites. Colony expansion may occur into the residential and commercial areas to the east.

Colony #4
Foothills Community Park



COLONY DESCRIPTION

Colony is approximately 9 acres, (*21 acres pre-plague 2005):

- OSMP = 8.5 acres
- Parks & Recreation = .5 acres

Condition of Colony:
Both north and south colonies are highly visible to visitors to the park and open space areas, as well as the surrounding neighborhoods

North Colony

- Moderately dense prairie dog population with good vegetative ground cover
- Colony occupies land on both Parks and Recreation and Open Space and Mountain Parks land
- Weed density is low
- Colony expansion to north is limited by roads and development
- Colony expansion to west is limited by unsuitable habitat (slope, forested areas)
- Developed park site and residential areas limit colony expansion to south and east

South Colony

- In July 2005, the colony was found to be infected with plague and a significant reduction in population occurred. Re-occupation of the site has been occurring in 2006
- Very low density prairie dog population on Open Space and Mountain Parks
- Colony occupies land on both Parks and Recreation and Open Space and Mountain Parks land.
- Prior to the plague event, the colony had a high density population with counts of 84 prairie dogs on 16 acres on both Parks and Recreation and Open Space and Mountain Parks land. Since the plague, the acreage of active burrows has been rapidly expanding; though the number of prairie dogs has not.
- This site has very low weed density.
- Colony expansion to west and north is limited by unsuitable habitat (slope, forested areas).
- Expansion east and south is limited by developed park site and residential areas.

MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Open Space and Mountain Parks:

Classification-**Near Term Removal**

Cost: (cost based on estimate of 180 animals)

- Removal through relocation-approximately $10,800-$36,000 ($60-$200/animal)
- Removal through trap/flush, lethal control with CO_2-approximately $8,000-$12,000 (4-6 days initial treatment) includes wildlife recovery program

Parks and Recreation:

Classification-**Near Term Removal**

Cost: (cost based on estimate of 10 animals)

- Removal through relocation-approximately $600-$2,000 ($60-$200/animal)
- Removal through trap/flush, lethal control with CO_2-approxiamtely $2,000-$4,000 (1-2 days initial treatment) includes wildlife recovery program

ANALYSIS FOR MANAGEMENT CLASSIFIACTIONS/ACTION PLAN

Current Land Use/Zoning Designations of Properties

- Developed multi-use fields, park facilities and approved future development of park amenities
- Adjacent Open Space and Mountain Parks removal area per PDHCP
- Passive recreation on Open Space and Mountain Parks

Colony Conditions

The South Colony is currently approximately 3 acres. Prior to the plague epizootic in 2005, this colony was approximately 16acres. Because this area was identified in the 1996 Open Space Grassland Plan as a "removal area", city staff filled/closed burrows post plague in an attempt to exclude prairie dogs from re-occupying this colony. However, the plague event did not kill all of the animals and they have slowly re-occupied the area in 2006. The colony is currently expanding with a low number of animals but a high level of activity. The vegetative cover in this colony is very good. It has approximately 85% ground cover dominated by native grasses with a minor influence of exotic species, such as toadflax. In the early 2000's, wildfire positively influenced the vegetative cover in this area.

The North Colony is approximately 6 acres. It is located approximately ¼ mile north of the South Colony and was not affected by the 2005 plague epizootic. This colony is expanding to west, south and east. The population numbers are fairly stable, thus the expansion is more geographic. The vegetative cover in this colony can be described as moderate with approximately 60-70% ground cover, with a mix of native and non-native grasses and invasive weeds, including bindweed and Canada thistle.

Landscape Context

Both colonies are expanding but will eventually be bounded by unsuitable habitat to the west, slope and forested areas, and the east/south east by the developed park site and residential areas. Expansion east and south is limited by developed park site and residential areas. Expansion into the developed park site is a significant threat to a multi-million dollar public asset. Multiple relocations and exclusion efforts have occurred as there has been expansion within close proximity the developed turf, multi-use fields of the park.

Ownership

This site is owned and managed by the city of Boulder.

Nature and Level of Conflicts

Areas classified as **Near Term Removal Areas** in the Prairie Dog Component of the Urban Wildlife Management Plan are areas where the presence or activities of prairie dogs are in direct conflict with public services, safety and developed facilities or landowner preference. Both colonies at this site are in close proximity/contiguous to residential development and Foothills Community Park. With expansion of either of these colonies to the south or east, the potential for Foothills Community Park, a multi-million dollar public asset, being negatively impacted is very high. Burrowing into and destroying multi-use turf fields, flood control structures, landscaping and irrigation systems is not compatible with the city of Boulders commitment to provide safe, urban services in the urban areas.

Colony #5
Foothills Parkway and Kalmia Avenue

COLONY DESCRIPTION

Colony complex is approximately 3 acres:

- CDOT right-of-way = 2 acres
- Private = 1 acre

Condition of colony:

- Private
  - Mostly non-native plants
  - Colony is disconnected from other colonies and bounded by major highways
  - Some expansion can occur
  - Not a highly visible area
- CDOT
  - Area is mostly non-native plants and colony is disconnected from other colonies
  - Not a highly visible area
  - Highly bounded by highway and development
  - Colony expansion will create greater conflict

MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Private:
Because this is private property, this plan can only convey a *recommendation* based on information available. In the context of this plan, preliminary recommendations are:
Classification – **Interim Protection** if colony is compatible with current land use and property owner is willing to coexist with the prairie dogs. Recommendations may be made to the existing code to provide incentives for the landowner to protect the prairie dogs. Monitoring the type and level of conflict will be necessary. **Removal** should be considered if the prairie dogs are not compatible, if development becomes imminent or if relocation sites are available and prairie dogs have been removed from other higher priority removal areas.

CDOT Right-of-way:
Classification – **Near-term Removal** from road right-of-way to prevent future conflicts. The current barrier is ineffective and colony expansion could threaten a multi-million dollar city asset (Pleasant View soccer fields).

City staff and CDOT staff will need to collaborate. CDOT's policies are similar to the city's. It is likely that removal from this area would only occur if a receiving site were available or if ground disturbing activities were to occur in the area. This should be a high priority area when receiving sites are available.

ANALYSIS FOR MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Current Land Use/Zoning Designations of Properties

- Private property zoned commercial
- State Department of Transportation right-of-way

Conditions

The colony complex currently occupies only approximately 3 acres. Vegetation consists of mostly non-native plants. The occupied areas are disconnected from other colonies and bounded by major highways. Neither area is highly visible to the public. Colony expansion will likely create greater conflict.

Landscape Context

These highly fragmented areas are separated from other colonies by Foothills Highway and the Diagonal Highway. There is the potential for connection to the colony on the east side of Foothills Highway. It is unlikely that significant predation occurs at this site.

Ownership

The colony occupies land on a privately owned parcel and CDOT right-of-way.

Nature and Level of Conflicts

The nature and level of conflict on the private property is unknown. Colony expansion from the CDOT right-of-way would threaten the Pleasant View soccer fields. Conflicts could also arise from expansion into the irrigated landscaping of surrounding commercial development. While it is appears that the prairie dogs moving across or onto the roads may create a safety hazard for motorists, the extent of this conflict is unknown.

Colony #6
Boulder Municipal Airport

COLONY DESCRIPTION

Currently there are no prairie dogs active at this site.

MANAGEMENT CLASSIFICATIONS/ACTION PLAN

- Classification: This site is classified as a **Removal** area. Due to human safety issues as well as FAA requirements, prairie dogs will not be permitted to occupy this area. Prairie dogs have been relocated several times from this site. Currently the site is not occupied. Airport staff will provide on-going and constant vigilance for individual prairie dogs attempting to re-colonize. Other action steps include evaluating barrier options on the west, south and east sides of the airport and hardscaping the helicopter pad, infield and other areas. On-going burrow fumigation or trapping and euthanizing will also be necessary. The existing barrier along the north side of the property should be maintained regularly.

ANALYSIS FOR MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Current Land Use/Zoning Designations of Properties

- City-owned
- Small municipal airport – light aircraft commuters, flying/gliding lessons, etc.

Conditions

The prairie dogs were removed in 2005 under the provisions of the Boulder Revised Code, subsection 6-1-11(b)(1). Prairie dogs were also removed in 2001 and 2003.

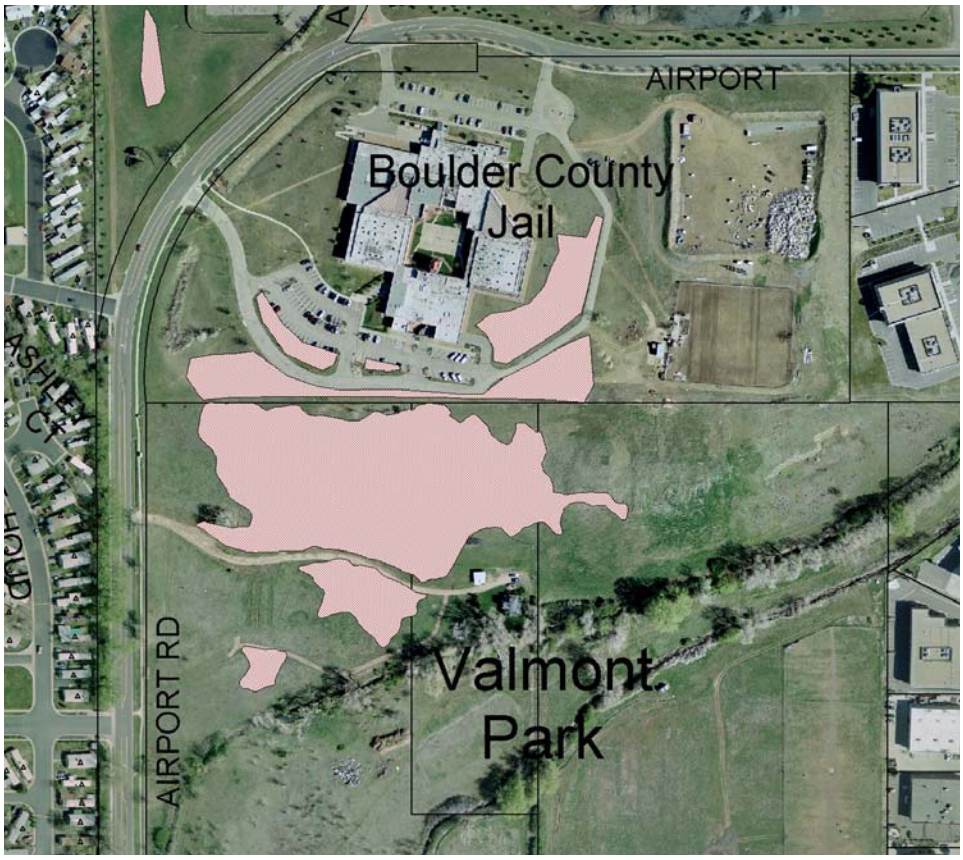
Landscape Context

The airport is not an area to be considered as habitat for prairie dogs or other wildlife.

Nature and Level of Conflicts

Prairie dogs on this site create significant conflicts related to human safety. Their burrows are a hazard to aircraft on the glider runway as well as aircraft that may need to leave the runway or taxiway. Prairie dogs are also a prey base for raptors. Attracting raptors to the airspace around the airport poses a collision threat. The FAA requires airport operators to maintain areas adjacent to runways in a flat, hazard free condition and to control rodents that may attract aerial predators.

Colony #7
North Valmont Park Area



COLONY DESCRIPTION

Colony complex is approximately 3 acres:

- Parks and Recreation = 5 acres

(Colonies shown north of Valmont Park on County land, have been removed)

Condition of colony:

- Very dense prairie dog population
- Site is mostly bare ground with non-native plant dominance

MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Classification: **Interim protection** of the area until development is imminent. Parks staff should also explore various options for barriers to contain the prairie dogs on site and reduce the potential for conflicts on surrounding properties. It may be necessary to determine the sustainable population and maintain the prairie dogs at that level. **Removal** will be necessary if development is to occur. Removal should also be considered when relocation sites are available and when prairie dogs have been removed from other higher priority removal areas.

ANALYSIS FOR MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Current Land Use/Zoning Designations of Properties

- City-owned park site
- Undeveloped (planned) park site
- Historical residence site

Conditions

The colony complex currently occupies approximately 5 acres. The colony appears to be densely populated, as there are large areas of bare ground. The area is also dominated by non-native, invasive plants. A hay bale barrier has been placed between the jail expansion project and the prairie dogs to the south on City Parks land.

Landscape Context

The colony is separated from other prairie dog colonies to the south by a riparian area and Valmont Road. The site is bounded by residential areas, light industrial areas, manicured (park) turf grasses, commercial properties and County detention facility. Some predation may be occurring at this site.

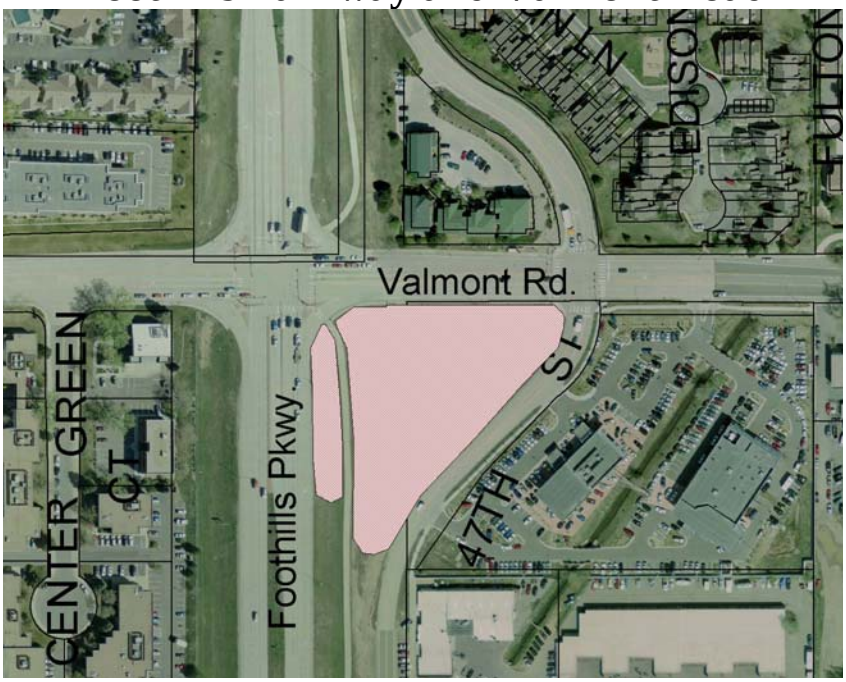
Ownership

City owned Parks and Recreation land.

Nature and Level of Conflicts

This colony may be a potential source of prairie dogs encroaching onto the airport (removal area), as well as potentially expanding onto the surrounding light industrial and commercial areas, where prairie dogs are unwanted. This situation may result in on-going lethal control on these surrounding areas. Conflict will also occur when this site is developed.

Colony #8a
Foothills Parkway and Valmont Road



COLONY DESCRIPTION

Colony complex is approximately 2 acres:

- City transportation right-of-way
- CDOT right-of-way

Condition of Colony:

- Site dominated by non-native vegetation, and bare ground
- Site is very isolated
- Bounded by roads, commercial and industrial areas and residential area.
- Highly visible from roads
- Raptors perch in cottonwood

MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Classification – **Long-term Protection** is a possibility here due to the limited conflicts. City staff and CDOT staff will need to collaborate. CDOT's policies are similar to the city's. It is likely that removal from this area would only occur if a receiving site were available or if ground disturbing activities were to occur in the area.
If road, bike lane and pedestrian area expansion occur, only the affected prairie dogs should be removed and use Best Management Practices (BMP's) should be employed for construction activities.

ANALYSIS FOR MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Current Land Use/Zoning Designations of Properties

- Colorado Department of Transportation right-of-way
- City-owned vacant land

Conditions

The colony complex currently occupies approximately 2 acres. The site has large areas of bare ground and is dominated by non-native vegetation. However, the site seems to be sustaining its small population of prairie dogs. There are occasional raptors that perch in the cottonwood tree on the site.

Landscape Context

This is a very small habitat fragment that is very isolated from other colonies. The colony is surrounded by wide roads, and high density residential and commercial development. It is unlikely that significant predation is occurring at this site. However the site is highly visible to commuters and other community members. Therefore, while its ecological function is extremely limited, there are educational opportunities and values provided by this colony.

Ownership

The colony occupies transportation rights-of-way owned both by the city and the Colorado Department of Transportation.

Nature and Level of Conflicts

While there are perceived human safety issues with bicycle commuters and auto commuters, the level of conflict is considered to be very low. There is potential for expansion from this colony to create conflicts on surrounding residential and commercial areas, however city staff has not received any complaints from these landowners and again the level of conflict appears low. Conflicts could arise if the roadways or bike lanes are widened or improved, but impacts would be minimal. There are also some conflicts created by inadvertent vehicle parking. These conflicts can be mitigated through education and signs.

Colony #8b
Foothills Parkway and Pearl Parkway

COLONY DESCRIPTION

Colony complex is approximately 2 acres:

- City of Boulder = 1 acre
- CDOT right-of-way = 1 acre
- Marriott Hotel = burrows scattered around hotel grounds

Condition of Colony:

- Site dominated by non-native vegetation, and bare ground
- Site is very isolated
- Bounded by roads, commercial and industrial areas.
- Hotel area is irrigated turf and landscape trees
- Mainly visible to hotel patrons and staff

MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Classification – **Near-term Removal** from all areas. City staff and CDOT staff and Marriott staff will need to collaborate. Removal will need to be coordinated among the landowners. Removal efforts should be followed by specific exclusion strategies to prevent re-colonization. This should include hardscaping or paving of the city owned site, xeriscaping of the CDOT right-

of-way and hotel site. Barriers will need to be erected if removal is not undertaken on the CDOT or city properties. Relocation from this area should be a very high priority if a receiving site is available.

ANALYSIS FOR MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Current Land Use/Zoning Designations of Properties

- Colorado Department of Transportation right-of-way
- City-owned vacant land
- Marriott Hotel – hospitality operation

Conditions

The colony complex currently occupies approximately 2 acres. The CDOT site has large areas of bare ground and is dominated by non-native vegetation. The city-owned vacant land is dominated by non-native vegetation. Large cottonwood trees irrigated turf and landscape plants dominate the hotel site. Hotel staff has made efforts to exclude the prairie dogs from their property, including hardscaping some areas and erecting barriers.

Landscape Context

This is a small habitat fragment that is isolated from other colonies. However, there may be connections to the colony at Foothills Parkway and Arapahoe (colony 8c). The colony is surrounded by wide roads and commercial development. It is unlikely that predation is occurring at this site. The site is mainly visible only to hotel patrons.

Ownership

The colony occupies transportation right-of-way owned by the Colorado Department of Transportation, a small 1 acre parcel of city owned vacant land and a number of burrows occupying the landscaped area of the Marriott Hotel.

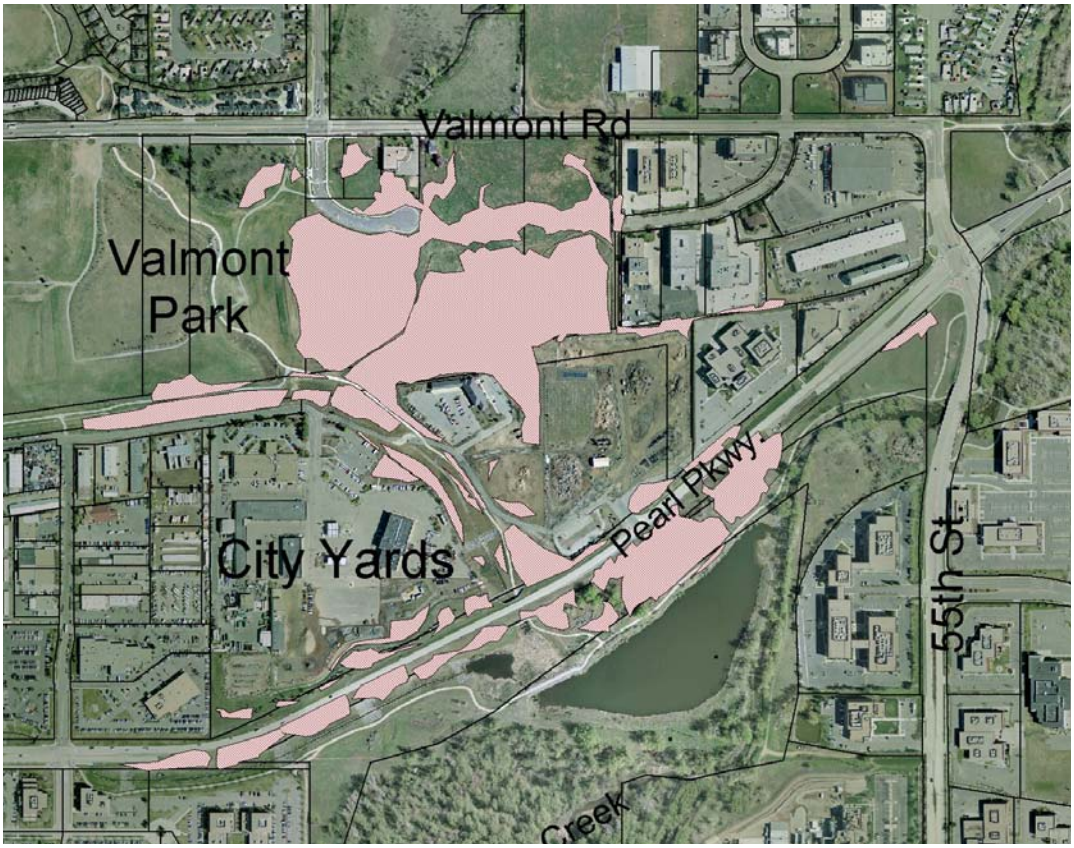
Nature and Level of Conflicts

On the hotel property landscaping is being destroyed. External lighting and mechanical systems have also been damaged. Hotel staff has indicated their concern for hotel patrons' safety given this situation and the proximity of burrows to walkways. There is also a concern related to the potential hazard from undermining root systems of some large cottonwood trees. The hotel staff indicates a concern for their corporate image and lost revenues from perceived health issues. Some hotel patrons have also expressed that they are fearful of the prairie dogs and are unable to enjoy there stay at the hotel. Movement of prairie dogs from the hotel site further east may create conflicts on other landscaped commercial properties.

Conflicts on the CDOT right-of-way include prairie dog expansion onto or use of the hotel property. Conflicts will also occur if the transportation infrastructure is expanded or developed. While it is appears that the prairie dogs moving across or onto the roads and bike lanes may create a safety hazard, the extent of this conflict is unknown.

Movement of prairie dogs from the city owned site is exacerbating the conflicts on the hotel property. . Movement of prairie dogs from this site further east may create conflicts on other landscaped commercial properties. This property is also slated for future development.

Colony #9
Valmont Park/Goose Creek/Pearl Parkway Area



COLONY DESCRIPTION

Colony complex is approximately 43 acres:

- Parks & Recreation = 30 acres
- City transportation right-of-way = 12 acre
- Private = <1 acre

Condition of Colony:

- High density prairie dog population which is contiguous to or in close proximity to colonies on several public and private properties
- Colonies are highly bounded by roads, irrigated and landscaped commercial office parks, landscaped park, light industrial and other undesirable areas (lake and cottonwood riparian area)
- Site is mostly covered by non-native, invasive vegetation

MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Parks & Recreation:
Classification- **Interim Protection** on undeveloped areas
Cost: development is not currently funded and not anticipated for at least six years, costs for future removal are estimates based on 2006 data and analysis

- Removal through relocation- approximately$48,000-$300,000 (assumes 45acres, with a density of 20- 25animals /acre, $60-$200/animal, initial treatment)
- Removal through trap/flush, lethal control with CO_2-approximately $36,000-$69,000 (assumes 45 acres, density of 20-25 animals/acre, an initial treatment of 20-30 days, @$1,800-$2,300/day, includes wildlife recovery program)

Classification-**Near Term Removal** on developed, landscaped turf and multi-use fields and buffer area
Cost: based on estimate of 50-150 animals

- Removal through relocation-approximately $3,000-$30,000 ($60-$200/animal)
- Removal through trap/flush, lethal control with CO2-approximately $9,000-$12,000 (assumes initial treatment of 5 days@ $1,800-$2,300/day, includes wildlife recovery program)

City Transportation Right-of Way:
Classification-**Interim Protection** until such time a road expansion would impact prairie dogs
Costs: to be determined if/when road expansion occurs

Private Property:
Because this is private property, this plan can only convey a *recommendation* based on information available. In the context of this plan, preliminary recommendations are:
Classification-**Near Term Removal and Interim Protection,** coordinated with any treatment the city may take, depending on land owner preference.
Cost: to be determined by landowner

ANALYSIS FOR MANAGEMENT CLASSIFIACTIONS/ACTION PLAN

Current Land Use/Zoning Designations of Properties

- City-owned – park site and park operations, transportation right-of-way and fleet maintenance facility
  - Phase I Park Site developed-multi use playing field
  - Undeveloped city park site
- Private – light industrial and commercial
  - Fully developed general industrial park
- Goose Creek flood control drainage ways

Conditions

The colony complex currently occupies approximately 45 acres. Numerous relocations have occurred on this site in an attempt to reduce conflicts with park site development. Prairie dogs now occupy approximately 90% of the park site to be developed at some point in the future. The colonies are densely populated. Ground cover is approximately 50% dominated by introduced grasses and weeds, including bindweed and white horehound, Canada thistle in the riparian ditches and an influence of diffuse knapweed.

Landscape Context

This densely populated colony complex is contiguous to or in close proximity to colonies on several public and private properties. Colonies are bounded by roads, irrigated and landscaped commercial office parks, landscaped park, light industrial and other undesirable areas (water retention facility and cottonwood riparian area). The major portion of this site will be developed at some point in the future as a community park site with active recreation facilities/amenities.

Ownership

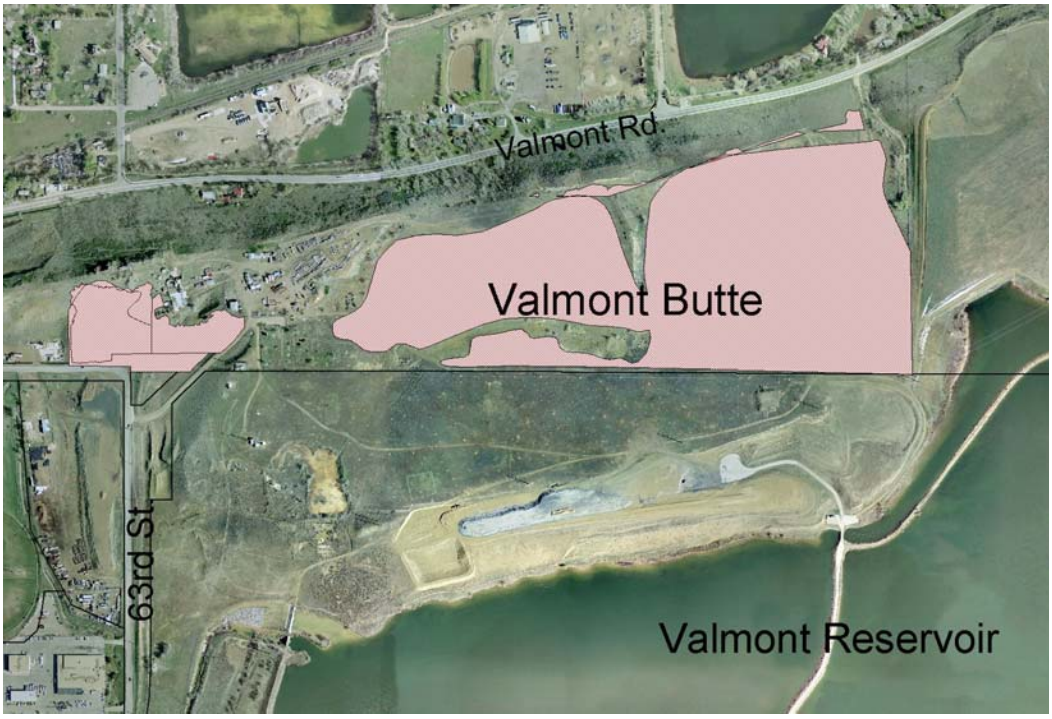
The city of Boulder is the primary land owner. Private land, commercial and light industrial is contiguous to the city owned property.

Nature and Level of Conflicts

Areas classified as **Removal Areas,** in this colony report, are areas where the presence or activities of prairie dogs are in direct conflict with public safety and services/facilities or landowner preferences.
Areas classified as **Interim Protection Areas** are areas where there are no *current* conflicts, natural land management decisions have not been made and/or development plans are unknown or not anticipated for at least six years.

This colony complex is expanding and is currently in close proximity to the developed, multi-use field. Burrowing into and destroying multi-use, turf fields, flood control structures, landscaping and irrigation systems is not compatible with the city of Boulders commitment to provide safe, urban services in the urban areas.

Colony #10
Valmont Butte



COLONY DESCRIPTION

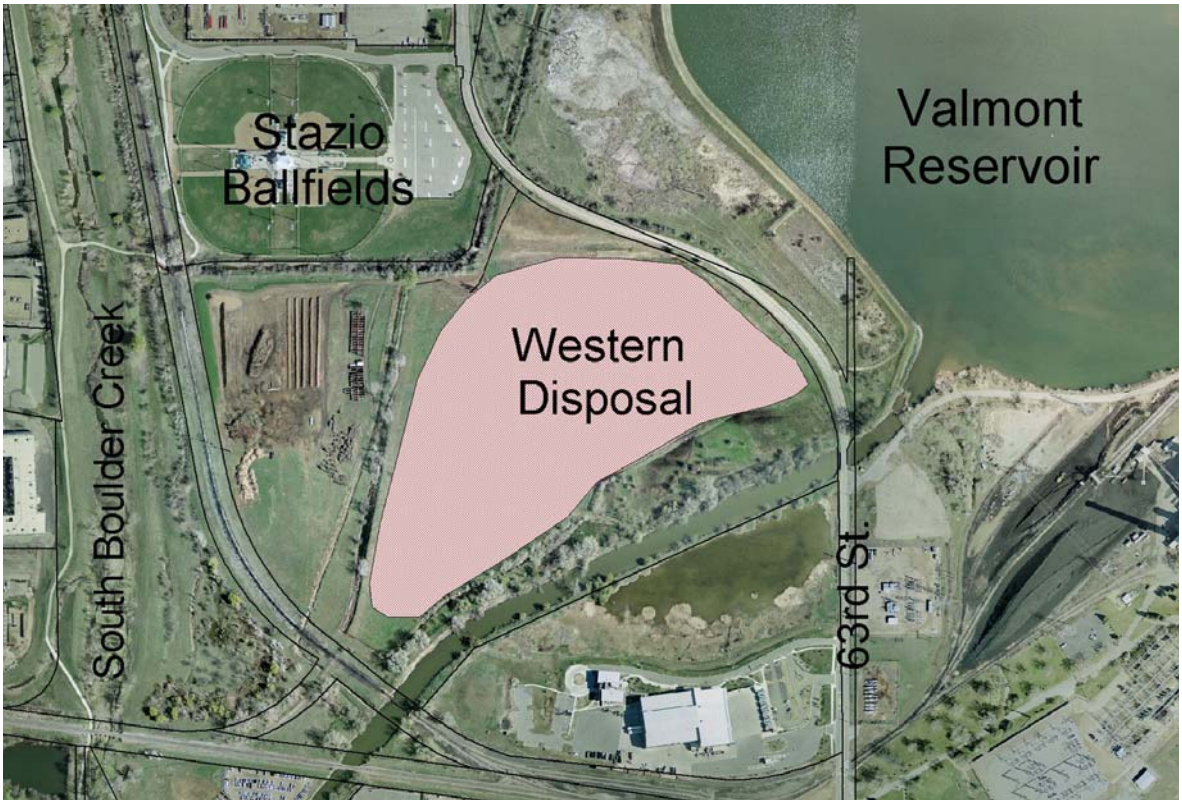
Colony complex is approximately 58 acres; all city owned

MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Classification: **Removal** from 10 acres as required by EPA.

The management plan for the rest of the site is currently being developed under a separate city process.

Colony #11
Western Disposal



COLONY DESCRIPTION

Colony complex is approximately 22 acres; all privately owned by Western Disposal.

Condition of Colony:

- Relatively large habitat area surrounded by natural lands
- Significant presence of other wildlife species (raptors)
- Vegetation in relatively good condition
- Bounded by industrial uses, irrigated ball fields and unsuitable habitat (lake)

MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Because this is private property, this plan can only convey a *recommendation* based on information available. In the context of this plan, preliminary recommendations are:
Classification – **Short-term protection** until develop occurs. **Long-term protection** may be feasible on part of the site depending upon development plans. Barriers (vertical & horizontal)

plans should be incorporated as part of the overall development plan. Relocation and exclusion should occur if a receiving site is available, prior to development.

ANALYSIS FOR MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Current Land Use/Zoning Designations of Properties

- Private, undeveloped industrial site.

Conditions

This is a relatively large colony surrounded by significant natural lands with ecological values. There are some areas of bare ground, but the vegetation is in fair condition.

Landscape Context

The colony complex is not connected to any other complexes and none are in the immediate vicinity. The habitat is also bounded by industrial development and multi-million dollar irrigated ball fields. However, due to the significant natural lands to the east, this complex may play an important role as a prey base for predators on the urban fringe; particularly raptors that may also be using Valmont Reservoir. Current natural and human created barriers (road, water supply canal, and railroad berm) around the site appear to be preventing the colony from expanding

Ownership

The colony occupies a development site owned by Western Disposal.

Nature and Level of Conflicts

Currently conflicts are minimal. Potential conflicts include possible encroachment into ball fields to the northwest and other surrounding developed lands. The landowners plan to exercise development of the site, so conflicts will exist when development is imminent.

Colony #12
West Arapahoe Avenue

COLONY DESCRIPTION

Colony is less than .25 acres on private land.

Condition of Colony:

- Small, very disconnected from other colonies and potentially new to the site
- Non-native Canada bluegrass is the dominant vegetation
- Bounded by a wetland to the north and industrial/commercial development
- Little other natural habitat in the area
- Not visible from a public right-of-way

MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Because this is private property, this plan can only convey a *recommendation* based on information available. In the context of this plan, preliminary recommendations are:
Classification - **Removal** of all prairie dogs as soon as possible to avoid potential long term costs and increasing conflicts from inaction. Actions should then be taken to destroy the burrow structures and actively prevent prairie dogs from re-colonizing the area. Until removal occurs, actions should be taken to prevent colonization of the vacant land to the north and onto landscaped areas to the east and west. This should be a very high priority for relocation if a receiving site is available.

ANALYSIS FOR MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Current Land Use/Zoning Designations of Properties

- Relatively undeveloped industrial site.
- Future development in unlikely on this site, but development to the north could occur.

Colony Conditions

The colony is very small and surrounded by unsuitable habitat. A large wetland is located on the south side of the property. The vegetation is mainly non-native bluegrass.

Landscape Context

There is no connection between this colony and a greater landscape context. The colony also is not visible from any public right-of-way.

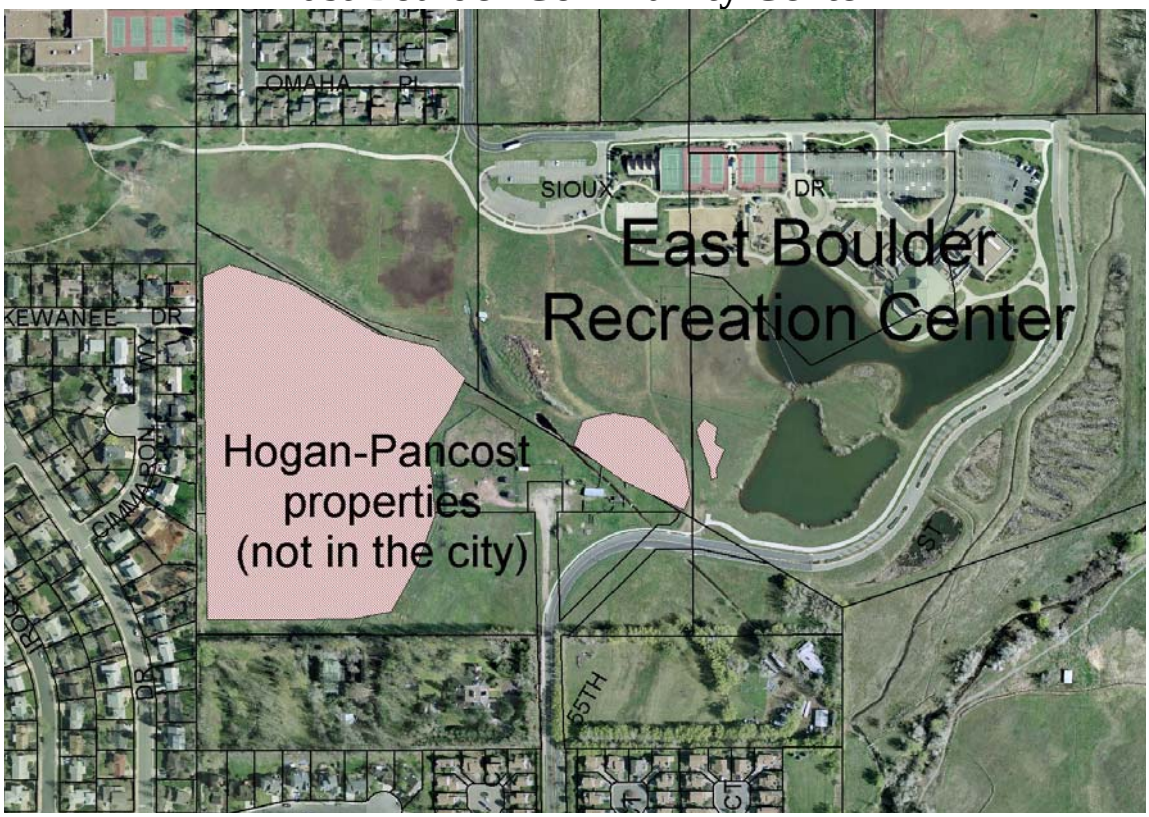
Ownership

Privately owned.

Nature and Level of Conflicts

There is great potential for the colony to expand over more of the site and on to adjacent commercial properties. Expansion of the colony will like create conflicts with surrounding landscaped areas. Expansion to the north will create conflicts should this vacant land be developed.

Colony #13
East Boulder Community Center



COLONY DESCRIPTION

Colony is approximately 13 acres:

- Parks and Recreation = 1 acre
- Private = 12 acres

Condition of Colony:

East Boulder Community Park Site

- Prairie dogs expanded onto city-owned land from the south in August 2005
- Two prairie dogs have been counted on Parks and Recreation Department land
- The condition of the site is poor, with extensive non-native, invasive species
- The colony is surrounded by developed park and residential areas

Private- Hogan/Pancost

- Vacant parcel outside of the city
- Colony is approximately 13 acres
- Moderately high density prairie dog colony
- The condition of the site is poor with extensive non-native, invasive species

MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Parks and Recreation:

Classification-**Near Term Removal**

Cost: (based on approximately 10 animals)

- Removal through relocation-approximately $60-$200

- Removal through trap/flush, lethal control with CO2, approximately $1800-$2,300, includes wildlife recovery program

ANALYSIS FOR MANAGEMENT CLASSIFIACTIONS/ACTION PLAN

Current Land Use/Zoning Designations of Properties

- City-owned
  - Phase II Park development planned for 2007-2008
  - Currently a Temporary Dog Park
  - Undeveloped site has passive uses
  - Multi-use play fields to the west
  - Community recreation center
- Private – undeveloped residential
  - Contiguous to public land

Colony Conditions

East Boulder Community Park Site:

In August of 2005, prairie dogs expanded onto approximately one acre of city-owned land from the south. As a pilot project to deter further expansion onto city park land, the existing temporary dog park was expanded and the chain link fence material was replaced by 1x1 mini-mesh. A metal barrier, anchored into the new dog park fence was also installed. The pilot barrier has been effective at limiting the northward expansion, but the number of prairie dogs has increased and currently approximately 6-10 animals occupy this one acre site. The area has approximately 80% ground cover dominated by introduced grasses and invasive weeds-primarily diffuse knapweed and musk thistle. The colony is bounded by residential development, developed park land and areas approved future park development.

Private- Hogan/Pancost:

This private parcel of land is vacant and currently outside of the city limits. General observations of the site suggest approximately 12 acres are occupied by prairie dogs with a moderately high density. Ground cover is poor and is dominated by non-native, invasive species.

Landscape Context

This colony is bounded by residential development, active recreation park land, a community recreation center and roadways. There is no suitable habitat, in any direction, for expansion of the colony.

Ownership

Twelve acres of this colony are on private, undeveloped property. One acre is owned by the city of Boulder.

Nature and Level of Conflicts

- Future park site development on city property
- Potential annexation and residential development of private site
- Expansion into surrounding residential areas
- Conflicts with pets using park site

Colony #14
University of Colorado Research Park

COLONY DESCRIPTION

Colony complex is approximately 5 acres, all owned by CU

Condition of Colony:

- Degraded shrub and grass area dominated by cheatgrass
- Isolated and not highly visible
- Highly bounded by developed areas and Boulder Creek riparian area

MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Recommendations for this site are not presented since the city does not have jurisdiction over CU properties. Staff will work with appropriate CU staff.

ANALYSIS FOR MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Current Land Use/Zoning Designations of Properties

- University research and office buildings and associated parking lots

Conditions
This colony is very small and fragmented with unsuitable habitat surrounding it, including parking lots and a riparian area. The area is dominated by cheatgrass and other non-native grasses and forbs.

Landscape Context
The colony is highly isolated from other colonies. It is not a visible colony.

Ownership
University of Colorado.

Nature and Level of Conflicts
Prairie dogs could expand to track and baseball fields to south, as well as onto adjacent landscaped areas around CU buildings.

Colony #15
NOAA/NIST

COLONY DESCRIPTION

Colony is approximately 4 acres, all on federal land

- U.S. Department of Commerce – NOAA/NIST
- OSMP conservation easement

Condition of Colony:

- Dominant vegetation non-native, invasive weeds
- Isolated and small but highly visible by local residents and NOAA/ NIST employees

MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Recommendations for this site are not presented since the city does not have jurisdiction on federal lands. Staff will work with appropriate NOAA/NIST staff regarding ways to provide **long-term protection** and containment.

ANALYSIS FOR MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Current Land Use/Zoning Designations of Properties

- Federal land-light industrial and research
- OSMP conservation easement with management responsibility

Conditions

There are some significant areas of bare ground and the area is dominated by non-native invasive weeds, especially knapweed.

Landscape Context

The colony is isolated from other colonies yet highly visible to local residents and NOAA/NIST employees. Predation is not likely to be a factor related to population control.

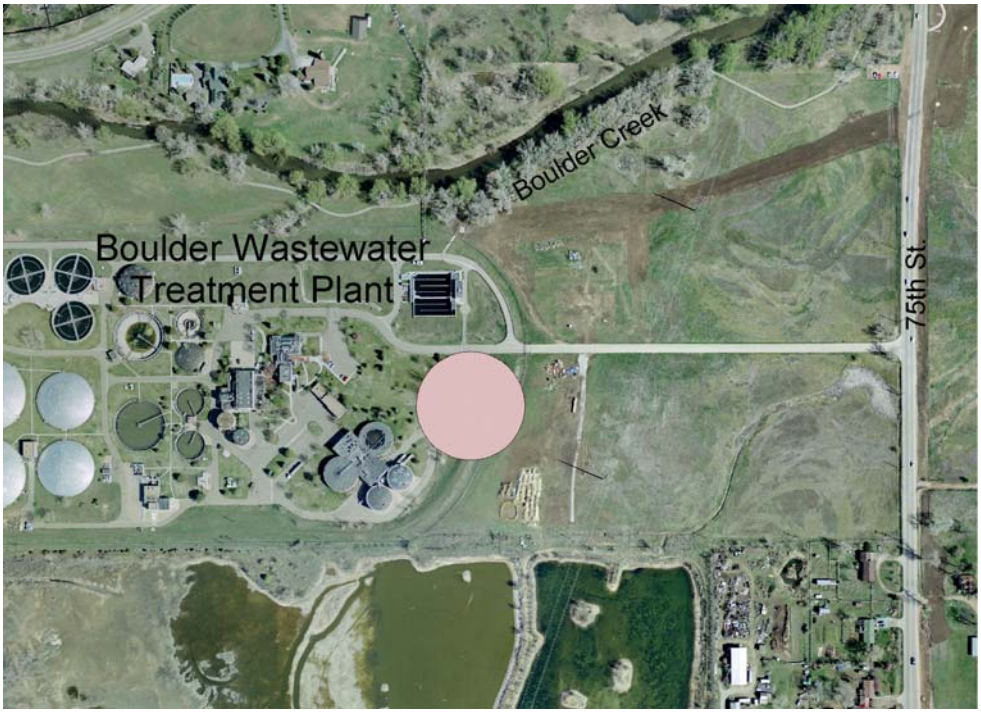
Ownership

The area is owned by the U.S. Department of Commerce and OSMP has a conservation easement with management responsibilities on a portion of the property, including the portion occupied by prairie dogs.

Nature and Level of Conflicts

Current conflicts are unknown. Significant development has occurred on the site since the last mapping effort. Potential conflicts include expansion into surrounding residential areas, destruction of mechanical equipment and potential future facility expansion.

Colony #16
75th Street Wastewater Treatment Plant



COLONY DESCRIPTION

Colony complex is approximately 2 acres:

- Public Works – Waste Water

(This site was not mapped)

Condition of colony:

- Dominated by non-native plants
- Bounded by treatment facility, Boulder Creek riparian area, irrigated pasture, and residential areas
- Colony is not highly visible

MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Classification: **Interim protection** of the area until development is imminent. Public Works staff should also explore various options for barriers to contain the prairie dogs and reduce the potential for conflicts on-site, as well as on surrounding properties. It may be necessary to determine the sustainable population and maintain the prairie dogs at that level. **Removal** will be necessary if development or facility expansion is to occur. Removal should also be considered when relocation sites are available and when prairie dogs have been removed from other higher priority removal areas.

ANALYSIS FOR MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Current Land Use/Zoning Designations of Properties

- Wastewater treatment facility
- Vacant land on the east portion of the site.

Conditions

The colony is small and isolated. The vegetation is mostly non-native grasses.

Landscape Context

The colony is bounded on the north by unsuitable riparian habitat and on the west by parking areas and landscaping around the treatment plant. There is potential for colony expansion to the east. Some predation may occur in this area. The colony is not highly visible.

Ownership

City owned Public Works land.

Nature and Level of Conflicts

There is potential for encroachment into water treatment infrastructure. Potential also exists for encroachment into surrounding residential areas or irrigated pastures. Conflicts will also occur if plant expansion or other development on the site occurs.

Colony # 17
Regional Park Site-Planning Reserve

(This colony has not been mapped)

COLONY DESCRIPTION

Colony is approximately 145 acres:

- Colony is located on 191 acre designated Planning Preserve/Regional Park Site-City Parks and Recreation
- Contiguous colonies on adjacent private property

Condition of Colony:

- Colony has expanded significantly in the past five years
- Colony is bounded by private property, residential areas to the south, east and west, OSMP to the north
- Vegetative cover is moderate with introduced grasses and invasive weeds

MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Parks and Recreation:
Classification-**Interim Protection** until development is planned.
Cost: to be determined
Private Property:
Classification:
Private property is outside the city limits and has not been classified. Area should be further analyzed in conjunction with any future plans to develop the park site. City staff should work closely with private landowners to develop future recommendations.

ANALYSIS FOR MANAGEMENT CLASSIFIACTIONS/ACTION PLAN

Current Land Use/Zoning Designations of Properties

- City owned land
- Area III Designation
- Proposed future regional Park Site
- Private property-future potential development

Colony Conditions
Ground cover is approximately 60-70 percent, dominated by diffuse knapweed with pockets of hounds tongue and musk and scotch thistle. Pockets of native species exist in areas unoccupied by prairie dogs. The majority of this colony was eliminated this year (summer of 2006) by a plague epizootic.

Landscape Context
This area is a documented site for ground nesting birds of special concern in Boulder County. This colony is monitored annually and has expanded significantly in the past five years (prior to the plague epizootic). Because this area is relatively undisturbed by the public, many species of wildlife-small mammals, predators and raptors have been documented frequenting this site. Private property and residential areas surround this colony on all sides but the north end. Prior to the plague epizootic, there was minimal opportunity for further expansion of this colony.

Ownership
The city of Boulder owns the entire Planning Reserve/Regional Park site which is approximately 190 acres.

Nature and Level of Conflicts
This site is currently designated as a Planning Reserve/future Regional Park Site.

Areas classified in this report as **Interim Protection** are areas where there are no *current* conflicts, natural land management decisions have not been made and/or development plans are unknown or not anticipated for at least six years.

Colony #18
Fire Station - Gunbarrel

(Colony has not yet been mapped)

COLONY DESCRIPTION

Colony size and conditions are currently unknown.

MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Classification and action plan will be developed after analysis of the property ownership, site conditions, landscape context and nature and level of current or potential conflicts.

Colony #19
North Boulder Army Reserve

(Colony has not yet been mapped)

COLONY DESCRIPTION

Colony size and conditions are currently unknown

MANAGEMENT CLASSIFICATIONS/ACTION PLAN

Classification and action plan will be developed after analysis of the property ownership, site conditions, landscape context and nature and level of current or potential conflicts.

Appendix B:
Evaluation of Management Tools

There are several tools for accomplishing the management actions outlined in Chapter 3. It is likely that a package of management tools will need to be used in each of the areas occupied by prairie dogs. This chapter provides an analysis of the benefit, feasibility and costs of tools that are currently available or show promise of addressing the goals of the plan. The box below describes the evaluation criteria that were applied to the following management tools:

- Containment and Exclusion
  - Visual barriers
  - Hardscaping as a barrier to excavation
- Removal
  - Relocation
  - Lethal control
    - Trapping and killing
    - Burrow fumigation (use of poisons)
- Birth Control

Benefit
A strategy is beneficial if it provides protection of prairie dogs or conflict resolution at a given site. Strategies that leverage other approaches, or are effective across multiple sites or have long-lasting outcomes are considered more beneficial.

Feasibility
The overall feasibility of a management action is dependent upon the availability of people; the time, talent, experience and support to carry it out. It is also critical that the strategy appeal to the motivations of community members who must support the management. Strategies that are simple, have been proven effective before, and for which funding are available are more likely to be successful.

Cost
Strategy costs were estimated for the appropriate time horizon and capped at ten years (for strategies that may continue indefinitely). Costs estimates were based upon 1) one-time costs, 2) annual costs, 3) person hours, and 4) frequency.

Containment and Exclusion

Visual Barriers

As prairie dog populations increase the colonies tend to grow as the second year males are forced out of the colonies. While there is some evidence that prairie dog populations grow more slowly under crowded conditions, numbers still tend to increase and there are second year males that are dispersing. Colony growth and dispersing individuals often results in conflicts with neighboring properties. A successful prairie dog protection area in an urban setting needs a means to discourage colony growth and dispersal to nearby properties. The most common approach to colony dispersal is the use of barriers.

Benefit*:* Barriers can reduce conflict by controlling the dispersal of prairie dogs onto areas where they are not wanted.

Visual barriers alone, however, are not likely to offer 100% effective containment. If prairie dogs continue to reproduce, colony density will continue to increase. At some point dispersing young will be forced to find a way over, around or through a barrier. Prairie dogs quickly find the way out where barriers are not continuous around the exclusion/containment area or where gates are needed for people or vehicles to enter and leave the area. Furthermore, barriers that are effective at containing or excluding prairie dogs can also restrict the movement of other small and medium sized terrestrial animals such as mice, toads, salamanders, frogs, snakes, and lizards.

A variety of site conditions on protection and removal areas as well as adjacent lands can affect the degree to which barriers are effective. Barriers are most effective in flat areas where the prairie dogs cannot get a hillside view of adjacent lands and, when installed with an adequate buffer between the barrier and the currently occupied landscape. On the other hand, barriers are not particularly effective in situations where the manager is trying to contain prairie dogs in sparsely vegetated areas surrounded by rich grass cover. Visual barriers can be long-lasting if constructed out of durable materials and installed with attention to high winds and exposure to sun. Longevity is also dependent upon the consistency of monitoring and maintenance.

Feasibility*:* The construction of barriers is viable. Fencing contractors in the Boulder area specialize in the construction of prairie dog barriers. There are OSMP and Parks and Recreation staff who have experience in building and maintaining visual barriers. However, the city does not currently have the capacity to build or maintain visual barriers on other lands or throughout all of the city park system.

City staff has found that barriers are relatively simple to construct and install. Staff has heard that private landowners are satisfied with the work of contractors, indicating that barrier construction is not significantly more complex for those with less experience

managing prairie dogs. Cost-share projects to establish visual barriers on lands managed by multiple owners could be complex and require special agreements.

Visual barriers appeal to motivations of many members of the community because the strategy offers a non-lethal alternative to prairie dog protection and conflict resolution and appears to have few obvious effects on non-target animals. On the other hand, some people find visual barriers to be visually obtrusive and aesthetically unacceptable.

Costs: The one-time costs associated with visual barrier construction range from $7 to $17 per linear foot depending upon the material. Fencing a square one acre area would cost between $5,900 and $14,000. Ongoing costs include monitoring and maintaining the barrier at approximately $500-$1,000 per acre annually. A higher initial investment would reduce the annual maintenance costs, especially in early years. Additional costs would be associated with plantings that might be used to soften the visual impact of a visual barrier. Staff has not estimated the range of costs for plantings and maintenance.

Hardscaping as a Barrier to Excavation

Under natural situations, prairie dogs will not occupy areas where they cannot excavate burrows. Managers of developed areas have begun experimenting with the use of buried wire mesh (chicken wire or hardware cloth), pavement and layers of rock (rock mulch) to discourage prairie dog burrowing.

Benefit: Pavement, rock mulch and wire mesh barriers can reduce conflict by controlling the establishment of prairie dogs in areas where they are not wanted. Wire mesh barriers also have the advantage of being an effective stand-alone strategy for excluding prairie dogs where they are not already established. In addition, hardscaping can be used around occupied areas as a tool to limit the spread of a colony. However, because prairie dogs are likely to walk across hardscaped areas, this approach alone is unlikely to be effective alone as a strategy for containment. Containment strategies also do not address continued reproduction, and pressures on prairie dogs to disperse. The effectiveness of hardscaping increases if the barrier is placed throughout an exclusion area and all around a containment area. The movement of people, vehicles and other animals across the surface is unaffected. Since it results in the destruction of burrow entrances, hardscaping will reduce the availability of prairie dog burrows for use by species such as burrowing owls and other burrowing animals such as pocket gophers.

Hardscaping requires that the vegetative cover be disturbed or removed from an area. Areas treated with wire mesh can be restored to grass cover, while there are fewer planting options for stone mulch, and none for paving. This approach has broad application in urban areas where it is likely that development, landscaping or other land use practices will result in the removal of vegetation and soils. The need to disturb native vegetation and soil over large areas means that this would not be a beneficial strategy in natural areas. Hardscaping for prairie dog management is a relatively recent innovation, and it is unclear how long wire mesh would remain effective. Paving and stone mulch

are probably fairly stable over time, especially with periodic monitoring and maintenance.

Feasibility: Hardscaping is a viable tool. There are contractors in the Boulder area that specialize in paving and concrete, and landscaping. The installation of wire mesh and restoration of grass (or other) cover is a relatively straightforward project for landscaping contractors. City staff has some experience in building and maintaining hardscaping applications; however, the city does not currently have the capacity to build or maintain hardscaping on other lands.

Hardscaping like visual barriers is appealing because it is a non-lethal alternative and has limited unwanted effects. Hardscaping applications vary in their visual appeal, but provide a number of choices (wire mesh being essentially invisible once the ground surface is revegetated). Establishing hardscaping on private lands or lands managed by other agencies could be complex and require special agreements.

Costs: The one-time costs associated with hardscaping include the costs of site preparation, materials, installation (including revegetation if applicable). In addition to the material costs, there are also site preparation and revegetation costs which would double or triple the area cost. On-going costs are probably relatively low, but capacity would be needed for periodic inspection and repairs.

Removal

Relocation

Relocation of prairie dogs normally involves live capture by trapping prairie dogs on the ground surface, or removing them from their burrows. Burrow removal techniques include flushing burrows with a water/soap mixture, or vacuuming prairie dogs out of their burrows. It is common for relocation projects to include a combination of specific techniques. Once captured, prairie dogs are transported and released at sites deemed suitable by CDOW and if across county lines, by appropriate county officials.

Benefit: The relocation of prairie dogs can address conflicts in removal areas, and may reduce dispersal related issues in protected areas. Relocation is a strategy with widespread application and has similar effectiveness across sites. The effects of relocation for removal can be long lasting, but require that all prairie dogs be removed from a site and that effective means of excluding re-colonization are also implemented. Relocation is seldom completely effective at removing all the prairie dogs from an area. Relocation for population reduction is a short-term strategy and needs to be repeated periodically to have long lasting effects.

Feasibility: Relocation is also a viable tool. There are contractors and some volunteer organizations in the area that provide prairie dog relocation services. The city has had

problems with the reliability and capabilities of some contractors. In addition, city staff has developed experience with trapping and burrow flushing on city land; but do not have the capacity to offer these services to others in the community.

Relocation techniques vary in their appeal to members of the community. There is controversy about success rates, "humaneness" of the process and mortality rates for relocated animals. However, relocation is generally preferred to lethal alternatives. Impacts to some non-target animals may be higher if burrow flushing and vacuuming is combined with live trapping, however, flushing can also increase the survivability of other non-target animals. Some members of the community are especially opposed to vacuuming because they say this technique exposes prairie dogs to a greater risk of harm.

The practicality of relocation is limited by the availability of receiving sites. There are currently few or no receiving sites in Boulder County and state regulations require the county commissioners' approval for relocations that cross county lines. Commissioner approval, especially outside Boulder County, is not considered likely.

Prairie dog relocation is not simple. Preparation for relocation requires pre-planning to obtain the necessary authorizations and permits, receiving sites and contractors (or staffing and materials). The state and federal permitting processes usually take a minimum of thirty days and often up to sixty days. Contractors and permits must be schedule for particular times of the year when relocation is effective or not required to be followed by lethal control. Once the planning is complete, relocation implementation is opportunistic because it is strongly influenced by weather conditions.

Costs: Costs estimates range from $60 - $200 per animal relocated. Estimates of average prairie dog densities on in the Boulder Valley range from 13-49 animals/acre. The cost for relocating prairie dogs on one acre could range from $800 to $9,800. The range of cost/acre for relocation reflects some of the feasibility issues, the availability of volunteers and the differences among flushing, vacuuming and live trapping. If the receiving site does not have pre-existing burrows, restoration costs associated with creating artificial burrow systems can be substantial. Follow up treatments with trapping/killing or burrow fumigation to ensure 100% removal would increase costs. If constructed barriers are needed to prevent recolonization, there would be additional barrier costs. On-going costs for this strategy would be dependent upon prairie dog recolonization of the site.

Lethal Control

City Council has clarified the city's preference that lethal control measures be used only as a last resort in section 6-1-1 of the Boulder Revised Code (see Six-step process on page 17).

Removal and Killing

This management technique involves live capture by the methods described under relocation. Prairie dogs may be killed on site or transported live to the federal black-footed ferret recovery program to support the re-introduction of this federally endangered

species. Prairie dogs are a natural food source and prey base for ferrets and are integral to the ferret recovery program. Prairie dogs that are used in ferret transition programs are suffocated by carbon dioxide gas (CO_2) in a controlled chamber. The lethal treatment occurs either on-site or at an off-site facility, depending on the contractors capabilities. Prairie dogs are then stored (frozen) and delivered to recovery programs for black-footed ferrets or raptor rehabilitation programs.

Extensive documentation of the effectiveness and guidelines for the use of CO_2 to kill animals has been developed by the American Veterinary Medical Association (AVMA) and Humane Society of the United States (HSUS).

Benefit: This approach shares the benefits, and limits of relocation.

- Can effectively remove prairie dogs.
- Can reduce prairie dog density
- Can be applied in a variety of sites

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Long term effectiveness requires complete removal and burrow flushing, live trapping and vacuuming are seldom 100% effective. Removal and killing is not a stand-alone strategy, removal applications will require exclusion measures to ensure the area will not be re-colonized and may require the use of other lethal means to achieve 100% removal.

Feasibility: The removal aspect of this project shares the following aspects of feasibility with relocation.

- Contractors are available to capture and kill prairie dogs.
- Staff has experienced reliability and capability issues with some contractors.
- Complexity of prairie dog removal projects (although no receiving site is needed).
- Variable public support for live-trapping, burrow flushing and vacuuming.

The need for live prairie dogs is affected by the demand; the ferret recovery program does not always accept prairie dogs. The transport of live prairie dogs is also more complex than transporting dead and frozen animals since there are permit requirements for transporting live prairie dogs.

Killing prairie dogs is not consistent with the motivations of the community. City policies unequivocally state that lethal control is considered a last resort and city regulations seek to ensure that other non-lethal alternatives are explored. When there is no alternative to lethal control, it is the city's policy to encourage, live trapping, individual killing to minimize suffering and the use of prairie dogs in animal recovery programs.

Costs: Costs for removal and killing (using CO_2) range from $1,800-$2,500/day for initial treatment. Estimates prepared for the case study suggest a formula where a day is needed for each 2-3 acres. This translates to a $600-$1,200/acre cost for initial treatment. Subsequent treatments to ensure 100% removal would add additional costs. Transportation costs for moving live prairie dogs to ferret transition projects vary and are

not included in these estimates. If constructed barriers are needed to prevent recolonization, there would be additional barrier costs.

Burrow Fumigation (Use of Poisons)
This method involves the use of fumitoxins (fumigants) to poison prairie dogs. There are two types of fumitoxins that are typically used to kill prairie dogs; zinc phosphide treated grain (oats) and aluminum phosphide tablets.

Zinc phosphide-treated oats are placed by prairie dog burrows after a period of pre-baiting with untreated oats. When prairie dogs feed on the treated grain the zinc phosphide reacts with moisture and acid in the animals' stomach to produce a poisonous phosphine gas.

Aluminum phosphide pellets are placed into prairie dog burrows and the nearby burrow entrances are sealed. The aluminum phosphide reacts with soil moisture to produce poisonous phosphine gas which is inhaled by prairie dogs.

Depending upon the dose, phosphine poisoning can result in death within minutes or after several days. Both of these fumitoxins are "restricted use" pesticides and may only be applied by a licensed pesticide applicator and in a manner consistent with labeling requirements. Zinc phosphide may only be used from July 1 through January 31 Aluminum phosphide is labeled for use throughout the year but is only effective when soil temperatures are above 40 degrees and soil moisture levels are high.

Benefit: Poisoning prairie dogs is an effective means of removing prairie dogs from areas where they are not wanted or for reducing prairie dog populations. Fumitoxins have been used in a variety of settings and have broad applicability. While poisoned grain can kill up to 90% of prairie dogs on a site, repeated application of burrow fumigants can kill all prairie dogs in the area treated. The effects of poisons, like any method of removal, will have long-term effectiveness only if prairie dogs are excluded from re-colonizing the site.

On the other hand, poisons have impacts on non-target animals. Birds and other small mammals can be poisoned when feeding upon zinc phosphide-treated grain. In an urban setting this management strategy poses a very great risk to human health especially to children who could accidentally ingest poisoned grain. Burrow fumigants kill all vertebrates (amphibians, reptiles, birds, mammals) and most other animals living in treated burrow. Aluminum phosphide is extremely flammable and both poisons are hazardous to aquatic life.

Feasibility: Qualified and experienced certified pesticide applicators are available to poison prairie dogs. Poisoning is relatively simple.

Despite the fact that poisoning is possible to undertake, it clearly does not appeal to the motivations of many members of the community. There is general agreement that poisoning wildlife is undesirable. It is the city's policy to encourage and, where appropriate, require parties to exhaust all other options prior to the use of lethal controls.

Fumigant poisoning is considered particularly undesirable and is not considered a humane alternative by the AVMA and the HSUS due to length of time to death (hours to days) and symptoms of death (caustic erosion of mucous membranes, hemorrhagic bleeding, vomiting, pulmonary edema).

Costs: Costs estimates for prairie dog poisoning include a set up fee of about $500 and a charge from $2.50-$3.50 per hole. Burrow entrances density counted at 35 sites around Boulder ranged from 40-145 holes/acre. That translates into a "per acre" cost ranging from $600 to $1,000. It is likely that repeated treatments would be necessary for complete removal of prairie dogs. If constructed barriers are needed to prevent recolonization, there would be additional barrier costs.

Emerging Management Techniques: Birth Control

There are several instances where natural resource managers have interrupted the reproductive cycle of animals as an alternative to lethal control. As prairie dog management begins to affect communities concerned about humane treatment of animals, new attention could be focused upon birth control techniques[2].

The idea behind birth control for prairie dogs is straightforward. A chemical would be introduced into the diet of prairie dogs through treated bait. This chemical would inhibit reproduction. A certain percentage of the population would be affected and fail to reproduce. Prairie dogs would continue to die from natural causes, but due to the introduction of the birth control, fewer prairie dogs would be born. By adjusting the doses of birth control, managers could use this technique to eliminate the prairie dogs from a site or reduce populations to more sustainable levels.

Benefit: Birth control or chemosterilants have not yet been demonstrated to be an effective technique for removing prairie dogs or controlling their numbers. If successfully developed this technique could be used throughout the study area because of ease of access (necessary for delivering the chemical to the prairie dogs). The use of birth control, like other control techniques would also require that effective means be developed to prevent recolonization of removal areas or emigration into protection areas where population numbers need to be lowered.

One of the greatest difficulties with chemosterilants is that they are not species specific. Therefore grain treated with a chemosterilant agent could be ingested by birds or other small mammals reducing reproductive success of non-target organisms. Some agents are

[2] Surgical sterilization is an option used for population control of pets, including pet prairie dogs, and some wildlife (e.g. beavers). This approach relies upon the same removal tools that have been previously analyzed as well as a surgical procedure that would add to the cost. Complications associated with surgery as well as practicality and costs issues kept this alternative from more thorough analysis.

also known to bio-accumulate, which means that predators (such as hawks, eagles or coyotes) feeding upon prairie dogs could also be affected.

There have been at least two field trials to test the potential of chemosterilants in controlling prairie dog populations. In one of these studies, conducted in Fort Collins the investigators observed a 59% reduction in the proportion of observed young to adults when comparing the treated colony with the control. More study is needed to determine the effectiveness of chemosterilants.

Feasibility: There are currently no chemosterilants available for use to control prairie dogs. Consequently there are no people with the experience to carry out this strategy. It does however appeal to the motivations of the community as it is an alternative to lethal control. Feasibility would be greater if funding were available for research into this alternative (perhaps by a coalition of governments and land management agencies).

In addition to developing a better understanding of the effectiveness of different chemosterilants, there are several practical matters that need to be resolved before this technique is available for managers. These include obtaining federal registration of the agents for use in the field, determining dosage requirements, and optimal bait formulations.

Costs: The cost effectiveness of this approach cannot be determined due to the many questions about effectiveness, dosage, and delivery systems all of which are currently unknown.