BLACK-TAILED PRAIRIE DOG SURVEYS IN CROWLEY, OTERO, PUEBLO AND EASTERN HUERFANO COUNTIES, COLORADO

A Report to the Bureau of Land Management, Canon City Office
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TABLE OF CONTENTS

INTRODUCTION……..…**1**

METHODS…….**3**

RESULTS……...**4**
Study Area……4
Element Occurrences of Animals Tracked by CNHP……...5
Parcel Summaries……..8
Crowley County……..8
Huerfano County..……...……...…19
Otero County..……...……30
Pueblo County……...……37
Sites of Local Significance……58
Box Springs Reservoir……..59
Buffalo Arroyo……..61
Colorado Canal – East of Boone……...62
Dotson Reservoir……..64
East of Swink Reservoir No……..66
Faw Wells……67
La Juanta Municipal Airport……69
Madden Canyon……71
North of Lolita Reservoir……..72
North Of Mustang Creek……..74
Saunders Arroyo……...76
Saunders Arroyo at Whiterock……77
South of Cudahy Reservoir……...79
West of Lake Henery……80

DISCUSSION……...……**82**

LITERATURE CITED……..……**84**

APPENDIX I……**87**

APPENDIX II……...……**93**

APPENDIX III……..……...……**95**

LIST OF TABLES

Table 1. The rare and uncommon animal species tracked by the CNHP recorded during the course of this project.……..……7
Table 2. Sites of local significance with potential to act as demonstration areas.……58

LIST OF FIGURES

Fig. 1. Historic distribution of black-tailed prairie dog in North America (from Goodwin 1995)..2
Fig. 2. Present distribution of black-tailed prairie dogs in Colorado……...3
Fig. 3. Map of the study area in the southeastern Colorado counties of Crowley, Otero, Pueblo and eastern Huerfano……4
Fig. 4 Map of the study area showing the location of the BLM parcels including both those that were surveyed and those to which access was not permitted……5
Fig. 5. Map of the study area showing the location of black-tailed prairie dog complexes (polygons) and other animals (points) observed during the project……6
Fig. 6. The distribution and identification number of Bureau of Land Management Parcels surveyed in Crowley County, Colorado……...……8
Fig. 7. The distribution and identification number of Bureau of Land Management Parcels surveyed in eastern Huerfano County, Colorado……20
Fig. 8. The distribution and identification number of Bureau of Land Management Parcels surveyed in Otero County, Colorado……..……...31
Fig. 9. The distribution and identification number of Bureau of Land Management Parcels surveyed in Pueblo County, Colorado……...…….38
Fig. 10. Map of the study area showing the location of the sites of local significance…….59

INTRODUCTION

The research reported here examines the distribution of black-tailed prairie dogs, *Cynomys ludovicianus*, on Bureau of Land Management (BLM) property in four southeastern Colorado counties including Crowley, Otero, Pueblo and eastern Huerfano counties. Although emphasis was placed on surveying BLM parcels in the study area, data was collected opportunistically on prairie dog colonies observed throughout the study during conductance of fieldwork.. In addition, an attempt was made to visit colonies identified by EDAW (2000) and mapped on the NDIS data layer, to determine the accuracy of those reported distributions. During fieldwork information was also collected on all observations of Burrowing Owls (*Athene cunicularia*), Mountain Plovers (*Charadrius montana*), triploid checkered whiptails (*Cnemidophorus neotesselatus*) and other sensitive species recorded on the Colorado Natural Heritage Programs (CNHP) conservation status list and the BLM's sensitive species list.

The black-tailed prairie dog (*Cynomys ludovicianus*) is a colonial ground squirrel and one of five species in the genus Cynomys, all of which occur in western North America. Black-tailed prairie dogs live in colonies or "towns" in short and mixed grass prairies where the landscape is characterized by dry, flat, open grasslands with low, relatively sparse vegetation, including areas overgrazed by cattle. By colonizing areas with low vegetative stature, prairie dogs often select areas with past human (as well as animal) disturbance. In North Dakota and Montana, colonies are associated with areas heavily used by cattle, such as water tanks and long-term supplemental feeding sites, and these structures may even encourage prairie dog colonization (Licht and Sanchez 1993). In these disturbed open areas with little cover the "early warning" system against predators afforded by colonialism is optimized.

Prairie dogs are proposed as keystone species in North American grasslands (Miller et al. 1994); impacting grassland ecosystems by increasing habitat heterogeneity, modifying ecosystem processes, and enhancing regional biodiversity (Ceballos et al. 1999). This viewpoint, however, is not without controversy. Knowledge of the effects prairie dogs have on grassland ecosystems may be more limited and equivocal than has been recently proposed (Stapp 1998). Stapp (1998) suggests, given the variation in grasslands inhabited by prairie dogs (e.g. mixed vs. shortgrass prairies), that they may affect the flora and fauna of these systems in variable ways not yet fully understood. That prairie dogs have effects on many animals including Burrowing Owls, Mountain Plovers, song birds, Ferruginous Hawks and black-footed ferrets is acknowledged (Knowles et al. 1982, Desmond and Savidge 1996, Plumpton and Anderson 1998, Barko et al. 1999, Kotiliar et al. 1999). And efforts directed towards conservation of prairie dogs will positively impact these species.

Black-tailed prairie dogs prefer fine to medium textured soils (Merriam 1902, Koford 1958), presumably because burrows and other structures tend to retain their shape and strength better than in coarse, loose soils. In addition, loose soils such as sand often support larger, coarser graminoids with lower forage quality and prairie dogs may avoid these forages and their associated soils (NatureServe 2000). Colonies commonly are found on silty clay loams, sandy clay loams, and loams (Bonham and Lerwick 1976, Klatt and Hein 1978, Agnew et al. 1986). Encroachment into sands (e.g., loamy fine sand) occurs if the habitat is needed for colony expansion (Osborn 1942).

Shallow slopes of less than 10% are preferred (Dahlsted et al. 1981), presumably in part because such areas drain well and are only slightly prone to flooding.

Prairie dogs prefer graminoids, focusing their herbivory on leaf bases (Koford 1958, Hansen and Gold 1977, Uresk 1984, Krueger 1986). The proportion of other forage types in the diet varies with season, location of forage on towns, and vegetative composition (Fagerstone 1981). Prairie dogs apparently do not require free water (Bintz 1984), obtaining it during summer from green grass and forb shoots, which are about 68-77% water (Bintz 1984), and in winter, from succulents such as *Opuntia* spp., which are about 80% water (Fagerstone et al. 1981).

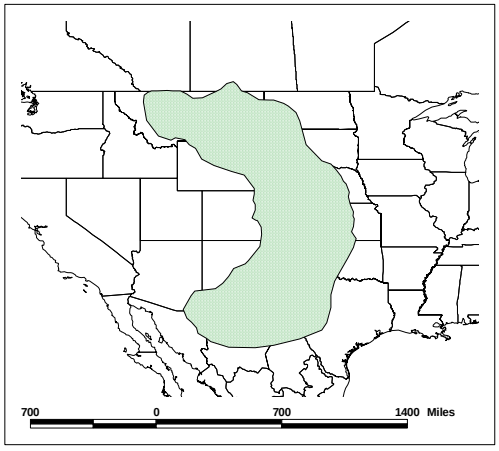

Fig. 1 Historic distribution of black-tailed prairie dog in North America (from Goodwin 1995)

Historical estimates indicate that prairie dogs once occupied 100-200 million acres in North America, originally extending from extreme southern Saskatchewan, Canada, to the desert grasslands of the southwestern U.S. and adjacent Mexico, and from the Rocky Mountain foothills east to the central Great Plains (Goodwin 1995) (Fig. 1). Three major events within the last 100 years have been significantly contributed to the decline of prairie dogs. First, prairie in the eastern portion of the range was converted to farmland from 1890 to 1930. Second, between 1920 and 1970, large scale poisoning occurred on most western rangelands (Hoogland 1995). Finally, sylvatic plague capable of killing 99% of a colonies population was introduced into the North American prairie ecosystem around 1900 and has severely impacted the species (Cully 1989, Oldemeyer et al. 1993). The disease was first documented in black-tailed prairie dogs from Texas in 1946-47.

Significant contractions leaving few or no prairie dogs remaining have occurred on approximately 20 percent of the original range. In addition, approximately 37 percent of the historical range has been converted to cropland, and abundance and extent of occupied habitat have declined by 94-99 percent since about 1900 (see USFWS 2000). Black-tailed prairie dogs are now extirpated from southeastern Arizona (NatureServe 2000), southwestern New Mexico (NatureServe 2000), the Sonora and most of Chihuahua in Mexico, and locally in many areas throughout the range, primarily as a result of the above-mentioned factors. Without further information on the effects that reduced populations, smaller average colony sizes, fragmentation of habitat, and introduced sylvatic plague have on the species demography, viability of current populations will remain uncertain.

In Colorado, black-tailed prairie dogs occupy the eastern 40 percent of the state, inhabiting shortgrass prairie and other areas of low-growing vegetation (Fitzgerald et al. 1994) (Fig. 2a). Throughout the range in Colorado, prairie dogs occur at much lower densities and in smaller colonies than history predicates (Fitzgerald et al. 1994). The distribution of black-tailed prairie dogs in eastern Colorado reported by EDAW (2000) and compiled from records of historical locations, aerial photos and recent research on current distributions, indicates that even less area

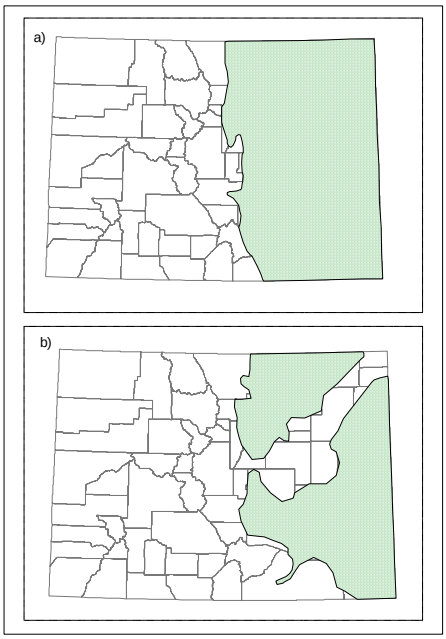

Fig. 2 Present distribution of black-tailed prairie dogs in Colorado: a) from Fitzgerald et al 1994; b) compiled from NDIS GIS coverage from EDAW 2000.

is occupied than proposed by Fitzgerald et al. (1994) (Fig. 2b). Large areas of suitable habitat are unoccupied in 12 eastern Colorado counties according to the NDIS GIS data layer, and prairie dogs have been extirpated from eastern Huerfano County, Colorado.

The decline in black-tailed prairie dog populations throughout North America caused the USFWS to designate the species as a Candidate throughout its entire range on February 4, 2000 (65 FR 5476). The USFWS (Federal Register, 25 March 1999) found that a petition to list this species as threatened under the U.S. Endangered Species Act presented substantial information indicating that listing may be warranted; a status review was initiated and the USFWS (2000) determined that listing as threatened is warranted but precluded by actions of higher priority.

METHODS

The Canon City District of the BLM supplied updated maps of the BLM parcels within the study area. These maps were used to truth BLM data layers that CNHP had for the study area. The NDIS GIS data layer on prairie dog distributions in Colorado and the BLM data layer were integrated and each BLM parcel in the study area and any surrounding prairie dog colonies were identified. Visits to each BLM parcel and any surrounding prairie dog colonies were than scheduled.

At each BLM parcel visited, data was collected on the date of visitation, surveyors name(s), parcel location, directions to parcel, sensitive species present, all species present, ecological condition, landscape context, vegetation descriptors including the dominant vegetation and percent trees, shrubs, grasses and forbs present. In addition, data on the aspect, slope, soil texture and other management considerations were also collected (see Appendix II). An attempt was made to digitally photograph every BLM parcel visited. The data collected documents the habitat and topographic characteristic of each parcel, supplying information for assessing each parcel's likelihood of supporting prairie dogs. Characteristics used to define potential prairie dog habitat include percent slope (2-4% preferred), soils (deep well-drained sandy-loam to clay-loam preferred), vegetation composition (*Bouteloua gracislis-Buchloe dactyloides* dominated landscapes preferred), land tenure and proximity to currently occupied prairie dog complexes. A CNHP element occurrence datasheet (see Appendix III) was also completed for animals tracked by CNHP and observed at BLM parcels. This same information was recorded for animals tracked by CNHP and serendipitously observed anywhere during the survey.

During completion of field work all prairie dog colonies and observations of other sensitive species were mapped on either 1:100,000 or 1:24,000 topographic maps. This information was then transcribed into ArcView for map production and data analysis. Information on the study area including its size, the area of suitable prairie dog habitat as mapped by Fitzgerald et al.

(1994), area of current prairie dog distribution as defined by EDAW (2000), area currently occupied by prairie dog complexes, and the acres of BLM property surveyed were calculated using ArcView data layers that are part of CNHPs data library.

RESULTS

Study Area

The study area totals 290,790 acres of which 28,787 acres are owned by the BLM (Fig 3).

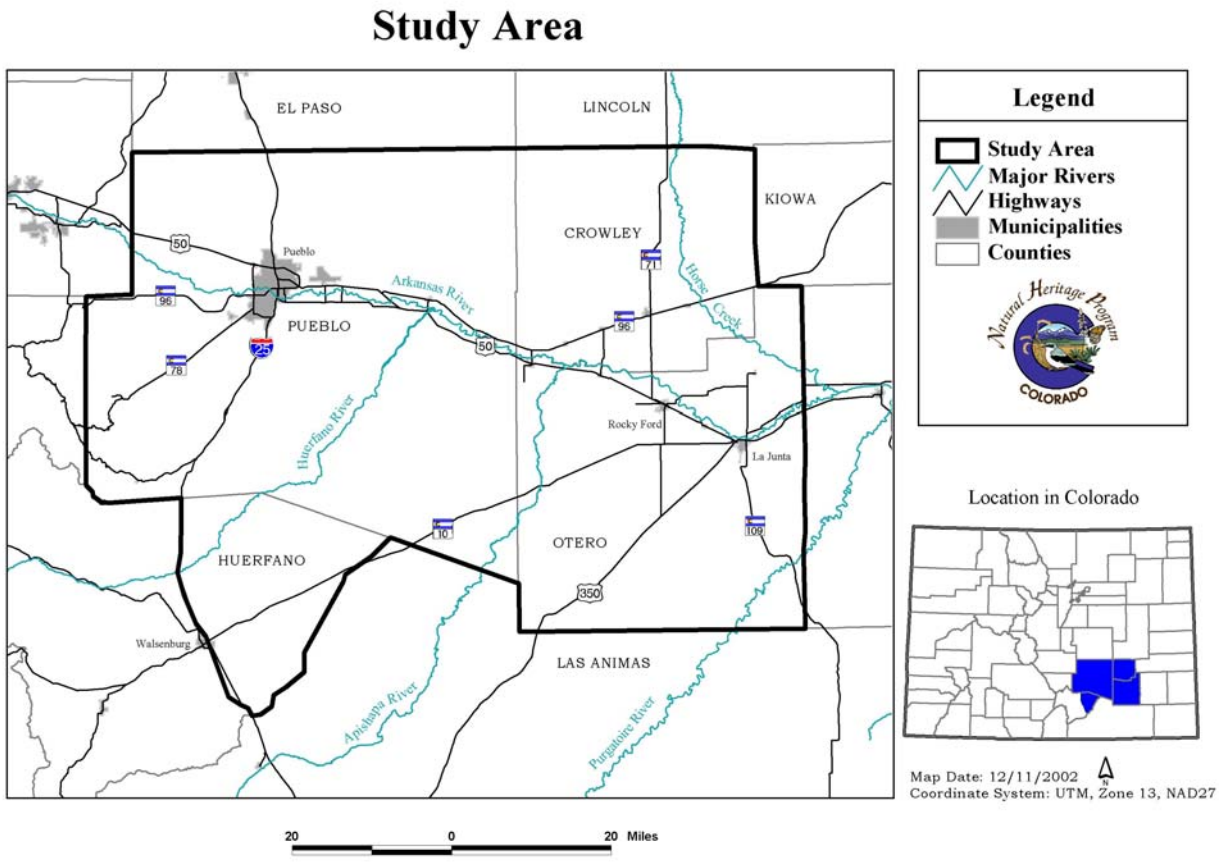

Fig. 3. Map of the study area in the southeastern Colorado counties of Crowley, Otero, Pueblo and eastern Huerfano.

There are 171 total BLM parcels in the study area and for the purposes of this study, BLM parcels in close proximity to one another and having similar habitat types were grouped together resulting in 136 parcels. Of these 136 parcels, 28 are located in Crowley County, 38 in eastern Huerfano, 16 in Otero and 54 in Pueblo. Permission to access eight parcels, numbered H26-H28 and H31-H35 in eastern Huerfano County, was not granted by the landowner. In addition one small 40-acre parcel was missed in Crowley County, otherwise all of the remaining 128 parcels were visited (Fig. 4).

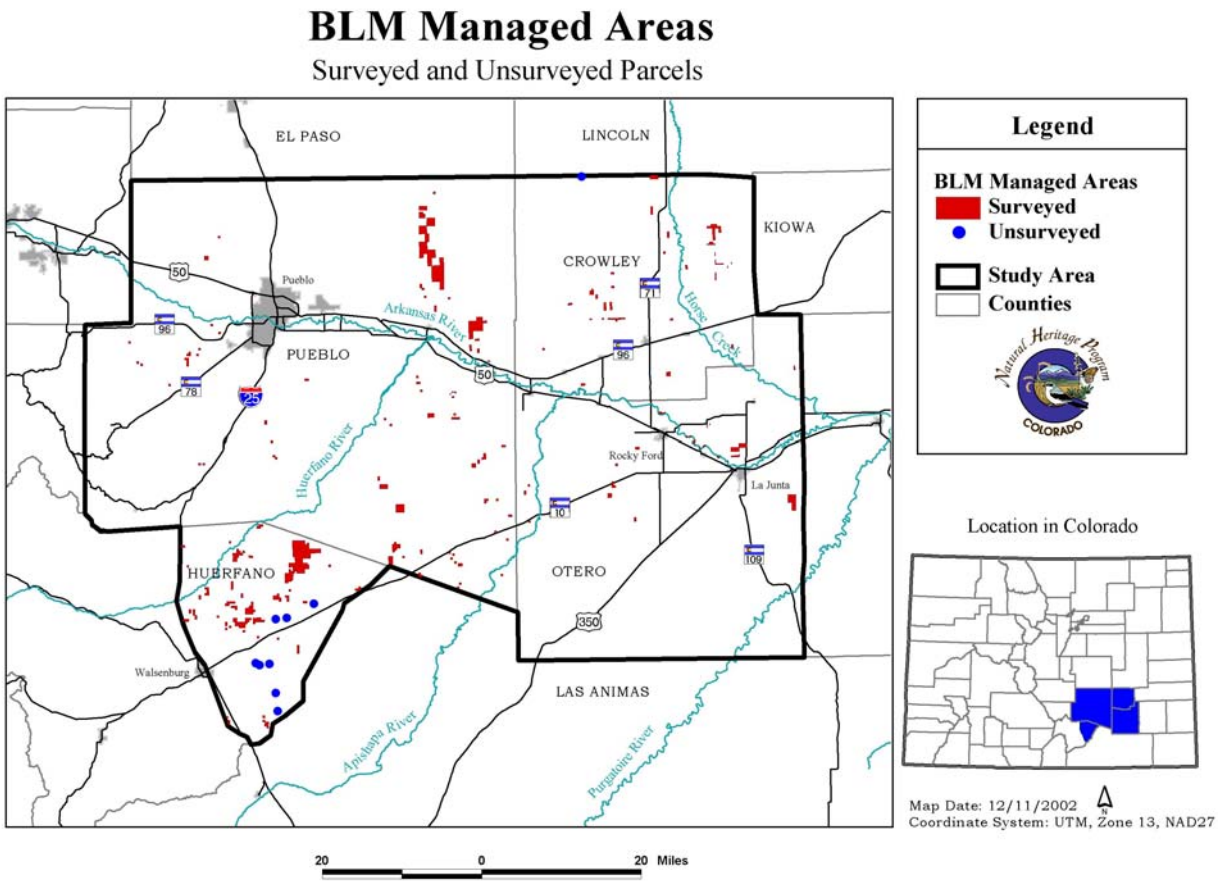

Fig. 4. Map of the study area showing the location of the BLM parcels including both those that were surveyed and those to which access was not permitted.

There is a high concentration of BLM parcels in northeastern Pueblo and Eastern Huerfano counties, while the southern half of Otero County where the Comanche Grasslands are located is without any BLM owned land (Fig 4).

Element Occurrences of Animals Tracked by CNHP

A total of 76 newly recorded occurrences of rare and uncommon animals including 8 different species tracked by the CNHP were recorded during the course of this project (Table 1). These occurrences were concentrated in Northern Pueblo County and from throughout Crowley and Otero counties (Fig. 5). The majority of these occurrences were black-tailed prairie dog records with some representing large complexes of healthy reproducing populations. Also observed during this project were Burrowing Owls, Mountain Plovers, Lewis's Woodpecker, Long-billed Curlews, Ferruginous Hawks, Willow Flycatchers and triploid checkered whiptails.

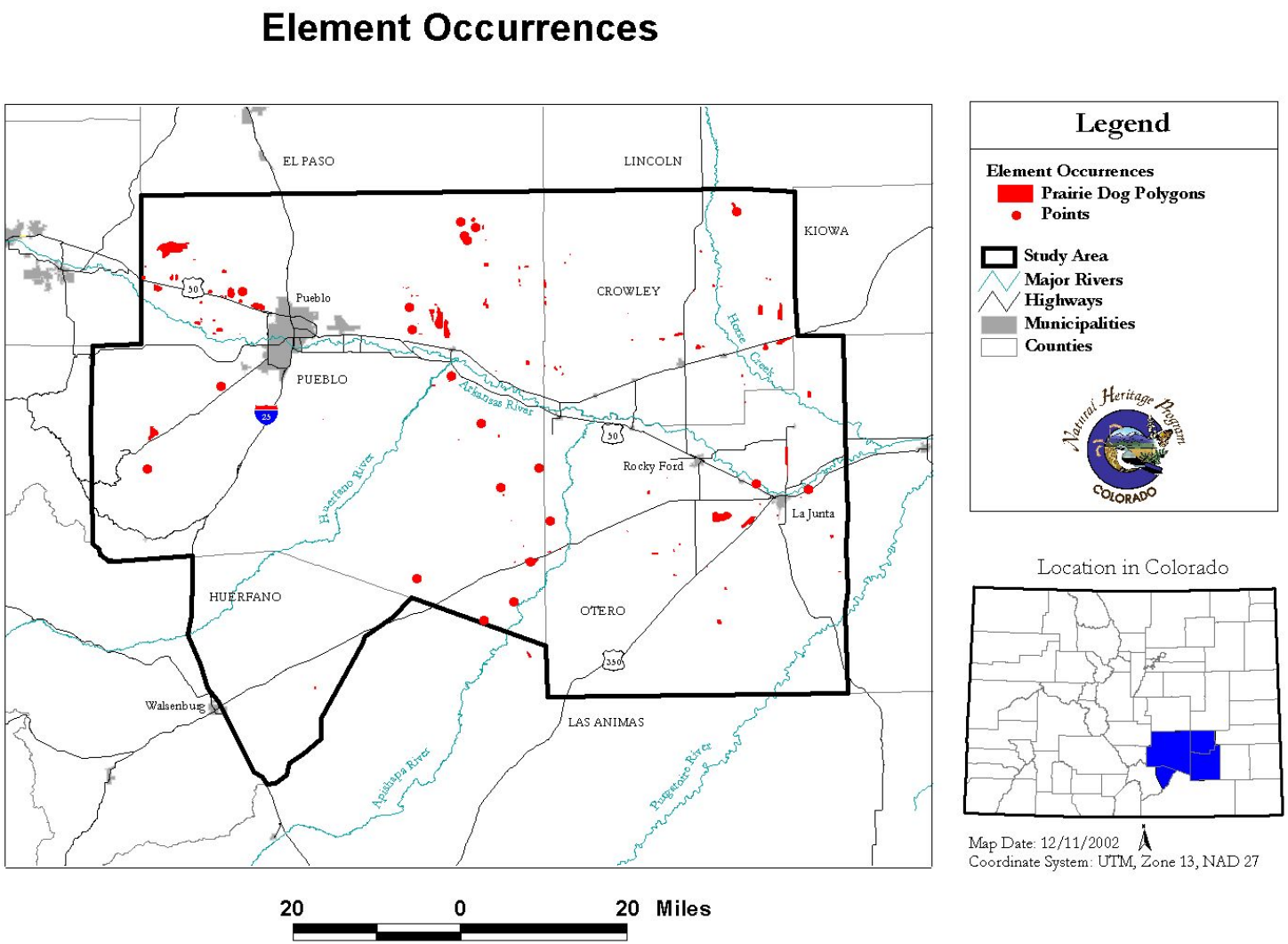

Fig. 5. Map of the study area showing the location of black-tailed prairie dog complexes (polygons) and other animals (points) observed during the project.

Table 1. The rare and uncommon animal species tracked by the CNHP recorded during the course of this project

Birds

Order CHARADRIIFORMES		**Number of**	**CNHP Status and Ranking**		**Regulatory Status**		
Scientific Name	**Common Name**	**Occurrences**	**Global Rank**	**State Rank**	**Agency Sensitive**	**Federal Status**	**State Status**
Charadrius montanus	Mountain Plover	2	G2	S2B, SZN	FS/BLM	C	SC
Numenius americanus	Long-billed Curlew	1	G5	S2B, SZN	FS/BLM		SC
Order FALCONIFORMES							
Buteo regalis	Ferruginous Hawk	1	G4	S3B, S4N	FS/BLM		SC
Order PASSERIFORMES							
Empidonax traillii	Willow Flycatcher	1	G5	S4			
Order PICIFORMES							
Melanerpes lewis	Lewis's Woodpecker	1	G5	S4	FS		
Order STRIGIFORMES							
Athene cunicularia	Burrowing Owl	13	G4	S4B			T

Mammals

Order RODENTIA							
Cynomys ludovicianus	black-tailed prairie dog	55	G5	S5			

Reptiles

Order SQUAMATA							
Cnemidophorus neotesselatus	triploid checkered whiptail	2	G2Q	S2			

Parcel Summaries

Following are summaries of each site visited including documentation of the habitat types at each parcel and a qualitative assessment of each parcels likelihood of supporting prairie dogs. A synopsis of this information can be found in Appendix I.

Crowley County

Crowley County included 28 BLM parcels of which 27 were visited during this survey and these parcels were spread throughout the county (Fig. 6). Field technicians missed one small parcel on the Crowley and Lincoln county line during their visits to Crowley County. A total of six parcels either presently harbored active colonies of prairie dogs or were within one-quarter mile of an active colony, with the potential for that colony to expand onto the parcel. On one other parcel there was an abandoned prairie dog colony.

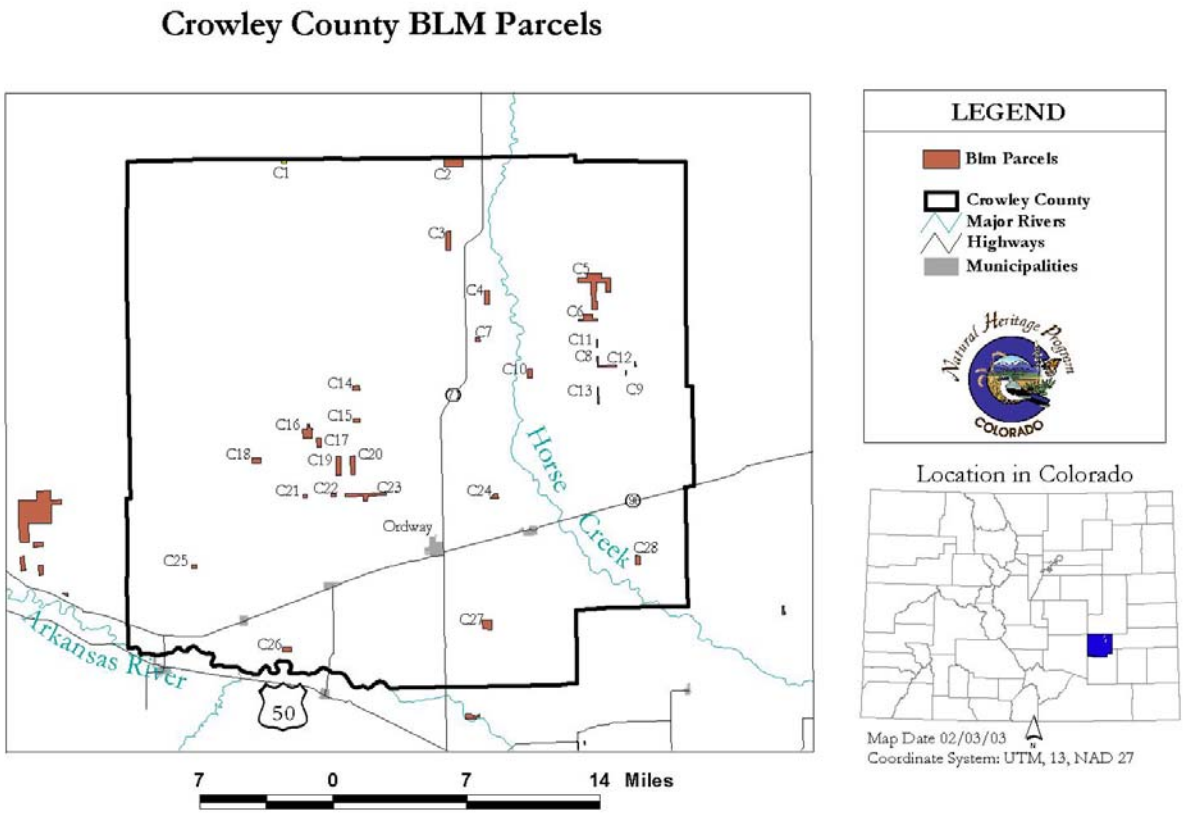

Fig 6. The distribution and identification number of Bureau of Land Management Parcels surveyed in Crowley County, Colorado.

Parcel C1:
This small 40-acre parcel in northeastern Crowley County on the Lincoln-Crowley county line was missed during the survey and no data was collected on the parcel. UTM Northing: 4263987 Easting: 595940. No pictures exist of the parcel. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land.

Parcel C2

This 320-acre parcel is located in northeastern Crowley County on the Lincoln-Crowley county line: UTM Northing: 4,263,906 Easting: 610,491. The pictures of this parcel include c1-c3. Shortgrass prairie dominates this site. The grass cover is split 70 to 30% between blue gramma (*Bouteloua gracilis*) and alkali sacaton (*Sporobolus airoides*), respectively. The soils are sandy clay-loam with a slope of less than 5%. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Active and inactive prairie dog complexes occupy the surrounding landscape with the closest active colony lying within five miles of the parcel. There is an unvisited complex, the status of which is unknown, within 1.25 miles of the parcel's north boundary. Numerous surveyed prairie dog complexes near the parcel were either abandoned, reduced in size or nonexistent suggesting that plague and/or poisoning influences population dynamics in this area. The complex located within five miles of the parcel appeared in good health and possibly on the rebound from the recent plaque epidemic of 2000-2001 that swept through the area. The parcel and surrounding area is excellent prairie dog, Burrowing Owl and Mountain Plover habitat. A plover was observed within five miles of the parcel. The surrounding land is private and the owners are antagonistic towards prairie dogs. The likelihood that this parcel will support prairie dogs in the future is good.

Parcel C3

This 168-acre parcel is located in northeastern Crowley County; UTM Northing: 4,257,192 Easting: 610,030. The pictures of this parcel include c4 and c5. The parcel is located on a relatively flat area with a southeast-facing slope of less than 2^0. Vegetation is dominated by blue gramma (85%) with about 10% shrubs including yucca (*Yucca glauca*), opuntia (*Opuntia* spp.) and four-winged saltbush (*Atriplex canescens*). The soils consist of sandy clay-loams and the parcel and surrounding private ranchland are moderately grazed and suitable for prairie dogs, Burrowing Owls and Mountain Plover. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land and surrounding landowners are antagonistic towards prairie dogs. Numerous surveyed prairie dog complexes near the parcel were either inactive or nonexistent suggesting that plague and/or poisoning influences population dynamics in this area. An abandoned prairie dog town occupies the southern part of the parcel and an active colony exists less than three miles south of the parcel. The complex within three miles of the parcel is small, but appeared in good health and appears to be rebounding from the 2000-2001 plaque epidemic that swept through the area, however, this is unsubstantiated. The likelihood that this parcel will support prairie dogs in the future is high.

Parcel C4

This 123-acre parcel is located in northeastern Crowley County; UTM Northing: 4252291 Easting: 613350. The pictures of this parcel include c6 and c7. The parcel is located at the top of a flat-topped hill and the associated soil is sandy-loam. Vegetation is co-dominate between blue gramma and alkali sacaton. The parcel and surrounding grassland are intensely grazed and 30% consists of bare ground. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. The area is suitable for prairie dogs, Burrowing Owls and Mountain Plovers, however surrounding landowners are antagonistic towards prairie dogs. Numerous surveyed prairie dog complexes near the parcel were either inactive or nonexistent suggesting that plague and/or poisoning influences population dynamics

in this area. The parcel and adjacent prairie dog colony could represent an opportunity for a demonstration area for local landowners and land managers, but plaque may prevent long-term viability of prairie dogs at this site. Although the area is intensely grazed the colony is surviving, but the degradation of the grassland could be reversed by aggressive rotational grazing systems. The likelihood that the adjacent colony will expand onto the parcel is very high.

Parcel C5
This 755-acre parcel is located in northeastern Crowley County; UTM Northing: 4252833 Easting: 622562. The pictures of this parcel include c8-c10. The parcel is located at the top of a flat hill and the associated soil is sandy clay-loam. Shortgrass prairie is the dominant vegetation type and the dominant grasses are blue gramma and alkali sacaton. The parcel and surrounding grassland are moderately grazed and 30% consists of bare ground. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. The area is suitable for prairie dogs, Burrowing Owls and Mountain Plovers, however surrounding landowners are antagonistic towards prairie dogs. Numerous surveyed prairie dog complexes near the parcel were either abandoned, reduced in size or nonexistent suggesting that plague and/or poisoning influences population dynamics in this area. A large, but abandoned prairie dog colony occupies the eastern arm of this parcel and an active colony exists approximately three miles to the parcels south. Plague might prevent long-term viability of prairie dogs at the site. One male Burrowing Owl was observed in the abandoned prairie dog colony at this site. A breeding population of Burrowing Owls may occur at this parcel, but further observations would be required to verify this. The likelihood that this parcel will support prairie dogs in the future is good.

Parcel C6
This 150-acre parcel is located just south of Parcel C5 and the habitat is the same here as at C5. UTM Northing: 4,250,570 Easting: 622,031. In comparison to C5, livestock have heavily grazed the grassland at C6 and 30% of the parcel consists of bare ground (see pictures c11 and c12). The slope at this parcel did not exceed 2% and the soils are clay. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either abandoned, reduced in size or nonexistent suggesting that plague and/or poisoning influences population dynamics in this area. There is an active prairie dog town located approximately 2.5 miles south of this parcel. The area is suitable for prairie dogs, Burrowing Owls and Mountain Plovers, however surrounding landowners are antagonistic towards prairie dogs. Prairie dogs seem tolerant of grazing and the likelihood that this parcel will support them in the future is fair.

Parcel C7:
This 40-acre parcel is located in northeastern Crowley County; UTM Northing: 4,248,693 Easting: 612,554. The pictures of this parcel include c13 through c15. The parcel is located adjacent to a small reservoir on a southwest-facing slope of less than 5% and the associated soil is sandy-loam. Shortgrass prairie is the dominant vegetation type with blue gramma as the dominant grass. Due to the proximity near a reservoir the parcel and surrounding grassland are intensely grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either abandoned, reduced in size or nonexistent suggesting that plague

and/or poisoning influences population dynamics in this area. The area is suitable for prairie dogs, Burrowing Owls and Mountain Plovers, however surrounding landowners are antagonistic towards prairie dogs. Active prairie dog complexes exist north and south of this parcel at distances of approximately two miles and appear to possibly be rebounding from the 2000-2001 plaque epidemic that swept through the area, however, this is unsubstantiated. Both complexes are reproductively active, but each is composed of small towns on private ranchland. The likelihood that this parcel will support prairie dogs in the future is fair.

Parcel C8

This 80-acre parcel is located in northeastern Crowley County; UTM Northing: 4,246,792 Easting: 622,862. The pictures of this parcel include c16 and c17. The parcel consists of shortgrass prairie dominated by blue gramma and is located on a southwest-facing slope of less than 2%. The associated soil is sandy clay-loam and the parcel and surrounding grassland are intensely grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either abandoned, reduced in size or nonexistent suggesting that plague and/or poisoning influences population dynamics in this area. The area is suitable for prairie dogs, Burrowing Owls and Mountain Plovers, however surrounding landowners are antagonistic towards prairie dogs. Active prairie dog complexes exist east, west and south of the parcel at distances of approximately 1.5, 3.5 and 2.7 miles, respectively and they appear to possibly be rebounding from the 2000-2001 plaque epidemic that swept through the area, however, this is unsubstantiated. Both complexes are reproductively active, but each is composed of small towns on private ranchland. The likelihood that this parcel will support prairie dogs in the future is fair.

Parcel C9

This 10-acre parcel is located in northeastern Crowley County; UTM Northing: 4,245,830 Easting: 625309. The pictures of this parcel include c18 and c19. The parcel consists of shortgrass prairie dominated by blue gramma and threeawn (*Aristida purpurea*) along with a 10% cover of rabbitbrush. There is a southeast-facing slope of less than 5% and a drainage borders the parcel to the east. The associated soil is sandy clay-loam and the parcel and surrounding grassland are intensely grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either abandoned, reduced in size or nonexistent suggesting that plague and/or poisoning influences population dynamics in this area. The area is suitable for prairie dogs, Burrowing Owls and Mountain Plovers, however surrounding landowners are antagonistic towards prairie dogs. Active prairie dog complexes exist east, west and south of the parcel at distances of approximately 0.5, five and 2.5 miles, respectively and they appear to possibly be rebounding from the 2000-2001 plaque epidemic that swept through the area, however, this is unsubstantiated. One complex is large and reproductively active, while the other two are composed of small towns and all are on private ranchland. The likelihood that this parcel will support prairie dogs in the future is good.

Parcel C10

Prairie dogs are present on this 80-acre parcel that is located in northeastern Crowley County; UTM Northing: 4,245,792 Easting: 617,050. The pictures of this parcel include c20 and c22. The parcel consists of shortgrass prairie dominated by blue gramma along with an 8% cover of

opuntia. There is an east-facing slope of less than 5% and the associated soil is loamy-sand to sandy-loam. The parcel and surrounding grassland are intensely grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either abandoned, reduced in size or nonexistent suggesting that plague and/or poisoning influences population dynamics in this area. An active prairie dog complex exists on the southern part of the parcel and suitable habitat exists for Burrowing Owls and Mountain Plovers, but surrounding landowners are antagonistic towards prairie dogs and there has been poisoning practiced in the area in the past. The complex is reproducing, but is composed of small towns on private ranchland that appear to possibly be rebounding from the 2000-2001 plaque epidemic that swept through the area, however, this is unsubstantiated. The likelihood that this parcel will continue to support prairie dogs in the future is very high.

Parcel C11

This 15-acre parcel is located in northeastern Crowley County; UTM Northing: 4,248,384 Easting: 622,821. The pictures of this parcel include c23 and c24. The parcel consists of shortgrass prairie dominated by blue gramma. There is a west facing slope of less than 2% and 20% of the site consists of bare ground. The associated soil is sandy clay-loam and the parcel and surrounding grassland are intensely grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either abandoned, reduced in size or nonexistent suggesting that plague and/or poisoning influences population dynamics in this area. The area is suitable for prairie dogs, Burrowing Owls and Mountain Plovers, however surrounding landowners are antagonistic towards prairie dogs. Active prairie dog complexes exist east, west and south of the parcel at distances of approximately 1.5, four and four miles, respectively and they appear to possibly be rebounding from the 2000-2001 plaque epidemic that swept through the area, however, this is unsubstantiated. One complex is large and reproductively active, while the other two are composed of small towns and all are on private ranchland. The likelihood that this parcel will support prairie dogs in the future is fair.

Parcel C12

Prairie dogs occupy the northern half of this 8-acre parcel that is located in northeastern Crowley County; UTM Northing: 4,246,600 Easting: 626,103. The pictures of this parcel include c25-c27. The parcel consists of shortgrass prairie dominated by blue gramma and threeawn, and about 15% of the cover consists of a weedy forb. There is a south-facing slope of less than 1% and associates soils are clay. The parcel and surrounding grassland is grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. The surrounding landowners are antagonistic towards prairie dogs and poisoning has been practiced in the area in the past. Numerous surveyed prairie dog complexes near the parcel were either abandoned, reduced in size or nonexistent suggesting that plague and/or poisoning influences population dynamics in this area. In addition to prairie dogs, one adult Burrowing Owl was observed on the parcel, but evidence of breeding was not observed for either species. A large reproducing complex of prairie dogs occurs south of the parcel and this and the parcels complex could represent an opportunity for a demonstration area for local landowners and land managers, but plaque may prevent long-term viability of prairie dogs at this site. There is also suitable habitat for Mountain Plovers at this site. The likelihood that this parcel will

continue supporting prairie dogs and Burrowing Owls is very high.

Parcel C13
This 38-acre parcel is located in northeastern Crowley County; UTM Northing: 4,243,894 Easting: 622,918. The pictures of this parcel include c28 and c29. The parcel consists of shortgrass prairie dominated by threeawn and blue gramma. There is a south facing slope of less than 2% and 10% of the site consists of bare ground. The associated soil is sandy-loam to clay-loam and the parcel and surrounding grassland is grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either abandoned, reduced in size or nonexistent suggesting that plague and/or poisoning influences population dynamics in this area. The area is suitable for prairie dogs, however, surrounding landowners are antagonistic towards prairie dogs. Active prairie dog complexes exist east, west and south of the parcel at distances of approximately two, 3.75 and one mile, respectively and they appear to possibly be rebounding from the 2000-2001 plaque epidemic that swept through the area, however, this is unsubstantiated. One complex is large and reproductively active, while the other two are composed of small towns and all are on private ranchland. The likelihood the parcel will support prairie dogs in the future is fair.

C14
This 60-acre parcel is located in central Crowley County; UTM Northing: 4,244,521 Easting: 602,131. The pictures of this parcel include c30 and c31. The parcel consists of shortgrass prairie dominated by alkali sacaton along with a 10% cover of opuntia. There is a southwest facing slope varying from 0 to 10% and 20% of the site consists of bare ground. The associated soil is sandy-clay and the parcel and surrounding grassland is moderately grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning has a moderate influence on population dynamics in this area. The area is suitable for prairie dogs, however, surrounding landowners are antagonistic towards prairie dogs. Active prairie dog complexes do exist to the parcel's south, but the closest is 4.25 miles distant. The steeper slope and relative seclusion of the parcel from other active prairie dog complexes makes the likelihood it will support future populations of prairie dogs poor.

Parcel C15
This 52-acre parcel is located in central Crowley County; UTM Northing: 4,241,745 Easting: 602,180. The pictures of this parcel include c32 and c33. The parcel consists of shortgrass prairie dominated by alkali sacaton along with a 5% cover of opuntia. There is a southwest facing slope less than3% and 20% of the site consists of bare ground. The associated soil is sandy clay and the parcel and surrounding grassland is moderately grazed. An unnamed tributary of the Colorado Canal runs past the parcel's southwest corner. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning has a moderate influence on population dynamics in this area. The area is suitable for prairie dogs, however, surrounding landowners are antagonistic towards prairie dogs. There is an inactive colony within one mile of the parcel's

southern boundary and an active colony exists approximately 3.25 miles to the parcel's southwest. The likelihood that the parcel will support future populations of prairie dogs is fair.

Parcel C16

This 187-acre parcel is located in central Crowley County; UTM Northing: 4,240,824 Easting: 597,969. The pictures of this parcel include c34 through c36. The parcel is highly disturbed due to its location adjacent to Cudahy Reservoir where the water table is impacted and use by cattle is intense. The site is best characterized as a forb dominated grassland with plants and grasses unidentifiable due to the drought and grazing, but having 40% cover in bare ground, 40% in forbs and 20% in grasses. The associated soils of the site are clay. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning has a moderate influence on population dynamics in this area. Prairie dogs have been observed in other like disturbed sites and this parcel could support them, however, surrounding landowners are antagonistic towards prairie dogs. There are both active and abandoned prairie dog colonies within 0.5 miles of the parcel and the active colony appears to be rebounding from the 2000-2001 plaque epidemic that swept through the area, however, this is unsubstantiated. The complex is reproducing, but it is composed of small towns on private ranchland. The likelihood that this parcel will support future populations of prairie dogs is high.

Parcel C17

Prairie dogs occupy the northern edge of this 78-acre parcel that is located in central Crowley County; UTM Northing: 4,239,844 Easting: 598,933. The pictures of this parcel include c37 and c38. The parcel consists of shortgrass prairie dominated by alkali sacaton along with a 10% cover of rabbitbrush (*Chrysothamnus* spp.), opuntia and cholla (*Cylindropuntia imbricata*). There is a northwest facing slope of less than 5% and 20% of the site consists of bare ground. The associated soil is stoney-clay and the parcel and surrounding grassland is intensely grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning has a moderate influence on population dynamics in this area. There is a breeding colony of prairie dogs located at the northern edge of this parcel that appears to be rebounding from the 2000-2001 plaque epidemic that swept through the area, however, this is unsubstantiated. The complex is reproductively active, but is composed of small towns on private ranchland and surrounding landowners are antagonistic towards prairie dogs. An adult Burrowing Owl was observed in the colony, although breeding was not verified and the area is also suitable for Mountain Plovers. The likelihood that this parcel will continue to support prairie dogs and Burrowing Owls are very high.

Parcel C18

This 80-acre parcel is located in west-central Crowley County; UTM Northing: 4,238,319 Easting: 593,573. The pictures of this parcel include c39 and c40. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include a 10% cover of sagebrush and opuntia. There is a southeast-facing slope of less than 5% and the associated soil is loamy-sand. The parcel and surrounding grassland is grazed. Ownership of the

surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning has a moderate influence on population dynamics in this area. The area is suitable for prairie dogs and Burrowing Owls; however, surrounding landowners are antagonistic towards prairie dogs. There is an active prairie dog colony approximately 3.25 miles east of the parcel and the likelihood future populations of prairie dogs could be supported here is fair.

Parcel C19

This 173-acre parcel is located in central Crowley County; UTM Northing: 4,237,856 Easting: 600,615. The pictures of this parcel include c41 through c43. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include a 10% cover of rabbitbrush and opuntia. There is a south facing slope of less than 5% and 20% of the site consists of bare ground. The associated soil is loamy-sand and the parcel and surrounding grassland is moderately grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning has a moderate influence on population dynamics in this area. The area is suitable for prairie dogs and Burrowing Owls; however, surrounding landowners are antagonistic towards prairie dogs. There are active prairie dog colonies to the south; the closest is within approximately 1.5 miles of the parcel and it appears to be rebounding from the 2000-2001 plaque epidemic that swept through the area, however, this is unsubstantiated. The complex is reproductively active, but it is composed of small towns on private ranchland. Bob Creek runs the length of the parcel from north to south just inside the eastern boundary of the parcel. It appears that historically prairie dogs have occupied the surrounding landscape, but have never occupied the parcel. The topographic relief associated with Bob Creek may make the landscape of the parcel less suitable, however, this is doubtful and lack of occupancy may relate to the complex social and dispersal patterns of black-tailed prairie dogs. The likelihood future populations of prairie dogs could be supported here is good.

Parcel C20

This 165-acre parcel is located in central Crowley County; UTM Northing: 42,37,905 Easting: 601,830. The pictures of this parcel include c44 through c46. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include a 5% cover of rabbittbrush and cholla. There is a south-facing slope of less than 5% and the associated soil is sandy-loam. The parcel and surrounding grassland is moderately grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning has a moderate influence on population dynamics in this area. The area is suitable for prairie dogs and Burrowing Owls; however, surrounding landowners are antagonistic towards prairie dogs. There are active prairie dog colonies to the south; the closest is within approximately 1.75 miles of the parcel and it appears to be rebounding from the 2000-2001 plaque epidemic that swept through the area, however, this is unsubstantiated. An unnamed tributary draining to the Colorado Canal runs through the parcel from east to west. It appears that historically prairie dogs have occupied the surrounding landscape, but have never occupied the parcel. The topographic relief associated

with the tributary may make the landscape of the parcel less suitable, however, this is doubtful and lack of occupancy may relate to the complex social and dispersal patterns of black-tailed prairie dogs. The habitat is suitable for prairie dogs and Burrowing Owls and the likelihood future populations of prairie dogs could be supported here is good.

Parcel C21
This 24-acre parcel is located in west-central Crowley County; UTM Northing: 4,235,284 Easting: 597,755. The pictures of this parcel include c47 and c48. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include a 15% cover of rabbitbrush. There is a northeast facing slope of less than 5% and 10% of the site consists of bare ground. The associated soil is loamy-sand and the parcel and surrounding grassland is grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning has a moderate influence on population dynamics in this area. The habitat is suitable for prairie dogs and Burrowing Owls; however, surrounding landowners are antagonistic towards prairie dogs. Active and inactive prairie dog complexes occupy the surrounding landscape with the closest active colony lying within one mile of the parcel and it appears to be rebounding from the 2000-2001 plaque epidemic that swept through the area, however, this is unsubstantiated. The complex is reproductively active, but it is composed of small towns on private ranchland. The likelihood that this parcel will support prairie dogs in the future is fair.

Parcel C22
This 28-acre parcel is located in south-central Crowley County; UTM Northing: 4,235,330 Easting: 600,198. The pictures of this parcel include c49 and c50. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include a 30% cover of rabbitbrush. There is a south-facing slope of less than 3% and 10% of the site consists of bare ground. The associated soil is loamy-sand and the parcel and surrounding grassland is moderately to intensely grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning has a moderate influence on population dynamics in this area. The area is suitable for prairie dogs and Burrowing Owls; however, surrounding landowners are antagonistic towards prairie dogs. Active and inactive prairie dog complexes occupy the surrounding landscape with the closest active colony lying within one tenth of a mile of the parcel and it appears to be rebounding from the 2000-2001 plaque epidemic that swept through the area, however, this is unsubstantiated. The 30% cover of rabbitbrush on this parcel, however marginalizes its suitability for habitation by prairie dogs because dense shrubs compromise the enhanced detection of predators avoided by colonialism and the likelihood that this parcel will support prairie dogs in the future is only fair.

Parcel C23
This 264-acre parcel is located in south-central Crowley County; UTM Northing: 4,235,330 Easting: 600,198. The pictures of this parcel include c51 and c52. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include a 1% cover of rabbitbrush. The associated soil is sandy-loam and the parcel and surrounding grassland

is lightly to moderately grazed with 5% of the site consisting of bare ground. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning has a moderate influence on population dynamics in this area. The area is suitable for prairie dogs and Burrowing Owls; however, surrounding landowners are antagonistic towards prairie dogs. An abandon prairie dog colony occupies the parcels west side and an active complex with a large breeding population composed of moderate sized towns on private ranchland is adjacent to the parcels eastern boundary. Comparison to EDAW data suggests that size of the complexes has not fluctuated much in recent years, indicating that plague or poisoning have not recently been factors of influence. The parcel and adjacent prairie dog complex could represent an opportunity for a demonstration area for local landowners and land managers. The likelihood that this parcel will support prairie dogs in the future is very high.

Parcel C24

This 50-acre parcel is located in central Crowley County; UTM Northing: 4,235,261 Easting: 613,986. The pictures of this parcel include c53 through c55. The dominant community is shortgrass prairie and the predominant grass is alkali sacaton with some desert saltgrass (*Distichlis spicata*), but there is a complete absence of blue gramma at this parcel. Accompanying shrubs include a 5% cover of sagebrush and along the reservoirs edge there is a 5% cover of tamarisk (*Tamarisk pentandra*). There is a high percentage of forb cover (15%) in the parcel, but the plants are unidentifiable due to the drought, and about 15 % of the site consists of bare ground. The parcel is adjacent to Henry Reservoir to the east and impacts to the water table have changed the vegetation composition on the parcel from that on the surrounding landscape. The associated soil is an alkaline sandy-loam and the parcel and surrounding grassland is grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning have a moderate influence on population dynamics in this area. A large and reproductively active prairie dog complex exists approximately 0.75 miles to the southwest of the parcel. The complex is composed of moderate sized towns on private ranchland. The composition of grasses on the parcel are not suitable for prairie dogs, but occupation by prairie dogs of similar habitat to the south suggests that the forb cover is adequate to support prairie dogs. The likelihood that this parcel will support prairie dogs in the future is fair.

Parcel C25

This 40-acre parcel is located in southwestern Crowley County; UTM Northing: 4,229,222 Easting: 588,225. The pictures of this parcel include c56 and c57. The parcel is located on sand dunes and the dominant community on the surrounding landscape is sand sagebrush (*Oligosporus filifolia*). The site consists of 60% bare sand with a 10% cover of grass, predominantly threeawn. The slope varies, but primarily faces southwest. The area is grazed and there is evidence of wind erosion. The sandy soils at this parcel lack the structural integrity necessary to support burrow systems and the likelihood that this parcel will support prairie dogs in the future is very poor.

Parcel C26

This 86-acre parcel is located in southwestern Crowley County north of the Arkansas River; UTM Northing: 4,222,074 Easting: 596,178. The pictures of this parcel include c58 and c59. The parcel is located on rolling terrain with variable aspect, and a slope that ranges from 0-30%. The dominant community is semi-desert shrubland and the predominant shrub is sand sagebrush, but also present are snakeweed, *Gutierrezia sarothrae*, and cholla, which all three taken together cover 40% of the parcel. Forty percent of the site consists of bare ground. The associated soil is gravelly sandy-loam to silty clay-loam and the parcel shows evidence of past grazing, while recent grazing is not apparent. The occurrence of snakeweed in particular is representative of over-grazed range (Weber 1976). The parcel is secluded from active prairie dog complexes; the closest complex is located over seven miles to the northwest. The root systems associated with the dominant vegetation, the shrubs, is not suitable for burrowing by prairie dogs and the likelihood that this parcel will support prairie dogs in the future is very poor.

Parcel C27

This 66-acre parcel is located in southeastern Crowley County north of the Arkansas River; UTM Northing: 4,224,246 Easting: 613,389. The pictures of this parcel include c60 through c62. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include a 15% cover of rabbitbrush with some cholla. There is a north-facing slope of less than 5% and the associated soil is silty-loam. The parcel and surrounding grassland is moderately grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning has a moderate influence on population dynamics in this area. The area is suitable for prairie dogs and Burrowing Owls; however, surrounding landowners are antagonistic towards prairie dogs. Active and inactive prairie dog complexes occupy the surrounding landscape with the closest active colony located less than five miles east of the parcel. The complex appears to be rebounding from the 2000-2001 plaque epidemic that swept through the area, however, this is unsubstantiated. All the local complexes are composed of small towns spread across private ranchland. The likelihood that this parcel will support prairie dogs in the future is fair.

Parcel C28

This 73-acre parcel is located in southeastern Crowley County north of the Arkansas River; UTM Northing: 4,229,762 Easting: 626,307. The pictures of this parcel include c63 and c64. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include less than 5% cover of yucca, *Yucca glauca*. The terrain slopes off to the east and west at less than 5% and the associated soil is sandy-loam. The parcel and surrounding grassland is moderately grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were active suggesting that plague and/or poisoning has a marginal influence on population dynamics in this area. The area is suitable for prairie dogs and Burrowing Owls; however, surrounding landowners are antagonistic towards prairie dogs. Active prairie dog complexes occupy the surrounding landscape to the east, north and west at distances of five, two and 3.35 miles from the parcel. Comparison to EDAW data suggests that size of the complexes has not fluctuated much in recent years, indicating that plague or poisoning have not recently been factors of influence. Although, present evidence and past records indicate prairie dogs have occupied the surrounding landscape

there is no evidence that they have ever occupied the BLM parcel and the likelihood that this parcel will support prairie dogs in the future is fair.

Huerfano County

A total of 38 BLM parcels were located in Huerfano County and 31 of these parcels were visited during this survey. Permission to access the remaining 7 parcels was not granted by the rancher owning the land surrounding the parcels. The parcels were too great of a distance from public access points to hike into. All, but one of the parcels surveyed in Huerfano County were located east of Interstate 25 (Fig. 7). Throughout the survey conducted in Huerfano County no active prairie dog complexes were ever located, and the distributions mapped on NDIS do not identify any complexes in the county. Two inactive complexes were observed in the county, one on parcel H5 and another in H30. The closest prairie dog complexes to Huerfano County occur 20 miles to the south in Las Animas County, and 13 miles to the east or 11 miles to the north, both in Pueblo County. In order for prairie dogs to recolonize Huerfano County from any of these complexes, dispersers would have to cross miles of unsuitable habitat including Cordova Mesa and the Apishapa River Canyon in Las Animas County and Jack Canyon, the Black Ridge, Cucharas River Canyon and Huerfano River Canyon in Pueblo County. Although not impossible, it is unlikely that this could happen.

The study did not conduct an exhaustive survey effort in eastern Huerfano County and extant populations may still populate unvisited areas. Also, there is a degree of uncertainty associated with the inactive status assigned to the two complexes located in Huerfano County during this study. Only one visit was made to each parcel and if prairie dogs were below ground during the visit they would have escaped detection. A more intensive search is required to verify with certainty the inactivity at these two complexes. Prairie dogs may be extirpated from eastern Huerfano County, and if so, without reintroduction it is unlikely they will reestablished in the county. Also, in the following parcel summaries no reference is made concerning distance to the closest active prairie dog complex since no such complex can be closer than 11 miles and most are much more distant making it unlikely that colonization would occur. For this reason, habitat suitability is not based on whether the parcel will support future populations based on proximity to other active complexes, but rather on whether its composition of plant, soil and slope represent suitable habitat that could support future populations if prairie dogs were reintroduced.

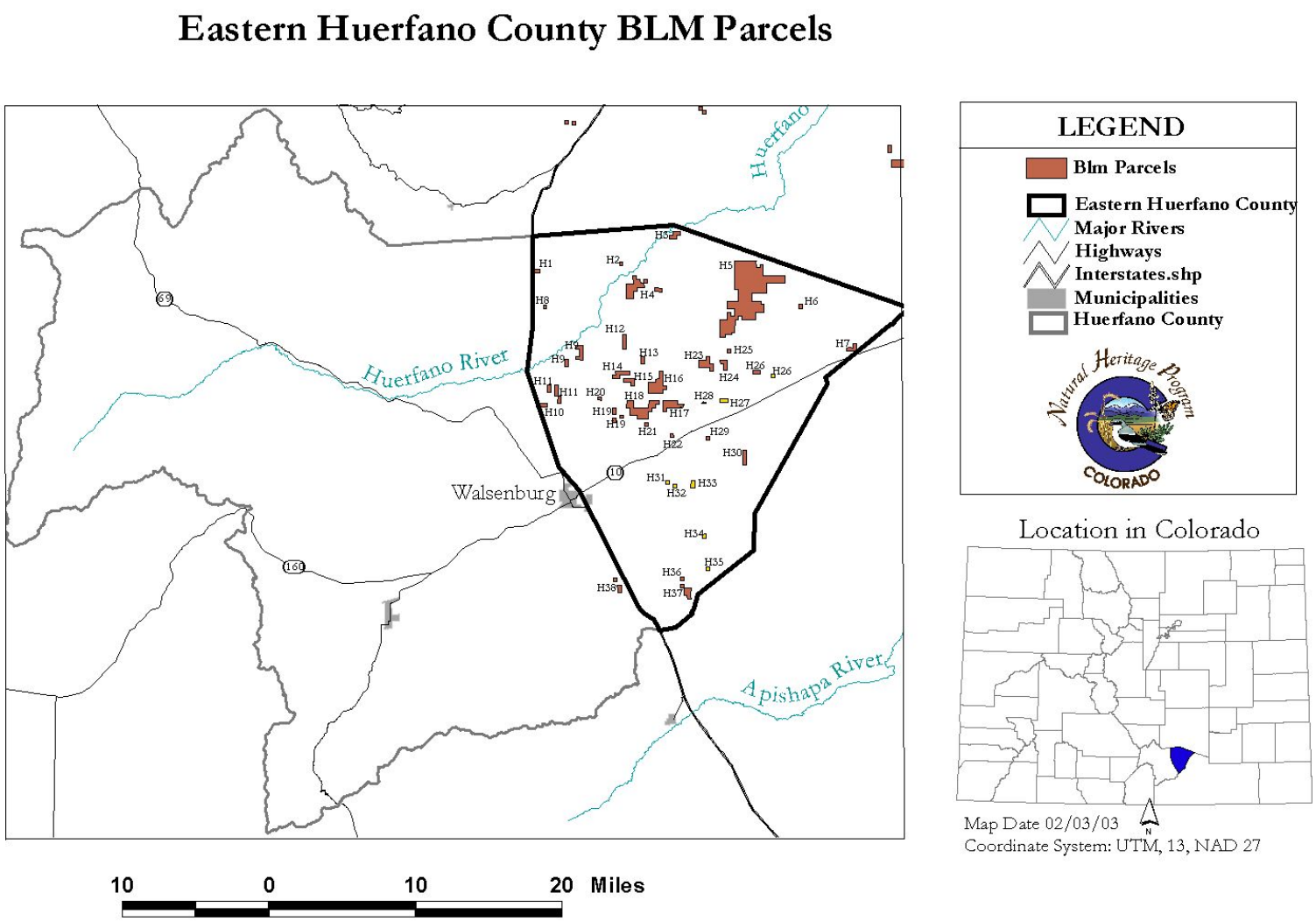

Fig 7. The distribution and identification number of Bureau of Land Management Parcels surveyed in eastern Huerfano County, Colorado.

Parcel H1
This 80-acre parcel is located in the northeast of the area surveyed in Huerfano County; UTM Northing: 4,189,617 Easting: 515,531. The pictures of this parcel include h1 through h3. The dominant community is semi-desert shrubland and the predominant shrubs are greasewood (*Sarcobatus vermiculatus*) and four-wing saltbrush, (*Atriplex canescens*); accompanying grasses include less than 15% cover of blue gramma. There is an east-facing slope of less than 3% and the associated soil is a silty clay to silty clay-loam. The parcel and surrounding grassland is intensely grazed and Pope Arroyo runs through the parcel from east to west. The surrounding land is privately owned with a few scattered sections of state owned land. Prairie dogs usually avoid woodlands and dense shrubs (Koford 1958, Hoogland 1995) where suitability for burrowing and detection of predators is compromised and the likelihood that this parcel could support prairie dogs in the future is very poor.

Parcel H2
This 36-acre parcel is located in the northeast of the area surveyed in Huerfano County; UTM Northing: 4,190,414 Easting: 525,011. The pictures of this parcel include h4 through h7. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include four-wing saltbush, rabbitbrush, snakeweed and yucca, which together cover 20% of the parcel. There is a northeast-facing slope of 10 to 20% and the associated soil is a stoney silty clay-loam. The parcel and surrounding grassland is grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Prairie dogs usually occur on areas with slopes of less than 9%, preferring slopes between 2 and 4% because steeper slopes impede detection of predators and are susceptible to erosion creating shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002), which are not conducive to constructing burrow systems. The likelihood that this parcel could support prairie dogs in the future is very poor.

Parcel H3
This 64-acre parcel is located in the northeast of the area surveyed in Huerfano County; UTM Northing: 4,193,629 Easting: 531,039. The pictures of this parcel include h8 through h10. The dominant community is pinyon-juniper woodland, which covers 60% of the parcel and the predominant grass is blue gramma; accompanying shrubs include mountain mohagony (*Cercocarous montanus*), skunkbrush (*Rhus trilobata*), rabbitbrush and cholla, which together cover 20% of the parcel. There is a northwest-facing slope of 15% to 20% and the associated soil is a stoney-loam. The parcel and surrounding grassland is grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Prairie dogs generally will not inhabit slopes of more than 9% and prefer slopes of 2% to 4% because steeper slopes usually have shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002), which are not conducive to constructing burrow systems. The likelihood that this parcel could support prairie dogs in the future is very poor.

Parcel H4
This 752-acre parcel combines three separate parcels with similar plant communities. The combined parcel is located in the northeast of the area surveyed in Huerfano County; UTM Northing: 4,187,813 Easting: 526,594. The pictures of this parcel include h11 through h13. The parcel is situated on a north-facing slope of 5-45% with pinyon-juniper woodland upslope

grading into blue gramma dominated grassland at lower slope. A number of shrubs are present on the parcel including four-wing saltbush, mountain mohagony, skunkbrush and snakeweed, which together cover 20% of the parcel. There is a northwest-facing slope of 15% to 20% and the associated soil is a stoney silty clay loam. The parcel and surrounding grassland is grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Prairie dogs generally will not inhabit slopes of more than 9% and prefer slopes of 2% to 4% because steeper slopes usually have shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002), which are not conducive to constructing burrow systems. The likelihood that this parcel could support prairie dogs in the future is very poor.

Parcel H5

This 1,314-acre parcel combines two separate parcels that span the Cucharas River Canyon in the northwest of the area surveyed in Huerfano County; UTM Northing: 4,187,899 Easting: 538,715. The pictures of this parcel include h14 through h19. The topography of the parcel is complex and includes the canyon, its cliffs and the flatlands located on top of the canyon. Pinyon-juniper woodlands dominate the canyon slopes, extending into the riparian zone along the Cucharas River where cottonwoods and tamarisk are predominant. The woodlands also extend for approximately 0.25 miles into the grassland located at the top of the canyon. The grassland varies considerably, with some places in areas distant from the canyon rims containing up to a 90% cover of blue gramma with very few shrubs to a transition zone near the woodlands dominated by rabbitbrush and containing only a 60% cover of blue gramma. Mountain mahogany and skunkbrush are also present along the canyon's slopes. The parcel contains a complex mix of aspects and a slope that varies anywhere from the cliffs of the canyon to gentle inclines of less than 5% in the grasslands. The associated soils vary from loams and silty-loams along the riparian zones of the Cucharas River to fine sandy-loams and clay loams in the rimtop grasslands. This is a huge parcel with great potential for meaningful natural resource management and planning. The parcel is set within a landscape dominated by privately owned lands with a checkerboard of state lease land. Prairie dogs usually do not inhabit woodlands and dense shrublands, or riparian zones that are subject to flooding (Koford 1958, Hoogland 1995, Reading and Matchett 1997), so the majority of this parcel including the riparian communities, the canyonlands and adjoining woodlands and those transition zones with dense shrubs are unsuitable for prairie dogs. The extensive expanse of grassland located on this parcel, however, has the proper soil and grass composition to support prairie dogs and an abandoned complex was identified near the parcel's northeastern arm. The likelihood that this parcel could support prairie dogs in the future is very high.

Parcel H6

This 45-acre parcel is located in the northwest of the area surveyed in Huerfano County; UTM Northing: 4,185,653 Easting: 545,096. The pictures of this parcel include h20 and h21. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include less than 5% cover of cholla. There is a south facing slope of less than 5% and the associated soil is fine sandy-loam. The parcel and surrounding grassland is lightly to moderately grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. The area is suitable for prairie dogs and Burrowing Owls. The likelihood that this parcel could support prairie dogs in the future is

good.

Parcel H7
This 158-acre parcel is located in the northwest of the area surveyed in Huerfano County; UTM Northing: 4,181,068 Easting: 551,165. The pictures of this parcel include h22 and h23. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include yucca, cholla and snakeweed, which together cover 15% of the parcel. There is a northwest-facing slope of 15% and the associated soil varies from a fine sandy-loam to a silty clay-loam. The parcel and surrounding grassland is lightly to moderately grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. The area is suitable for prairie dogs, Burrowing Owls and Mountain Plovers; however, surrounding landowners are antagonistic towards prairie dogs. The likelihood that this parcel could support prairie dogs in the future is fair.

Parcel H8
This 35-acre parcel combines two separate parcels with similar plant communities. The combined parcel is located in the northwest of the area surveyed in Huerfano County; UTM Northing: 4,185,590 Easting: 516,525. The pictures of this parcel include h24 and h25. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include a 40% cover of snakeweed with nominal amounts of yucca, cholla and rabbitbrush. There is no discernable slope and the associated soil is a fine sandy-loam. The parcel and surrounding grassland is lightly grazed. The surrounding land is privately owned with a few scattered sections of state owned land and some BLM land. The area is suitable for prairie dogs, and Burrowing Owls; however, surrounding landowners are antagonistic towards prairie dogs. The likelihood that this parcel could support prairie dogs in the future is good.

Parcel H9
This 130-acre parcel is located in the northwest of the area surveyed in Huerfano County; UTM Northing: 4,180,524 Easting: 520,367. The pictures of this parcel include h26 and h27. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include snakeweed, rabbitbrush, cholla and yucca, which together cover 20% of the parcel. There is a 5% slope and the associated soil varies from fine sandy-loam to silty-clays in the southern parcel. There is an equal mix of BLM and private land in the surrounding area with some State owned land. The parcel is suitable for prairie dogs and Burrowing Owls; however, surrounding landowners are antagonistic towards prairie dogs. The likelihood that this parcel could support prairie dogs in the future is high.

Parcel H10
This 127-acre parcel combines two separate parcels with similar plant communities. The combined parcel is located in the northwest of the area surveyed in Huerfano County; UTM Northing: 4,174,666 Easting: 516,119. The pictures of this parcel include h28 and h29. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include snakeweed, rabbitbrush, yucca and sagebrush (*Artemisia* spp.), which together cover 35% of the parcel. There is a northeast-facing slope of between 5 and 15% and the associated soil is silty-clay. There is an equal mix of BLM and private land in the surrounding area with some State owned land. The parcel and surrounding grassland is lightly

grazed. The steeper slope and cover of shrubs makes this parcel less suitable habitat for prairie dogs. The likelihood that this parcel could support prairie dogs in the future is poor.

Parcel H11
This 280-acre parcel combines three separate parcels with similar plant communities. The combined parcel is located in the northwest of the area surveyed in Huerfano County; UTM Northing: 4,176,277 Easting: 517,763. The pictures of this parcel include h30 and h31. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include snakeweed, rabbitbrush and cholla, which together cover 35% of the parcel. Hilly terrain runs through this parcel and there are aspects to both the northeast and southwest with steep slopes varying from 10 to 55%. The associated soil is silty-clay. The parcel and surrounding grassland is lightly grazed. There is an equal mix of BLM and private land in the surrounding area with some State owned land. The steeper slopes and cover of shrubs precludes habitation by prairie dogs. The likelihood that this parcel could support prairie dogs in the future is very poor.

Parcel H12
This 164-acre parcel is located in the northwest of the area surveyed in Huerfano County; UTM Northing: 4,181,702 Easting: 525,419. The pictures of this parcel include h32 and h33. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include snakeweed, four-wing saltbush, yucca and cholla, which together cover only 7% of the parcel. There is a northwest facing slopes of less than 5% and the associated soil is a fine sandy-loam. The parcel and surrounding grassland is intensely grazed. There is an equal mix of BLM and private land in the surrounding area with some State owned land. A cattle tank is located in the parcel's north end and such structures have been implicated as attractants to prairie dogs (Licht and Sanchez 1993) suggesting that this site is suitable prairie dog and Burrowing Owl habitat; however, surrounding landowners are antagonistic towards prairie dogs. The likelihood that this parcel could support prairie dogs in the future is high.

Parcel H13
This 80-acre parcel is located in near the center of the area surveyed in Huerfano County; UTM Northing: 4,179,653 Easting: 527,429. The pictures of this parcel include h34 and h35. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include four-wing saltbush and snakeweed, which together cover 40% of the parcel. There is a west-facing slopes of less than 2% and the associated soil is fine sandy-loam. There is an equal mix of BLM and private land in the surrounding area with some State owned land. The parcel and surrounding grassland is moderately to intensely grazed. The high percent of shrub cover suggests that this parcel represents less suitable prairie dog habitat, however, the author has observed complexes in similar habitats. The likelihood that this parcel will support prairie dogs in the future is fair.

Parcel H14
This 255-acre parcel is located near the center of the area surveyed in Huerfano County; UTM Northing: 4,178,015 Easting: 524,438. The pictures of this parcel include h36 through h38. The dominant community is semi-desert shrubland and the predominant shrub is four-wing saltbush with some snakeweed and the understory is predominantly blue gramma, which covers 20% of

the parcel. There is a south facing slopes of less than 2% and 30% of the site consists of bare ground. The associated soil is clay-loam. The parcel and surrounding grassland is intensely grazed and the parcel's southeast corner is adjacent to Bradford Reservoir. There is an equal mix of BLM and private land in the surrounding area with some State owned land. The high percent of shrub cover makes this parcel unsuitable for prairie dogs. The likelihood that this parcel could support prairie dogs in the future is very poor.

Parcel H15

This 157-acre parcel is located in near the center of the area surveyed in Huerfano County; UTM Northing: 4,177,171 Easting: 526,266. The pictures of this parcel include h39 and h40. The dominant community is semi-desert shrubland and the predominant shrub is four-wing saltbush with some snakeweed; the understory contains a 10% cover of grasses and there is a 50% cover of bare ground. There is a nominal slope and the associated soil is clay-loam. The parcel and surrounding grassland is intensely grazed and the parcel's northwest corner is adjacent to Bradford Reservoir. There is an equal mix of BLM and private land in the surrounding area with some State owned land. The high percent of shrub cover and lack of forb or grass cover makes this parcel unsuitable for prairie dogs. The likelihood that this parcel could support prairie dogs in the future is very poor.

Parcel H16

This 685-acre parcel is located in near the center of the area surveyed in Huerfano County; UTM Northing: 4,177,169 Easting: 529,082. The pictures of this parcel include h41 and h42. The percent of shrub and grass cover varies across this large parcel. In the north half the dominant community is shortgrass prairie and the predominant grass is blue gramma and the south half is dominated by four-wing saltbush and snakeweed, which together make up 70% of the cover. There is a slope of less than 10% and the associated soil is silty clay-loam. The parcel and surrounding grassland is moderately to intensely grazed. There is an equal mix of BLM and private land in the surrounding area with some State owned land. The habitat is marginal for prairie dogs and unsuitable in those areas with dense shrub cover. The likelihood that this parcel could support prairie dogs in the future is fair.

Parcel H17

This 440-acre parcel is located in near the center of the area surveyed in Huerfano County; UTM Northing: 4,174,544 Easting: 530,873. The pictures of this parcel include h43 and h44. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include snakeweed, four-wing saltbush, yucca, wolfberry and cholla, which together cover 15% of the parcel. This parcel rises to the east where it borders Cucharas Reservoir. Juniper is present at the hilltop and there are cliffs that drop into Cucharas Reservoir at the crest. There is a west-facing slope of between 5 and 15% and the associated soil varies from silty clay-loam at the hilltop to fine sandy-loam at lower elevation. The parcel and surrounding grassland is moderately grazed. There is an equal mix of BLM and private land in the surrounding area with some State owned land. The low-lying areas with a shallower slope, where grasses predominate, are suitable for prairie dogs and Burrowing Owls. The likelihood that this parcel could support prairie dogs in the future is fair.

Parcel H18

This large 923-acre parcel extends across two ranches and is located near the center of the area surveyed in Huerfano County; UTM Northing: 4,174,141 Easting: 527,467. The pictures of this parcel include h45 through h50. The terrain is very hilly and rolling across the parcel with the highest elevation of 6,040 feet occurring in the parcel's northwest corner. The terrain slopes to the south and southeast to the parcel's southern border where the lowest elevation of 5,810 feet is reached. Slopes within the parcel are highly variable and include nominal slopes in low-lying flats to slopes upward of 30% in some areas of higher terrain. Shortgrass prairie dominates the parcel with blue gramma and threeawn predominating. There are areas in the parcel where shrubs including four-wing saltbush, snakeweed and yucca cover 40% of the ground. Soil of the parcel is a fine sandy-loam. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. The parcel is essentially unsuitable habitat for prairie dogs, however, there is a mosaic of isolated flats dominated by grasses within the parcel that do constitute suitable habitat. The likelihood that this parcel will support prairie dogs in the future is poor.

Parcel H19

This 160-acre parcel combines three separate parcels with similar plant communities. The combined parcel is located near the center of the area surveyed in Huerfano County; UTM Northing: 4,173,958 Easting: 524,258. The pictures of this parcel include h51 and h52. The dominant community is semi-desert shrubland and the predominant shrubs are for-wing saltbush and snakeweed, which cover 40% of the parcel. The understory is predominantly blue gramma, which covers 50% of the parcel. There are various slopes and aspects distributed across the combined parcel and the associated soil is fine sandy-loam. The parcel and surrounding grassland is moderate to intensely grazed. There is an equal mix of BLM and private land in the surrounding area with some State owned land. Prairie dogs usually do not inhabit dense shrublands and the shrub cover here precludes habitation by prairie dogs. The likelihood that this parcel could support prairie dogs in the future is very poor.

Parcel H20

This 40-acre parcel is located near the center of the area surveyed in Huerfano County; UTM Northing: 4,175,396 Easting: 522,624. The pictures of this parcel include h53 and h54. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include snakeweed, cholla, opuntia and yucca, which together cover 10% of the parcel. The slope is less than 5% and the associated soil is silty clay-loam. There is an equal mix of BLM and private land in the surrounding area with some State owned land. The parcel and surrounding grassland is moderately grazed and the habitat is suitable for prairie dogs and Burrowing Owls. The likelihood that this parcel could support prairie dogs in the future is good.

Parcel H21

This 40-acre parcel is located near the center of the area surveyed in Huerfano County; UTM Northing: 4,172,504 Easting: 527,862. The pictures of this parcel include h55 and h56. The dominant community is semi-desert shrubland with cover that includes 30% four-wing saltbush and snakeweed, 30% blue gramma and 30% bare ground. There is a northwest-facing slope of 12% and the Sandy Arroyo crosses the parcel's north end. The associated soil is a stoney silty clay-loam. The parcel and surrounding grassland is intensely grazed. There is an equal mix of

BLM and private land in the surrounding area with some State owned land. Prairie dogs usually avoid dense shrubs and steeper slopes impede detection of predators and are susceptible to erosion creating shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002), which are not conducive to constructing burrow systems. The likelihood that this parcel could support prairie dogs in the future is very poor.

Parcel H22

This 40-acre parcel is located near the center of the area surveyed in Huerfano County; UTM Northing: 4,171,286 Easting: 530,675. The pictures of this parcel include h57 through h60. The dominant community is shortgrass prairie and the predominant grass is blue gramma, accompanying shrubs include a 15% cover of western sagebrush, four-wing saltbush, yucca and snakeweed. There is a west-facing slope of less than 5% and greater than 20% of the parcel consists of bare ground. The associated soil is a course rocky silty-clay and there is evidence of past grazing in the parcel and surrounding grassland. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Prairie dogs prefer medium to fine textured soils (Reading and Matchett 1997) and the rocky soils make the likelihood the parcel could support prairie dogs in the future, very poor.

Parcel H23

This 362-acre parcel is located near the center of the area surveyed in Huerfano County; UTM Northing: 4,179,263 Easting: 534,523. The pictures of this parcel include h61 through h65. The parcel is adjacent to Cucharas River Canyon to the east and the parcel's northern tip includes parts of Bobcat Canyon draining into the Cucharas River form the west. Pinyon-juniper woodland dominates the canyon's lip and along its steep slopes, but the majority of the parcel consists of the flats extending from the canyons lip to the west, where the dominant community is shortgrass prairie and the predominant grass is blue gramma. Accompanying shrubs on the flats include snakeweed, cholla, yucca and wolfberry. There is a west-facing slope of less than 5% and greater than 20% of the parcel consists of bare ground. In the grassland the soil is fine sandy loam while loam soils dominate riparian communities in the canyon bottom. The parcel and surrounding grassland is grazed. There is an equal mix of BLM and private land in the surrounding area with some State owned land. Prairie dogs usually do not inhabit woodlands or riparian zones that are subject to flooding (Koford 1958, Hoogland 1995, Reading and Matchett 1997), and these areas within the parcel are unsuitable for prairie dogs. The parcel's grasslands, however, have the proper soil and grass composition to support prairie dogs. The likelihood that this parcel could support prairie dogs in the future is good.

Parcel H24

This 155-acre parcel is located in the northeast of the area surveyed in Huerfano County; UTM Northing 4,179,090 Easting: 536,707. The pictures of this parcel include h66 and h67. The parcel is adjacent to Cucharas River Canyon to the west and pinyon-juniper woodland dominates the parcel, but a small portion of the parcel consists of level shortgrass prairie with blue gramma as the predominant grass. Accompanying shrubs in the shortgrass include snakeweed, cholla and yucca, which together comprise less than 2% of the cover. There is an east facing slope of less than 5% and the soil is loam to silty loam. The parcel and surrounding grassland is moderately grazed. There is an equal mix of BLM and private land in the surrounding area with some State owned land. Prairie dogs usually do not inhabit woodlands or riparian zones that are subject to

flooding (Koford 1958, Hoogland 1995, Reading and Matchett 1997), and these areas within the parcel are unsuitable for prairie dogs. The parcel's grasslands, however, have the proper soil and grass composition to support prairie dogs, but this habitat type represents a small portion of the overall parcel. The likelihood that this parcel could support prairie dogs in the future is fair.

Parcel H25

This 40-acre parcel is located in the northeast of the area surveyed in Huerfano County; UTM Northing 4,180,686 Easting: 537,086. The pictures of this parcel include h68 and h69. The parcel is adjacent to Cucharas River Canyon to the west and pinyon-juniper woodland dominates the parcel, but a small portion of the parcel consists of level shortgrass prairie with blue gramma as the predominant grass. Accompanying shrubs in the shortgrass include snakeweed, cholla and yucca, which together comprise less than 2% of the cover. There is an east facing slope of less than 5% and the soil is loam to silty loam. The parcel and surrounding grassland is moderately grazed. There is an equal mix of BLM and private land in the surrounding area with some State owned land. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Prairie dogs usually do not inhabit woodlands or riparian zones that are subject to flooding (Koford 1958, Hoogland 1995, Reading and Matchett 1997), and these areas within the parcel are unsuitable for prairie dogs. The parcel's grasslands, however, have the proper soil and grass composition to support prairie dogs, but this habitat type represents a small portion of the overall parcel. The likelihood that this parcel could support prairie dogs in the future is fair.

Parcel H26

This 80-acre parcel is located in the northeast of the area surveyed in Huerfano County; UTM Northing 4,178,343 Easting: 540,158. The pictures of this parcel include h70 and h71. The parcel is adjacent to Rattlesnake Canyon to the east and occupies a slight ridgeline above the canyon where pinyon-juniper woodland is the dominate vegetation covering 50% of the ground. Accompanying shrubs include a 25% cover of mountain mahogany and skunkbrush, with nominal amounts of yucca, cholla and snakeweed. The terrain slopes both to the east and west at anywhere from 5 to 30%. The silty-loam soils contain a high amount of stones. The parcel and surrounding grassland appears ungrazed during recent times. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Prairie dogs usually do not inhabit woodlands (Koford 1958, Hoogland 1995, Reading and Matchett 1997), and the parcel is unsuitable for prairie dogs, but would be excellent habitat for the endemic and rare triploid checkered whiptail. The likelihood that this parcel could support prairie dogs in the future is very poor.

Parcels H27 and H28

The rancher owning the land surrounding these two parcels did not grant permission for access and neither was surveyed. The two parcels are located in the east-central region of the area surveyed in Huerfano County; Parcel H27 is UTM Northing: 4,175,115 Easting: 536,512 and for parcel H28 UTM Northing: 4,174,900 and Easting: 534,267.

Parcel H29

This 40-acre parcel is located in the south-central region of the area surveyed in Huerfano County; UTM Northing 4,170,959 Easting: 534,737. The pictures of this parcel include h72 and

h73. The parcel is situated on a hill with its top comprising the eastern third of the parcel and pinyon-juniper woodland covers 15% of the hilltop. Extending from the hilltop to the west across the parcel is shortgrass prairie dominated by blue gramma. Accompanying shrubs include a 30% cover of snakeweed, with nominal amounts of yucca, cholla and rabbitbrush. There is a west-facing slope of 10% and the associated soil is silty clay-loam. The parcel and surrounding grassland is grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Prairie dogs usually do not inhabit woodland and generally will not inhabit slopes of more than 9%, preferring slopes of 2% to 4% because steeper slopes usually have shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002), which are not conducive to constructing burrow systems. The pinyon-juniper woodland and steeper slope of this parcel make it marginal habitat for prairie dogs. The likelihood that this parcel could support prairie dogs in the future is fair.

Parcel H30

This 163-acre parcel is located in the southeast of the area surveyed in Huerfano County; UTM Northing 4,168,816 Easting: 538,787. The pictures of this parcel include h74 through h77. Shortgrass prairie is the dominant vegetation type and the dominant grass is blue gramma; accompanying shrubs include yucca, cholla and snakeweed, which together cover 10% of the parcel. There is also a small hilltop at the north tip of the parcel is where most of the yucca and a 5% cover of juniper occurs. There is a south-facing slope of less than 5% and the associated soil is a fine sandy-loam. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. The parcel and surrounding grassland are lightly grazed and the area is suitable for prairie dogs, Burrowing Owls and Mountain Plovers. An old and abandoned prairie dog colony occupies the parcel's southwest corner. The likelihood that this parcel could support prairie dogs in the future is high.

Parcels H31 through H35

The rancher owning the land surrounding these five parcels did not grant permission for access and they were not surveyed. The parcels are located in the south-central and southeast of the area surveyed in Huerfano County. See Appendix I For the UTM coordinates of these five parcels.

Parcel H36

This 45-acre parcel is located in the southern tip of the area surveyed in Huerfano County; UTM Northing 4,155,234 Easting: 531,834. The pictures of this parcel include h78 and h79. The parcel consists of shortgrass prairie dominated by blue gramma with an 8% cover of opuntia spread patchily throughout; accompanying shrubs include a 30% cover of four-wing saltbush, with wolfberry and snakeweed together covering 10% of the parcel. Aspect and slopes on the parcel are variable and the associated soil is a fine sandy-loam. An un-named tributary of Santa Clara Creek runs inside the parcel's western boundary. The parcel and surrounding grassland is moderately grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. The shrub cover marginalizes the parcel's suitability as prairie dogs habitat (Koford 1958, Reading and Matchett 1997), but prairie dogs will expand existing colonies into less dense shrubland and actively clip the shrubs to their suitability (Osborn 1942). The likelihood that this parcel could support prairie dogs in the future is fair.

Parcel H37
This 245-acre parcel combines two separate parcels located in the southern tip of the area surveyed in Huerfano County; UTM Northing 4,153,568 Easting: 532,427. The pictures of this parcel include h80 through h82. The parcel consists of shortgrass prairie dominated by blue gramma with an 8% cover of opuntia spread patchily throughout; accompanying shrubs include a 40% cover of four-wing saltbush and sagebrush, with a 10% cover of cholla. There is a northwest-facing slope of less than 5% and a hill at the parcel's southeast corner contains a 5% cover of juniper. The soil varies from a fine sandy-loam in the north to a silty-clay in the south and the parcel and surrounding grassland is moderately grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. The suitability of this parcel for habitation by prairie dogs is marginalized by the shrub cover ((Koford 1958, Reading and Matchett 1997), but prairie dogs will occupy less dense shrubland and actively clip the shrubs to there suitability (Osborn 1942). The likelihood that this parcel could support prairie dogs in the future is fair.

Parcel H38
This 123-acre parcel combines two separate parcels located in the southwest of the area surveyed in Huerfano County; UTM Northing 4,154,099 Easting: 524,828. The pictures of this parcel include h83 and h84. The dominant community is pinyon-juniper woodland, which covers 90% of the parcel and the predominant grass is threeawn; accompanying shrubs include Gambel's oak (*Quercus qambelii*) and mountain mahogany, which together cover 15% of the parcel. There is an east-facing slope greater than 45% and 40% of the ground is exposed. The soil is shallow, rocky and consists of fine sandy-loam. The parcel is unsuitable for grazing. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Prairie dogs usually avoid woodlands and dense shrubs (Koford 1958, Hoogland 1995) where suitability for burrowing and detection of predators is compromised and generally will not inhabit slopes of more than 9%, preferring slopes of 2% to 4% because steeper slopes have shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002), which are not conducive to constructing burrow systems. The likelihood that this parcel could support prairie dogs in the future is very poor.

Otero County

Otero County included 16 BLM parcels most of which were in the northern half of the county and all were visited during this survey (Fig. 8). A total of six parcels either presently harbor active colonies of prairie dogs or were within one-quarter mile of an active colony, with the likelihood that the colony could expand onto the parcel.. On one other parcel there was an abandoned prairie dog colony.

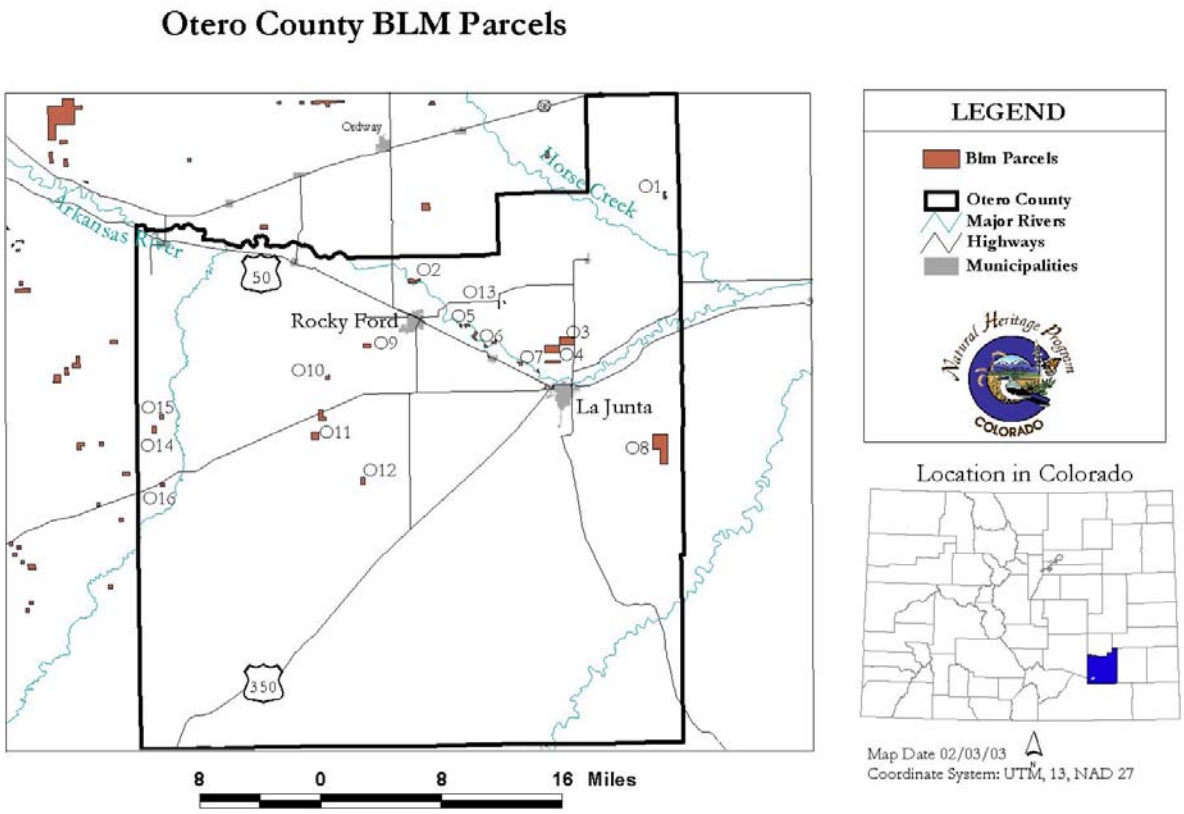

Fig 8. The distribution and identification number of Bureau of Land Management Parcels surveyed Otero County, Colorado.

Parcel O1

This 41-acre parcel is located in northeast Otero County; UTM Northing 4,225,459 Easting: 638,845. The pictures of this parcel include o1 through o4. The parcel is highly disturbed due to its location adjacent to Horse Creek Reservoir State Wildlife Area that experiences recreational use. Impacts to the water table have changed the vegetation composition on the parcel from that on the surrounding landscape and it appears that prior to this year, in which the area is experiencing a drought, much of the parcel experiences annual flooding. The parcel is dominated by tamarisk and unidentified forbs, but is completely devoid of grasses. There is an east-facing slope of less than 5% and the associated soil is clay. Most of the surrounding land is state owned with some private land. There is an active prairie dog colony three miles west of the parcel. Prairie dogs usually do not inhabit riparian zones that are subject to flooding (Koford 1958, Hoogland 1995, Reading and Matchett 1997), and the likelihood that this parcel will support prairie dogs in the future is poor.

Parcel O2

This 93-acre parcel is located in north-central Otero County; UTM Northing 4,216,368 Easting: 612,136. The pictures of this parcel include o5 through o8. The dominant plant community is cottonwood-willow riparian woodland with a 40% cover of cottonwood (*Populus* spp.) and a 30% cover of willow (*Salix* spp.). Tamarisk covers 30% of the parcel the understory consists of a 50% cover of forbs and a 15% cover of grasses. The slope is generally southeast facing at less

than 5% and the associated soil is sandy-clay. Most of the surrounding land is private with some state owned property and the parcel itself is contained within the Rocky Ford West State Wildlife Area and experiences recreational use. There is an active prairie dog colony 0.2 miles east of the parcel that appears to be rebounding from the 2000-2001 plaque epidemic that swept through the area, however, this is unsubstantiated. The complex is reproductively active, but it is composed of a small town on private ranchland and is isolated from other complexes. Prairie dogs usually do not inhabit woodland or dense shrubland where predator detection is compromised, or riparian zones that are subject to flooding (Koford 1958, Hoogland 1995, Reading and Matchett 1997). The likelihood that this parcel will support prairie dogs in the future is poor.

Parcel O3

This 309-acre parcel is located in northeast Otero County; UTM Northing 4,209,916 Easting: 628,428. The pictures of this parcel include o9 through o11. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include a 20% cover of sagebrush, with yucca and cholla together comprising 10% of the ground cover. There is a southeast-facing slope of less than 5% and the associated soil is a silty clay-loam. The parcel and surrounding grassland is grazed and an active prairie dog complex is encroaching upon the parcel's east end and it appears to be rebounding from the 2000-2001 plaque epidemic that swept through the area, however, this is unsubstantiated. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning influences population dynamics in this area. The area is suitable for prairie dogs and Burrowing Owls and the surrounding landowner appears friendly towards prairie dogs. The parcel, its adjacent prairie dog colony and another near by complex could represent an opportunity for a demonstration area for local landowners and land managers, but plaque may prevent long-term viability of prairie dogs at this site. The likelihood that this parcel will support prairie dogs in the future is very high.

Parcel O4

This 437-acre parcel is located in northeast Otero County; UTM Northing 4,209,103 Easting: 626,846. The pictures of this parcel include o12 and o13. The dominant community is sand sagebrush covering 50% of the parcel with an understory dominated by a 20% cover of needle and thread grass (*Stipa comata*); other shrubs include yucca, snakeweed and cholla, which together cover 15% of the parcel. There is a south-facing slope of less than 5% and 20% of the parcel consists of bare ground. The associated soil is loamy-sand and the parcel and surrounding grassland is grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning has a moderate influence on population dynamics in this area. An active prairie dog complex exists one mile east of the parcel. Prairie dogs usually avoid woodlands and dense shrubs (Koford 1958, Hoogland 1995) where suitability for burrowing and detection of predators is compromised, but they will expand existing colonies into less dense shrubland and actively clip the shrubs to their suitability (Osborn 1942). The likelihood that this parcel will support prairie dogs in the future is fair.

Parcel O5

This 48-acre parcel combines two separate parcels, each of which straddles the Arkansas River, and is located in north-central Otero County; UTM Northing 4,216,368 Easting: 612,136. The pictures of this parcel include o14 through o16. The dominant plant community is cottonwood-willow riparian woodland with a 40% cover of cottonwood (*Populus* spp.) and a 40% cover of willow (*Salix* spp.). The understory consists of a 50% cover of forbs and a 15% cover of grasses. The Arkansas River runs through the middle of each unit of the combined parcel. The surrounding land is privately owned with a few scattered sections of state owned land and some BLM land and the Rocky Ford State Wildlife Area, which experiences recreational use is directly adjacent to the parcel. The slope is generally east facing at less than 5% and the associated soil is sandy-clay. The parcel is secluded from active prairie dog complexes, the closest being approximately 3.5 miles to the northwest across unsuitable terrain. Prairie dogs usually do not inhabit woodlands and dense shrublands where suitability for burrowing and detection of predators is compromised, or riparian zones that are subject to flooding (Koford 1958, Hoogland 1995, Reading and Matchett 1997). The likelihood that this parcel will support prairie dogs in the future is very poor.

Parcel O6

This 112-acre parcel that actually combines three separate parcels, two of which straddles the Arkansas River, is located in north-central Otero County; UTM Northing 4,210,478 Easting: 618,485. The pictures of this parcel include o17 through o19. The dominant plant community is cottonwood-willow riparian woodland with a 20% cover of cottonwood (*Populus* spp.) and a combined cover of 80% for willow and tamarisk. The understory consists of a 10% cover of forbs and a 5% cover of grasses. The Arkansas River runs through the middle of two units of the combined parcel and the third is adjacent to the river on its north bank. There is agricultural use adjacent to the parcel and recreational use within the parcel along the river. The slope is generally east facing at less than 5% and the associated soil is sandy-clay. The surrounding land is privately owned with a few scattered sections of state owned land and some BLM land. The parcel is secluded from active prairie dog complexes, the closest being approximately two miles to the northwest across unsuitable terrain. Prairie dogs usually do not inhabit woodlands and dense shrublands where suitability for burrowing and detection of predators is compromised, or riparian zones that are subject to flooding (Koford 1958, Hoogland 1995, Reading and Matchett 1997). The likelihood that this parcel will support prairie dogs in the future is very poor.

Parcel O7

This 48-acre parcel that actually combines two separate parcels, one of which straddles the Arkansas River, is located in north-central Otero County; UTM Northing 4,207,517 Easting: 623,368. The pictures of this parcel include o20 through o22. The dominant plant community is riparian woodland with a 70% cover of cottonwood and a 30% cover tamarisk. The understory consists of a 20% cover of forbs and a 20% cover of grasses. There is agricultural use adjacent to the parcel and recreational use within the parcel along the river. The Arkansas River runs through the middle of one unit of the combined parcel and the other is 0.1 mile south of the river. There is agricultural use adjacent to the parcel and recreational use within the parcel along the river. The slope is north, facing into the Arkansas River at less than 5% and the associated soil is sandy-clay. The surrounding land is privately owned with a few scattered sections of state owned land and some BLM land. The parcel is secluded from active prairie dog complexes, the closest being approximately two miles to the south across unsuitable terrain. Prairie dogs usually

do not inhabit woodlands and where suitability for burrowing and detection of predators is compromised, or riparian zones that are subject to flooding (Koford 1958, Hoogland 1995, Reading and Matchett 1997). The likelihood that this parcel will support prairie dogs in the future is very poor.

Parcel O8

This 960-acre parcel is located in east-central Otero County; UTM Northing 4,198,423 Easting: 638,306. The pictures of this parcel include o23 through o25. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include snakeweed, sagebrush, yucca and cholla, which together cover 15% of the parcel. The parcel's topography is highly diverse with arroyos running both east and west from its center. Tamarisk has invaded the streams of the arroyos and the associated slopes vary from 15 to 45%. There is one high area at approximately 4,460 feet of elevation of flat terrain that fingers across the center of the parcel from the west, and from which the arroyos originate. The parcel and surrounding grassland are moderately grazed. Most of the surrounding land is USFS and state land with some private land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning has a moderate influence on population dynamics in this area. Prairie dogs generally will not inhabit slopes of more than 9% and prefer slopes of 2% to 4% because steeper slopes usually have shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002), which are not conducive to constructing burrow systems. The north and south parts of this parcel where the arroyos predominate and the slopes are steep represent unsuitable prairie dog habitat, however, the flat grassland at the parcel's center is suitable and a town exists at the hilltop, adjacent to the parcels west boundary. The complex appears to be rebounding from the 2000-2001 plaque epidemic that swept through the area, however, this is unsubstantiated. The complex is reproductively active, but it is composed of a small town on private ranchland. The likelihood that the existing colony will expand onto the parcel in the future is very high.

Parcel O9

This 85-acre parcel is located in north-central Otero County; UTM Northing 4,209,386 Easting: 607,139. The pictures of this parcel include o26 through o28. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include a 30 and 10% cover of yucca and cholla, respectively. The parcel occupies a hilltop with varying aspect and slope, but which generally run north at less than 10% into the highline canal. The soil is clay. Arroyos originate from the hilltop that drain north into the Arkansas River. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. The grassland found on this hilltop parcel represent suitable prairie dog habitat and on the hilltop less than 0.5 miles to the parcels southwest a complex exists that appears to be rebounding from the 2000-2001 plaque epidemic that swept through the area, however, this is unsubstantiated. The prairie dog complex is reproductively active, but it is composed of small towns on private ranchland and is distant from other active complexes. The likelihood that the existing colony will expand onto the parcel in the future is high.

Parcel O10

This 42-acre parcel is located in northwest Otero County; UTM Northing 4,206,050 Easting: 602,934. The pictures of this parcel include o29 through o31. The dominant community is

shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include yucca and cholla, which cover 1% of the parcel. Soil on the parcel varies from silty clay-loam to clay and 20% of the parcel consists of bare ground. There is an east-facing slope of less than 5% and the parcel and surrounding grassland are moderately to intensely grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. This parcel represents suitable prairie dog, Burrowing Owl and Mountain Plover habitat and at present over 60% of this parcel is inhabited by prairie dogs. The prairie dog complex is reproductively active, but it is composed of a single small town on private ranchland that is distant from other active complexes. The likelihood that the existing colony will persist on the parcel into the future is high.

Parcel O11

This 326-acre parcel combines two separate parcels and is located in west-central Otero County; UTM Northing 4,202,041 Easting: 602,385. The pictures of this parcel include o32 and o33. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include yucca and cholla, which cover 5% of the parcel. Soil on the parcel varies from silty clay-loam to clay and 10% of the parcel consists of bare ground. There is a short hill at the parcel's center and the terrain slopes down at less than 10% in all directions from the hilltop. The parcel and surrounding grassland are grazed and there is a corral and cattle tank at the parcel's center. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. This parcel represents suitable prairie dog and Burrowing Owl habitat and an abandon colony exists adjacent to the parcels north boundary suggesting that plague and/or poisoning has an influence on population dynamics in this area. The closest active prairie dog towns lie approximately 1.5 miles north and south of the parcel, and both are reproductively active, but each town is small and located on private ranchland. The likelihood that this parcel will support prairie dogs in the future is very good.

Parcel O12

This 80-acre parcel combines two separate parcels and is located in west-central Otero County; UTM Northing 4,195,062 Easting: 606,673. The pictures of this parcel include o34 through o36. The dominant community is semi-desert shrubland and the predominant shrub is four-wing saltbush covering 40% of the parcel; accompanying grasses include blue gramma and western wheatgrass (*Pascopyrum smithii*), which together cover 5% of the parcel. Soil on the parcel is silty clay-loam and 10% of the parcel consists of bare ground. There is a southwest-facing slope of less than 3% and Dry Creek runs south to north through the parcel's center. The parcel and surrounding grassland are moderately grazed. There is an equal mix of USFS and private land in the surrounding area with some State owned land. The closest active complex is located less than 0.5 miles east of the parcel. Prairie dogs usually do not inhabit dense shrublands where suitability for burrowing and detection of predators is compromised, or riparian zones that are subject to flooding (Koford 1958, Hoogland 1995, Reading and Matchett 1997), but they will expand existing colonies into less dense shrubland and actively clip the shrubs to there suitability (Osborn 1942). The likelihood that this parcel will support prairie dogs in the future is fair.

Parcel O13

This 21-acre parcel combines two separate parcels with similar plant communities that are located in northeastern Crowley County; UTM Northing: 4,213,789 Easting: 621,198. The

pictures of this parcel include o37 through o40. The combined parcel is highly disturbed due to its location adjacent to Holbrook Reservoir State Wildlife Area that experiences recreational use. Impacts to the water table have changed the vegetation composition on the parcel from that on the surrounding landscape and it appears that prior to this year, in which the area is experiencing a drought, the parcel experienced flooding. The dominant community is riparian woodland and the predominant tree is cottonwood, which covers 5% of the parcel. Accompanying shrubs include willows and tamarisk, which together cover 10% of the parcel. There is a high percentage of forb cover (30%) in the parcel, but most of these are weeds including sunflowers and thistle. The associated soil is loamy-sand and the parcel and surrounding grassland is grazed. Ownership of the surrounding land is a checkerboard of state lease and private land, with some BLM land. The closest active complex is located approximately 4.5 miles east of the parcel. Prairie dogs usually do not inhabit woodlands and dense shrublands where suitability for burrowing and detection of predators is compromised, or riparian zones that are subject to flooding (Koford 1958, Hoogland 1995, Reading and Matchett 1997) and the likelihood that this parcel will support prairie dogs in the future is very poor.

Parcel O14

This 80-acre parcel is located in west-central Otero County; UTM Northing 4,200,442 Easting: 584,487. The pictures of this parcel include o41 and o42. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include the occasional yucca, which cover 2% of the parcel. Opuntia covers approximately 8% of the parcel. Soil on the parcel is silty clay-loam and 20% of the parcel consists of bare ground. There is a short hill occupied by a radio tower in the parcel and the terrain slopes down at less than 10% in all directions from the hilltop. The parcel and surrounding grassland are moderately grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Three prairie dog complexes near the parcel were active, suggesting that they may be free from influences of plague and/or poisoning. This parcel represents suitable prairie dog, Burrowing Owl and Mountain Plover habitat and a large reproductively active complex is located across Highway 167 west of the parcel. There is other nearby parcels with adjacent towns and although not huge in size the complex and associated BLM parcels could potentially serve as a demonstration area for local landowners and land managers. The likelihood that the existing colony will expand onto the parcel in the future is very high.

Parcel O15

This 37-acre parcel is located in west-central Otero County; UTM Northing 4,201,870 Easting: 585,272. The pictures of this parcel include o43 and o44. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include the occasional yucca and cholla, which together cover less than 5% of the parcel. Opuntia covers approximately 5% of the parcel. Soil on the parcel is a stoney silty clay-loam and 20% of the parcel consists of bare ground. The parcel slopes east at 5-15% towards the Apishapa River. There is a cattle tank just off the parcel and the area is intensely grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. The parcel represents suitable prairie dog and Burrowing Owl habitat and a reproductively active prairie dog complex exists one mile southwest of the parcel. The likelihood that this parcel will support prairie dogs in the future is good.

Parcel O16
This 38-acre parcel is located in west-central Otero County; UTM Northing 4,194,607 Easting: 585,369. The pictures of this parcel include o45 and o46. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include the occasional yucca and cholla, which together cover 5% of the parcel. Soil on the parcel is silty clay-loam and 20% of the parcel consists of bare ground. There is a north-facing slope of less than 5% and the parcel and surrounding area is moderately grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Three prairie dog complexes near the parcel were active, suggesting that they may be free from influences of plague and/or poisoning. This parcel represents suitable prairie dog, Burrowing Owl, and Mountain Plover habitat and a large reproductively active prairie dog complex surrounds the parcel. An abandon colony occupies the parcel's northeast corner and an active town is located less than a mile west of the parcel. There is other nearby parcels with adjacent towns and although not huge in size the complex and associated BLM parcels could potentially serve as a demonstration area for local landowners and land managers. The likelihood that the prairie dog complex will expand into the parcel in the future is high.

Pueblo

Pueblo County included 54 BLM parcels of which all were visited during this survey (Fig. 9). A total of seven parcels either presently harbor active colonies of prairie dogs or were within one-quarter mile of an active colony, with the likelihood that the colony could expand onto the parcel. On one other parcel there was an abandoned prairie dog colony.

Parcel P1
This 40-acre parcel is located in northwest Pueblo County; UTM Northing: 4,251,803 Easting: 522,867. The picture of this parcel is p1. The dominant community is juniper woodland, which covers 30% of the parcel. The understory consists of a 30% cover of mountain mahogany, with 30% of the ground exposed and there is a 10% cover of grasses. The terrain contains many gullies draining to the east with a slope that varies from 15 to 35% and the associated soil is silty clay-loam. The parcel and surrounding grassland is grazed. The land surrounding the parcel is either privately owned or part of the Fort Carson Military Reservation. The closest active prairie dog complex is located approximately two miles south of the parcel across stretches of unsuitable habitat. Prairie dogs usually do not inhabit woodland where suitability for burrowing and detection of predators is compromised and generally will not inhabit slopes of more than 9%, preferring slopes of 2% to 4% because steeper slopes usually have shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002), which are not conducive to constructing burrow systems. The likelihood that this parcel will support prairie dogs in the future is very poor.

Parcel P2
This 170-acre parcel is located in northwest Pueblo County; UTM Northing 4,247,586 Easting: 520,265. The picture of this parcel is p2. The dominant community is shortgrass prairie and the predominant grass is blue gramma; accompanying shrubs include sagebrush, yucca and cholla, which together cover 15% of the parcel. Soil on the parcel is a stoney silty clay-loam and 35%

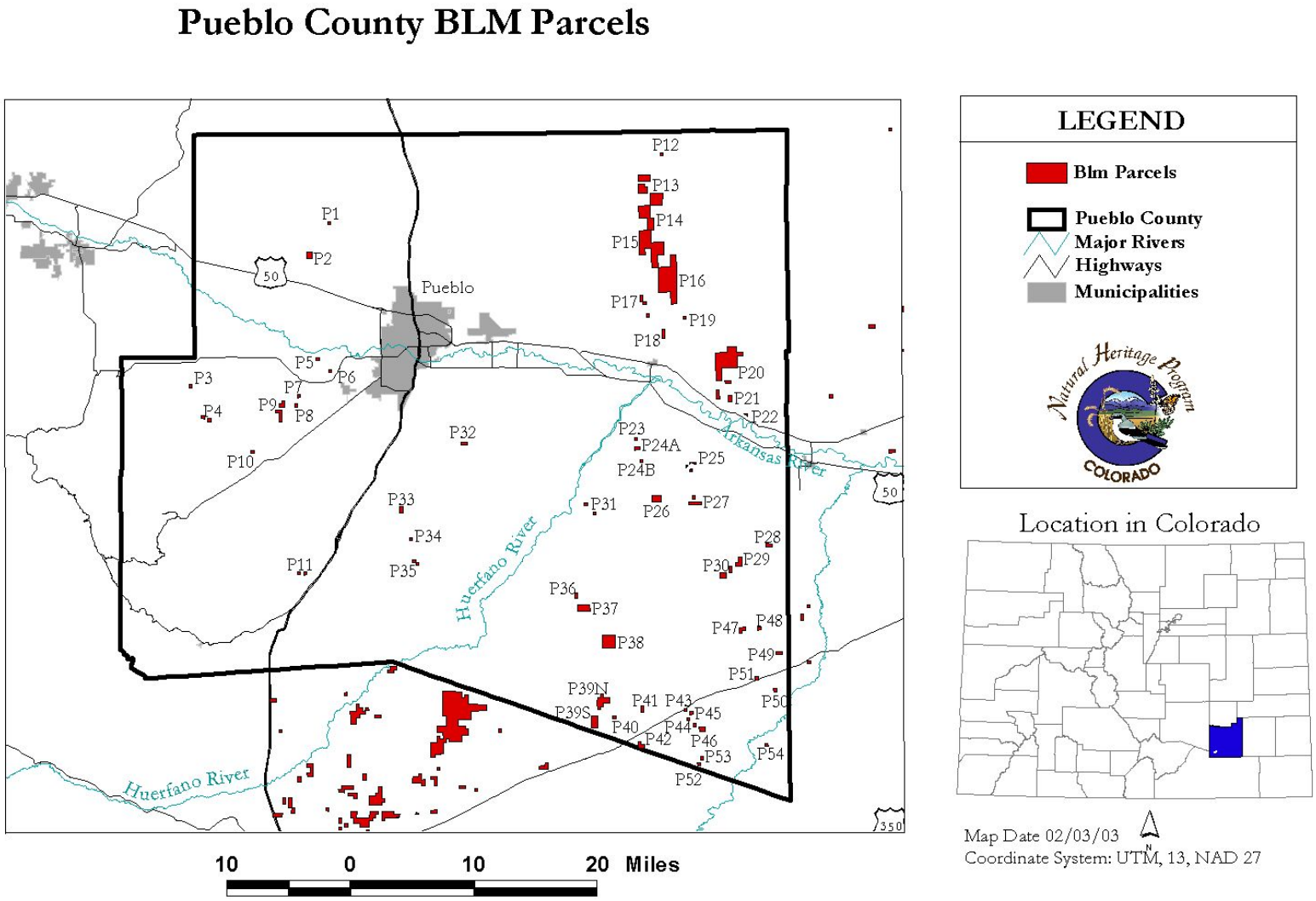

Fig 9. The distribution and identification number of Bureau of Land Management Parcels surveyed Pueblo County, Colorado.

of the parcel consists of bare ground. The parcel is on a slight rise where the soils are rockier than in the surrounding landscape and there is an east-facing slope of less than 10%. The parcel and surrounding area is intensely grazed and there is an abandoned prairie dog colony 0.25 miles northeast of the colony in less rocky soils. Private land surrounds the parcel with the Fort Carson Military Reservation to the north and the landowner is conservation minded and friendly towards prairie dogs. The majority of towns on two large prairie dog complexes near the parcel were abandoned suggesting that plague and/or poisoning influence population dynamics in the area. The rocky soils marginalize the parcels suitability for prairie dogs, which usually will not inhabit shallow rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002) because they are not conducive to constructing burrow systems. The likelihood that this parcel will support prairie dogs in the future is fair.

Parcel P3

This 40-acre parcel is located in northwest Pueblo County; UTM Northing 4,230,559 Easting: 504,770. The picture of this parcel is p3. The parcel occupies a north-facing ridge and increases 100 feet in elevation across it quarter mile length. The dominant community upslope is juniper woodland and at lower slope it opens to a juniper savanna. Soil on the parcel is a silty clay-loam and the slope from 10 to 25%. The parcel and surrounding area is grazed. The surrounding land is privately owned with a few scattered sections of state owned land. Prairie dogs usually occur on areas with slopes of less than 9%, preferring slopes between 2 and 4% because steeper slopes impede detection of predators and are susceptible to erosion creating shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002), which are not conducive to constructing burrow systems. There are no active prairie dog complexes near the parcel and the likelihood it will support prairie dogs in the future is fair.

Parcel P4

This 80-acre parcel combines two separate parcels and is located in northwest Pueblo County; UTM Northing 4,226,503 Easting: 506,396. The pictures of this parcel include is p4 and p5. Each unit of the combined parcel occupies an area of steep terrain. Owl Canyon runs between the two units and the aspect varies to some degree, but is generally north facing for each unit. Both units increase 100 feet in elevation across their one-quarter mile length. The dominant community on each unit is juniper woodland with an understory of 60% blue gramma and a 10% cover of yucca and cholla. Soil on the parcel is a silty clay-loam and the slope varies from 10 to 25%. The parcel and surrounding area is grazed. The surrounding land is privately owned with a few scattered sections of state owned land. Prairie dogs usually occur on areas with slopes of less than 9%, preferring slopes between 2 and 4% because steeper slopes impede detection of predators and are susceptible to erosion creating shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002), which are not conducive to constructing burrow systems. There are no active prairie dog complexes near the parcel and the likelihood it will support prairie dogs in the future is poor.

Parcel P5

This 40-acre parcel is located in northwest Pueblo County; UTM Northing 4,234,100 Easting: 521,357. The picture of this parcel is p6. The dominant community on the parcel is juniper woodland and the understory consists of a 20% cover of threeawn with yucca and sagebrush together covering 15% of the parcel. The aspect varies, but is generally north facing at less than

5% and 20% of the parcel consists of bare ground. Soil on the parcel is a stoney silty clay-loam and the parcel and surrounding area are part of the Lake Pueblo State Park and Wildlife Area. The area of the parcel is closed to the public, is undisturbed and although practiced in the past, appears recently to have not been grazed. The closest prairie dog complex is located approximately 4.5 miles south of the parcel. Prairie dogs usually do not inhabit woodlands where suitability for burrowing and detection of predators is compromised (Koford 1958, Hoogland 1995, Reading and Matchett 1997). There are no prairie dog complexes near the parcel the likelihood it will support prairie dogs in the future is poor.

Parcel P6

This 40-acre parcel is located in northwest Pueblo County; UTM Northing 4,232,500 Easting: 522,942. The picture of this parcel is p7. The dominant community on the parcel is juniper woodland and the understory consists of a 50% cover of grasses and a 10% cover of skunkbrush. The terrain contains many gullies draining to the northwest into Boggs Creek with slopes that vary from cliff faces to 25% and the associated soil is silty clay-loam. The parcel and surrounding area are part of the Lake Pueblo State Park and Wildlife Area and unofficial hiking trails cris-cross the terrain. Although practiced in the past, the parcel appears recently to have not been grazed. The closest prairie dog complex is located approximately 2.5 miles north of the parcel across unsuitable terrain. Prairie dogs usually do not inhabit woodland where suitability for burrowing and detection of predators is compromised and generally will not inhabit slopes of more than 9%, preferring slopes of 2% to 4% because steeper slopes usually have shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002), which are not conducive to constructing burrow systems. There are no prairie dog complexes near the parcel the likelihood it will support prairie dogs in the future is poor.

Parcel P7

This 40-acre parcel is located in northwest Pueblo County; UTM Northing 4,232,500 Easting: 522,942. The picture of this parcel is p8. The dominant community on the parcel is juniper woodland and the understory consists of a 40% cover of grasses and a 10% cover of yucca, snakeweed and the occasional cholla. The Minnequa canal runs through the north end of the parcel. There is a south facing slope of 10% and 20% of the parcel consists of bare ground. The soil is a stoney silty clay-loam and the parcel and surrounding area is intensely grazed. The surrounding land is privately owned with a few scattered sections of state owned land and some BLM land. The closest prairie dog complex is located approximately three miles southeast of the parcel across terrain with patches of unsuitable habitat. The rocky texture of the soil makes this parcel less suitable for prairie dogs and the likelihood that this parcel will support prairie dogs in the future is only fair.

Parcel P8

This 40-acre parcel is located in northwest Pueblo County; UTM Northing 4,232,500 Easting: 522,942. The picture of this parcel is p9. The dominant community on the parcel is shortgrass prairie and the predominant grass comprising 70% of the cover is blue gramma; accompanying shrubs includes a 10% cover of cholla. There is a north-facing slope of less than 5% and the soil is a silty clay-loam. The parcel and surrounding area is grazed. The surrounding land is privately owned with a few scattered sections of state owned land and some BLM land. The closest prairie dog complex is located 1.25 miles southeast of the parcel and it appears to be

rebounding from the 2000-2001 plaque epidemic that swept through the area, however, this is unsubstantiated. The complex is reproductively active, but it is composed of two small towns on private ranchland. This parcel represents suitable prairie dog and Burrowing Owl habitat and the likelihood that this parcel will support prairie dogs in the future is good.

Parcel P9

This 317-acre parcel combines two parcels of similar habitat that are located in west-central Pueblo County; UTM Northing 4,226,640 Easting: 516,471. The pictures of this parcel include p10 and p11. The parcel includes the hilltops, ridges and ravines defining the west side of Soda Creek. The dominant community covering 15% of each unit is pinyon-juniper woodland, with an understory including grasses and a 10% cover of shrubs. There is an east-facing slope that varies from 10 to 60% and the soil is a silty clay-loam. The parcel and surrounding area is grazed. The surrounding land is privately owned with a few scattered sections of state owned land and some BLM land. The closest prairie dog complex is located approximately two miles east of the parcel across unsuitable habitat. Prairie dogs usually do not inhabit woodland where suitability for burrowing and detection of predators is compromised and generally will not inhabit slopes of more than 9%, preferring slopes of 2% to 4% because steeper slopes usually have shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002), which are not conducive to constructing burrow systems. The likelihood that this parcel will support prairie dogs in the future is very poor.

Parcel P10

This 40-acre parcel is located in west-central Pueblo County; UTM Northing 4,221,987 Easting: 512,850. The pictures of this parcel include p12 and p13. The parcel occupies a low-lying area with a slight slope of less than 5% that is surrounded by buttes and gullies with slopes approaching 45%. The dominant community upslope is pinyon-juniper woodland covering 15 % of the terrain, with an understory that includes a 10% cover of mountain mahogany. The low-lying area consists of shortgrass prairie with a 70% cover of blue gramma. The soil is a silty clay-loam and the parcel and surrounding area is lightly grazed. The surrounding land is privately owned with a few scattered sections of state owned land. The low-lying area of this parcel could support prairie dogs, but it is over 3.5 miles across unsuitable terrain to the closest occupied habitat. The likelihood that this parcel will support prairie dogs in the future is poor, but it is suitable habitat for the triploid checkered whiptail.

Parcel P11

This 80-acre parcel combines two parcels of similar habitat that are located in southwest Pueblo County; UTM Northing 4,206,154 Easting: 519,723. The pictures of this parcel include p14 through p16. Each unit of the combined parcel occupies an area of steep terrain that includes more level hilltops. The dominant community on each unit is pinyon-juniper woodland with an understory of skunkweed, mountain mahogany and Gambel's oak, which together cover 40% of the parcel. The slopes of the parcel vary from less than 5% at the hilltop to 60% down some of the ravines and the soil is a shaly clay-loam. Hatchet Ranch Development, a land company developing ranchets, owns the area surrounding the combined parcel. Prairie dogs usually do not inhabit woodland where suitability for burrowing and detection of predators is compromised and generally will not inhabit slopes of more than 9%, preferring slopes of 2% to 4% because steeper slopes usually have shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and

Lockwood 2002), which are not conducive to constructing burrow systems. There are no prairie dog complexes near the parcel the likelihood it will support prairie dogs in the future is poor.

Parcel P12

This 40-acre parcel is located in northeast Pueblo County; UTM Northing 4,260,746 Easting: 566,173. There are no pictures of this parcel. The dominant community on the parcel is shrubland, dominated by a 35% cover of sand sage and with a 25% cover of grasses including big blue stem and needle and thread grass. The rest of the ground is bare (40%) and the parcel is located in rolling terrain with varying aspects and slopes ranging from 5 to 20%. Soil on the parcel is a very fine sandy-loam and the parcel and surrounding area are lightly to moderately grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land and grazed by the Chico Basin Ranch, which is friendly towards conservation efforts. Half of the towns of a prairie dog complex near the parcel were abandoned suggesting that plague and/or poisoning influences population dynamics of prairie dogs in the area. The closest prairie dog complex is located approximately 1.5 miles south of the parcel. Prairie dogs usually do not inhabit shrublands where suitability for burrowing and detection of predators is compromised (Koford 1958, Reading and Matchett 1997) and very sandy soils are not favorable because they lack the structural support needed for the construction of prairie dog burrow systems (Reading and Matchett 1997). The likelihood that this parcel will support prairie dogs in the future is very poor.

Parcel P13

This 1,257-acre parcel combines three separate parcels of similar habitat located in northeast Pueblo County; UTM Northing 4,256,263 Easting: 563,726. The pictures for this parcel include p17 and p18. The dominant community in the western two units is shrubland, dominated by a 50% cover of sand sage and with a 10% cover of grasses including big blue stem, needle and thread grass and prairie dropseed (*Sporobolus heterolepis*). The rest of the ground is bare (40%) and the parcel is located in rolling terrain with varying aspects and slopes ranging from 5 to 20%. In the east unit the dominant vegetation is shortgrass prairie with a 70% cover of blue gramma and a 10% cover of sand sagebrush (see photos). The eastern parcel's slope is less than 5% and soil on the parcel is a very fine sandy-loam. The parcel and surrounding area is lightly to moderately grazed with 20% consisting of bare ground. Ownership of the surrounding land is a checkerboard of state lease, BLM, DOD and privately owned land. Half of the towns of a prairie dog complex near the parcel were abandoned suggesting that plague and/or poisoning influences population dynamics of prairie dogs in the area. The two eastern parcels are not prairie dog habitat, as they usually do not inhabit shrublands where suitability for burrowing and detection of predators is compromised (Koford 1958, Reading and Matchett 1997). The closest prairie dog complex is located approximately 0.5 miles east of the eastern unit and here it is good prairie dog habitat. Although the adjacent prairie dog town is small in size the likelihood it will expand in the future to occupy parts of the parcel's east unit is high.

Parcel P14

This 915-acre parcel is located in northeast Pueblo County; UTM Northing 4,252,470 Easting: 564,152. There are no pictures for this parcel, however, the habitat is very similar to that represented in photo p19 and p20. The dominant community on the parcel is shrubland, dominated by a 50% cover of sand sage and with a 25% cover of grasses including big blue

stem, needle and thread grass and prairie dropseed. The rest of the ground is bare (25%) and the parcel is located in rolling terrain with varying aspects and slopes ranging from 5 to 20%. Soil on the parcel is a very fine sandy-loam and the parcel and surrounding area are lightly to moderately grazed. Ownership of the surrounding land is a checkerboard of state lease, BLM, DOD and privately owned land. The closest prairie dog complex is located approximately 1.5 miles east of the parcel. Prairie dogs usually do not inhabit shrublands where suitability for burrowing and detection of predators is compromised (Koford 1958, Reading and Matchett 1997) and very sandy soils are not favorable because they lack the structural support needed for the construction of prairie dog burrow systems (Reading and Matchett 1997). The likelihood that this parcel will support prairie dogs in the future is poor.

Parcel P15
This 2,093-acre parcel is located in northeast Pueblo County; UTM Northing 4,248,432 Easting: 565,615. The pictures for this parcel include p19 and p20. The dominant community on the parcel is shrubland, dominated by a 50% cover of sand sage and with a 25% cover of grasses including big blue stem, needle and thread grass and prairie dropseed. The rest of the ground is bare (25%) and the parcel is located in rolling terrain with varying aspects, and slopes ranging from 5 to 20%. Soil on the parcel is a very fine sandy-loam and the parcel and surrounding area are lightly to moderately grazed. Ownership of the surrounding land is a checkerboard of state lease, BLM, DOD and privately owned land. The closest prairie dog complex is located approximately three miles east of the parcel. Prairie dogs usually do not inhabit shrublands where suitability for burrowing and detection of predators is compromised (Koford 1958, Reading and Matchett 1997) and very sandy soils are not favorable because they lack the structural support needed for the construction of prairie dog burrow systems (Reading and Matchett 1997). The likelihood that this parcel will support prairie dogs in the future is poor.

Parcel P16
This 2,560-acre parcel is located in northeast Pueblo County; UTM Northing 4,244,466 Easting: 566,935. The pictures for this parcel include p21 and p22. The dominant community on the parcel is shrubland, dominated by a 50% cover of sand sage and with a 25% cover of grasses including big blue stem, needle and thread grass and prairie dropseed. The rest of the ground is bare (25%) and the parcel is located in rolling terrain with varying aspects and slopes ranging from 5 to 20%. Soil on the parcel is a very fine sandy-loam and the parcel and surrounding area are lightly to moderately grazed. Ownership of the surrounding land is a checkerboard of state lease, BLM, DOD and privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning has a moderate influence on population dynamics in the area. The closest prairie dog complex is located approximately two miles east of the parcel. Prairie dogs usually do not inhabit shrublands where suitability for burrowing and detection of predators is compromised (Koford 1958, Reading and Matchett 1997) and very sandy soils are not favorable because they lack the structural support needed for the construction of prairie dog burrow systems (Reading and Matchett 1997). The likelihood that this parcel will support prairie dogs in the future is poor.

Parcel P17
This 160-acre parcel combines three separate parcels of similar habitat, located in northeast Pueblo County; UTM Northing 4,241,365 Easting: 563,935. There are no pictures of this parcel.

The parcel is a mix of shrubs and grasses dominated by blue gramma. Soil on the parcel is a silty clay-loam and 10% of the parcel consists of bare ground. The aspect and slope varies and is defined by each unit's orientation to Haynes Creek and its tributaries, which the parcel lines, but slopes, are generally south-facing at 10 to 20%. The parcel and surrounding grassland are moderately grazed. Ownership of the surrounding land is a checkerboard of state lease, BLM, DOD and private land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning influences population dynamics in the area. The closest active complex is located less than 0.5 miles west of the parcel. Prairie dogs usually do not inhabit shrublands where suitability for burrowing and detection of predators is compromised, or slopes of more than 9%, instead preferring slopes of 2% to 4% because steeper slopes usually have shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002), which are not conducive to constructing burrow systems. The shrubs at this parcel, however, are not dense, and prairie dogs will expand existing colonies into less dense shrubland and actively clip the shrubs to their suitability (Osborn 1942), but the slopes are to steep for prairie dogs and the likelihood the parcel will support prairie dogs in the future is only fair.

Parcel P18

This 120-acre parcel is located in northeast Pueblo County; UTM Northing 4,237,404 Easting: 566,410. The pictures of this parcel include p23 and p24. The dominant community on the parcel is shortgrass prairie with a 70% cover grasses; accompanying shrubs include spiney sage (*Artemisia sinescens*) and cholla, which together cover 20% of the parcel. The parcel contains a number of conical mounds, the remnants of fossilized kelp beds from an ancient sea that contain numerous mollusk fossils. There is a south facing slope of less than 5% except for at the cones where the incline is dramatically steeper and the soil is a stoney silty-clay. . The parcel and surrounding area is moderately grazed. Ownership of the surrounding land is a checkerboard of state lease, BLM, DOD and private land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning influences population dynamics in the area. A large and reproductive prairie dog complex is located one mile west of the parcel. The complex is reproductively active and composed of large towns on both private ranchland and DOD property, but for dispersers to colonize the parcel from this complex would require migration across unsuitable habitat. This parcel represents suitable prairie dog and Burrowing Owl habitat and the likelihood that this parcel will support prairie dogs in the future is good.

Parcel P19

This 40-acre parcel is located in northwest Pueblo County; UTM Northing 4,239,493 Easting: 569,182. The pictures of this parcel include p25 and p26. The dominant community on the parcel is shortgrass prairie with a 70% cover of blue gramma; accompanying shrubs include spiney sage (*Artemisia sinescens*) and cholla, which together cover 20% of the parcel. There is a west facing slope 25% and the soil is a stoney loamy-sand. The parcel and surrounding area is grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning influences population dynamics in the area. The closest prairie dog complex is located approximately 1.5 miles northeast of the parcel and it appears to be rebounding from the 2000-2001 plaque epidemic that

swept through the area, however, this is unsubstantiated. Prairie dogs usually do not inhabit shrublands where suitability for burrowing and detection of predators is compromised, or slopes of more than 9%, instead preferring slopes of 2% to 4% because steeper slopes usually have shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002), which are not conducive to constructing burrow systems. The shrubs at this parcel, however, are not dense, and prairie dogs will expand existing colonies into less dense shrubland and actively clip the shrubs to their suitability (Osborn 1942), but the parcel's soils are rocky and the likelihood that this parcel will support prairie dogs in the future is fair.

Parcel P20

This 2,110-acre parcel combines two separate parcels of similar habitat that are located in northeast Pueblo County; UTM Northing 4,233,504Easting: 574,953. The pictures of this parcel include p27 and p28. This is a very large parcel with Kramer Creek, its associated tributaries and conical mounds of ancient fossilized sea kelp beds dominating the parcel's topography. The vegetation here includes cottonwoods along Kramer Creek and tamarisk both along the creek and its tributaries. Over all the dominant vegetation, covering 40% of the parcel, is shortgrass prairie and the dominant grass is alkali sacaton. Sandsage, spiney sage, snakebrush, yucca and cholla occur at various densities throughout the parcel, but together shrubs never represent more than 20% of the vegetation. Over 30% of the surface is bare ground and aspects vary considerable with the orientation of each separate tributary of Kramer Creek, but the entire parcel drains to the southeast. Slopes also vary throughout the parcel and include areas both with gentle slopes of 10% or less to areas with steep inclines of up to 45%. The soils are stoney and include silty-clays and silty clay-loams and the parcel, and surrounding grassland is intensely grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning influences population dynamics in the area. The closest active prairie dog complex is located just over one mile south of the parcel. Prairie dogs usually do not inhabit areas with slopes of more than 9%, instead preferring slopes of 2% to 4% because steeper slopes inhibit predator detection and usually have shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002), which are not conducive to constructing burrow systems. Due to the steep slopes most of this parcel is unsuitable as habitat for prairie dogs, but there are a few patches spread throughout the parcel where grasses dominate and the slopes are gentle enough to favor habitation by prairie dogs. The likelihood that this parcel will support prairie dogs in the future is fair.

Parcel P21

This 195-acre parcel combines two separate parcels of similar habitat that are located in northeast Pueblo County; UTM Northing 4,229,483 Easting: 573,523. The picture of this parcel is p29. The dominant community on the parcel is shortgrass prairie with a 70% cover of blue gramma; accompanying shrubs includes a 40% cover of cholla. The Colorado Canal runs through each unit of the parcel and there is an occasional cottonwood or tamarisk along the canal's bank. There is a south-facing slope of less than 3% and the soil is a silty clay-loam. The parcel and surrounding grassland is intensely grazed and 20% of the surface consists of bare ground. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning influences population

dynamics in the area. The parcel is suitable prairie dog habitat and a small reproducing population of prairie dogs presently inhabits the parcel's west unit. The colony appears healthy and may be recovering from the 2000-2001 plaque epidemic that swept through the area; however, this is unsubstantiated. The likelihood that this parcel will continue to support prairie dogs in the future is very high.

Parcel P22
This 20-acre parcel combines two separate parcels of similar habitat that are located in northeast Pueblo County; UTM Northing 4,226,774 Easting: 577,139. There is no picture of this parcel. The dominant community on the parcel is shortgrass prairie with a 10% cover of alkali sacaton and an 80% cover of forbs; accompanying shrubs includes a 7% cover of cholla. There is no discernable slope and the parcel lies between the Colorado Canal and Arkansas River. The soil is a silty clay-loam that is not well drained. The parcel and surrounding grassland is intensely grazed and 20% of the surface consists of bare ground. The surrounding land is privately owned with a few scattered sections of state owned land and some BLM land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning influences population dynamics in the area. Prairie dogs prefer soils that are well drained and less likely to flood (Reading and Matchett 1997) and because soils here are not well drained, the likelihood the parcel will support prairie dogs in the future is poor.

Parcel P23
This 40-acre parcel is located in east-central Pueblo County; UTM Northing 4,223,646 Easting: 562,803. The picture of this parcel is p30. The dominant community on the parcel is shortgrass prairie with a 50% cover of blue gramma; accompanying shrubs includes a 20% cover of cholla. There is an east-facing slope of less than 4% and the soil is a silty clay-loam. The parcel and surrounding grassland is intensely grazed and 25% of the surface consists of bare ground. The surrounding land is privately owned with a few scattered sections of state owned land and some BLM land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning influences population dynamics in the area. The parcel is suitable habitat for prairie dogs, Burrowing Owls and potentially Mountain Plovers. There is an active prairie dog town two miles south of this parcel and the likelihood that this parcel will support prairie dogs in the future is fair.

Parcel P24
This 115-acre parcel combines two separate parcels of similar habitat that are located in east-central Pueblo County; UTM Northing 4,222,425 Easting: 562,993. The pictures of this parcel include p31 and p32. The dominant community on the parcel is shortgrass prairie with a 50% cover of blue gramma; accompanying shrubs includes a 5% cover of cholla. There is an east facing slope of less than 10% and the soil is a silty clay-loam. The parcel and surrounding grassland is moderately grazed and 10% of the surface consists of bare ground. The surrounding land is privately owned with a few scattered sections of state owned land and some BLM land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning influences population dynamics in the area. The parcel is suitable habitat for prairie dogs, Burrowing Owls and potentially Mountain Plover. There is an active prairie dog town approximately 2.5 miles north of the parcel across patches of unsuitable terrain and the likelihood that the parcel will support prairie dogs in the future is fair.

Parcel P25
This 70-acre parcel combines three separate parcels of similar habitat that are located in east-central Pueblo County; UTM Northing 4,220,488 Easting: 570,481. Each unit of this parcel shares a shoreline with Dotson Reservoir. The pictures of this parcel include p33 and p34. The dominant community on the parcel is shortgrass prairie with an 80% cover of blue gramma. There are no shrubs on the parcel and tamarisk covers 10% of the parcel, but is restricted to the banks of the dry reservoir. Each unit of the parcel has a gentle slope of less than 5% towards the reservoir and the soil is a sandy-loam. Due to the proximity near a reservoir the parcel and surrounding grassland are intensely grazed and 10% of the parcel consists of bare ground. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning influences population dynamics in the area. The parcel is suitable habitat for prairie dogs, Burrowing Owls and potentially Mountain Plover and a small, reproducing prairie dog colony occurs less than 0.25 miles south of the parcel's south unit. The likelihood that this parcel will support prairie dogs in the future is very high.

Parcel P26
This 240-acre parcel combines three separate parcels of similar habitat that are located in east-central Pueblo County; UTM Northing 4,215,848 Easting: 565,521. The parcel shares a shoreline with Nepesta Reservoir and over half of the parcel lies within the reservoir proper. The picture of this parcel is p35. The dominant community on the parcel is shortgrass prairie with Indian ricegrass (*Stipa hymenoides*) and galleta (*Hilaria jamesii*) together covering 50% of the parcel; accompanying shrubs include four-wing saltbush and yucca, which together cover 5% of the parcel. Cottonwoods and tamarisk are restricted to the banks of the dry reservoir and cover 15% of the parcel. The parcel slopes gently to the south at less than 5% towards the reservoir and the soil is a silty clay-loam. Due to the proximity near a reservoir the parcel and surrounding grassland are intensely grazed and 20% of the parcel consists of bare ground. Ownership of the surrounding land is a checkerboard of state lease, private and some BLM land, but mostly it is state owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning influences population dynamics in the area. The parcel is suitable habitat for prairie dogs, Burrowing Owls and potentially Mountain Plover. There is an abandoned prairie dog colony inside the parcel and an active complex adjoins the parcel on its east end. The likelihood that this parcel will support prairie dogs in the future is very high.

Parcel P27
This 200-acre parcel combines two separate parcels of similar habitat that are located in east-central Pueblo County; UTM Northing 4,215,265 Easting: 570,520. The pictures of this parcel include p36 and p37. The dominant community on the parcel is shortgrass prairie with an 80% cover of blue gramma. There are no shrubs on the parcel and the parcel's north unit slopes gently to the south at less than 5% while the south units slope to the north at less than 5%. Due to the proximity near a cattle tank the parcel and surrounding grassland are intensely grazed and 5% of the parcel consists of bare ground. Ownership of the surrounding land is a checkerboard of state lease, private and some BLM land, but mostly it is state owned land. Numerous

surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning influences population dynamics in the area. The parcel is suitable habitat for prairie dogs, Burrowing Owls and potentially Mountain Plover. Active prairie dog complexes occur east, north, and west of the parcel, all are less than two miles distant and the likelihood that this parcel will support prairie dogs in the future is good.

Parcel P28
This 80-acre parcel is located in southeast Pueblo County; UTM Northing 4,209,818 Easting: 580178. There are no pictures of this parcel. The dominant community on the parcel is shortgrass prairie with a 55% cover of blue gramma and 20% cover of needle and thread grass. There are no shrubs on the parcel and there is an occasional opuntia present. There is an east-facing slope of less than 2% and the soil is a silty clay-loam. The parcel and surrounding grassland are grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were active with healthy reproducing populations, suggesting that they may be free from influences of plague and/or poisoning. The parcel is suitable habitat for prairie dogs and Burrowing Owls, and an active prairie dog colony is located approximately 0.5 miles northeast of the parcel. The likelihood that this parcel will support prairie dogs in the future is good.

Parcel P29
This 160-acre parcel is located in southeast Pueblo County; UTM Northing 4,207,727 Easting: 576,381. The picture of this parcel is p38. The dominant community on the parcel is shortgrass prairie with a 50% cover of blue gramma. The occurrence of snakeweed covering 15% of the parcel is indicative of intense grazing. There is a south-facing slope of less than 2% and the soil is a silty clay-loam. The parcel and surrounding grassland are intensely grazed and 30% of the parcel consists of bare ground. Ownership of the surrounding land is a checkerboard of state lease, private and BLM land, but mostly it is state owned land. Numerous surveyed prairie dog complexes near the parcel were active with healthy reproducing populations, suggesting that they may be free from influences of plague and/or poisoning. The parcel is suitable habitat for prairie dog, Burrowing Owls and Mountain Plovers, and an active prairie dog colony is located less than one mile west of the parcel. The likelihood that this parcel will support prairie dogs in the future is good.

Parcel P30
This 230-acre parcel combines two parcels of similar habitat that are located in southeast Pueblo County; UTM Northing 4,205,889 Easting: 574,154. The picture of this parcel is p39. The dominant community on the parcel is shortgrass prairie with a 65% cover of blue gramma; there are no accompanying shrubs and opuntia covers more than 5% of the surface. The parcel is located in rolling terrain and the soil is a silty clay-loam. The parcel and surrounding grassland are intensely grazed and 30% of the parcel consists of bare ground. Ownership of the surrounding land is a checkerboard of state lease, private and BLM land, but mostly it is state owned land. Numerous surveyed prairie dog complexes near the parcel were active with healthy reproducing populations, suggesting that they may be free from influences of plague and/or poisoning. The parcel is suitable habitat for prairie dog, Burrowing Owls and Mountain Plovers, and active prairie dog colonies are located both north and south of the parcel at less than 0.25

miles of distance. The likelihood that this parcel will support prairie dogs in the future is very high.

Parcel P31
This 80-acre parcel combines two parcels of similar habitat that are located in southeast Pueblo County; UTM Northing 4,215,149 Easting: 556,266. There are no pictures of this parcel. The dominant community on the parcel is shortgrass prairie with an 80% cover of blue gramma; accompanying shrubs include yucca and cholla, which together cover 15% of the parcel. There is no discernable slope or aspect and the soil varies from a loamy-sand to a fine sandy-loam. The parcel and surrounding grassland are lightly grazed. Ownership of the surrounding land is a checkerboard of state lease, private and BLM land, but mostly it is state owned land. The habitat is suitable for prairie dogs and Burrowing Owls and the landowner is friendly towards prairie dogs, but the closest known active colony is almost six miles east of the parcel. The likelihood that this parcel will support prairie dogs in the future is fair.

Parcel P32
This 84-acre parcel is located in central Pueblo County; UTM Northing 4,223,074 Easting: 540,453. The pictures of this parcel include p40 and p41. The dominant community on the parcel is shortgrass prairie with a 50% cover of grass; accompanying shrubs include a 30% cover of cholla and a nominal amount of yucca and cholla. There is a west-facing slope of less than 10% and the soil is a silty clay-loam. The parcel and surrounding grassland are grazed and 5% of the parcel consists of bare ground. There is an equal mix of state property and private land in the surrounding area with some State owned land. There are a number of abandoned prairie dog complexes near the parcel suggesting that plague and/or poisoning influences population dynamics in the area. The habitat is suitable for prairie dogs and Burrowing Owls and the landowner is friendly towards prairie dogs, but there are no active colonies known from the vicinity of the parcel. The likelihood that this parcel will support prairie dogs in the future is fair.

Parcel P33
This 87-acre parcel is located in south-central Pueblo County; UTM Northing 4,214,439 Easting: 532,219. The pictures of this parcel include p42 and p43. The dominant community on the parcel is shortgrass prairie with a 50% cover of grass; accompanying shrubs include cholla, yucca, rabbitbrush and western sage, which together cover 15% of the parcel. The terrain is rolling with variable aspects, but the land drains to the northwest at slopes of between 5 and 20%. The soil is a stoney silty clay-loam and a dry arroyo runs through the parcel form south to north. The parcel and surrounding grassland are intensely grazed and approximately 20% of the parcel consists of bare ground. There is an equal mix of state property and private land in the surrounding area and no prairie dog complexes exist near the parcel making colonization form existing populations unlikely. Prairie dogs usually occur on areas with slopes of less than 9%, preferring slopes between 2 and 4% because steeper slopes impede detection of predators and are susceptible to erosion creating shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002), which are not conducive to constructing burrow systems. Given the parcels isolation and the rolling character of the terrain, the likelihood that this parcel will support prairie dogs in the future is poor.

Parcel P34
This 40-acre parcel is located in south-central Pueblo County; UTM Northing 4,210,589 Easting: 533,476. The pictures of this parcel include p44 and p45. The parcel is adjacent to a small ridge located to the east and parts of the parcel include the lower slopes of the ridge. The dominant community on the parcel is shortgrass prairie with a 50% cover of grasses including threeawn, alkali sacaton and needle and thread grass; accompanying shrubs include cholla and yucca, which together cover 15% of the parcel. Opuntia is also present on the parcel, covering about 5% of its area. Pinyon-juniper woodland is encroaching upon the grassland from the ridge to the east and this vegetation type covers 15% of the parcel's far east side. There is a west-facing slopes of between 5 and 20% and the soil is a stoney silty-clay. The parcel and surrounding grassland are lightly grazed and approximately 8% of the parcel consists of bare ground. There is an equal mix of state property and private land in the surrounding area and no prairie dog complexes exist near the parcel making colonization form existing populations unlikely. The east side of the parcel is not suitable prairie dog habitat, as they usually do not inhabit woodlands where detection of predators is inhibited (Koford 1958, Reading and Matchett 1997). The west side of the parcel is suitable habit, however, given the parcels isolation the likelihood that it will support prairie dogs in the future is poor.

Parcel P35
This 80-acre parcel combines two separate parcels of similar habitat that are located in south-central Pueblo County; UTM Northing 4,207,363 Easting: 534,290. The pictures of this parcel include p46 and p47. The dominant community on the parcel is pinyon-juniper woodland at 25% of cover, with an understory consisting of 20% shrubs including mountain mahogany, skunkweed, snakeweed and yucca and a 40% cover of grasses including threeawn and Indian ricegrass. A number of gullies run through the parcel to west at a slope of 20%. The soil is a shaly silty-clay and 20% of the parcel consists of bare ground. The parcel and surrounding grassland are grazed. There is an equal mix of state property and private land in the surrounding area, and no prairie dog complexes exist near the parcel making colonization form existing populations unlikely. Prairie dogs usually do not inhabit woodland. The parcel is not prairie dog habitat, as they usually do not inhabit woodlands where detection of predators is inhibited and generally will not inhabit slopes of more than 9%, preferring slopes of 2% to 4% because steeper slopes usually have shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002), which are not conducive to constructing burrow systems. The likelihood that the parcel will support prairie dogs in the future is poor.

Parcel P36
This 80-acre parcel is located in southeast Pueblo County; UTM Northing 4,203,253 Easting: 555,013. There are no pictures of the parcel. Half of this parcel includes the ridgeline above Doyle Arroyo where pinyon-juniper woodland covers 30% of the land surface. The low flat land along Doyle Arroyo represents the west half of the parcel where shortgrass prairie dominants with a 50% cover of blue gramma; accompanying shrubs include a 20% cover of cholla. The slope varies from 40% at the ridge to less than 5% along the arroyo and the aspect faces west towards Doyle Arroyo. The soil is a silty clay-loam and the area is grazed, particularly along the arroyo where a cattle tank is located and 40% of the ground is bare because of grazing intensity. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. There are three prairie dog colonies within three miles of the

parcel, but the status of their occupancy is unknown and any immigrants from these colonies would have to cross unsuitable habitat to reach the parcel. The parcel's east side where the steep ridge is located and the woodland occurs is not suitable prairie dog habitat, as they usually do not inhabit woodlands where detection of predators is inhibited, or steeper slopes with shallower rocky soils that are not conducive to constructing burrow systems (Koford 1958, Reading and Matchett 1997). The west side of the parcel is suitable habitat, however, given its isolation the likelihood the parcel will support prairie dogs in the future is poor.

Parcel P37

This 324-acre parcel is located in southeast Pueblo County; UTM Northing 4,201,646 Easting: 556,029. There are no pictures of the parcel. The parcel is located on a plateau dominated by shortgrass prairie, but at higher ground inside the parcels south boundary there is pinyon-juniper woodland and the trees are encroaching upon the grasslands. A 40% cover of blue gramma, with a 15% cover of forbs, dominates the shortgrass prairie; accompanying shrubs include cholla, yucca, and snakeweed, which together cover 20% of the parcel. Pinyon-juniper woodland forms a canopy of 15% over the parcel's south half. There is a moderate north-facing slope of 5 to 15% and the soil is a stoney silty clay-loam. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. There is a prairie dog complex within 1.5 miles of the parcel, but the status of its occupancy is unknown. The parcel's south side where the woodland occurs is not suitable prairie dog habitat, as they usually do not inhabit woodlands where detection of predators is inhibited (Koford 1958, Reading and Matchett 1997). The west side of the parcel is suitable habitat and the likelihood the parcel will support prairie dogs in the future is fair.

Parcel P38

This 655-acre parcel is located in southeast Pueblo County; UTM Northing 4,197,256 Easting: 559,289. The picture of the parcel is p48. A ridge runs through the parcel's center and pinyon-juniper woodland dominants the ridgeline. On each side of the ridge, shortgrass prairie dominants with a 50% cover of blue gramma; accompanying shrubs include cholla, yucca and snakeweed, which together cover 15% of the parcel. Pinyon-juniper woodland forms a canopy of 15% over the ridge. The slope varies from 40% at the ridge to less than 5% within the shortgrass prairie and the aspect is dependent upon orientation to the ridgeline, but is generally northeast. The soil is a silty clay-loam and the area is lightly grazed, with approximately 5% of the ground exposed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. There is a prairie dog complex over 3.5 miles north of the parcel, but the status of its occupancy is unknown. The parcel's middle where the steep ridge is located and the woodland occurs is not suitable prairie dog habitat, as they usually do not inhabit woodlands where detection of predators is inhibited, or steeper slopes with shallower rocky soils that are not conducive to constructing burrow systems (Koford 1958, Reading and Matchett 1997). Those areas of shortgrass prairie within the parcel are suitable habitat, but the parcel is isolated form known prairie dog complexes and the likelihood that it will support prairie dogs in the future is poor.

Parcel P39

This 803-acre parcel combines two separate parcels of similar habitat that are located in southeast Pueblo County; UTM Northing 4,189,426 Easting: 558,569. The pictures of the parcel

include p49 through p52. Lone Jack and Madden Canyons define the character, vegetation and topography of the parcel. One, the other, or both of these two majestic, high walled canyons run through each unit of the parcel and it is these canyons and their tributaries that define the parcel's rough landscape. Pinyon-juniper woodland covers from 10-45% of the parcel and is found along the canyon sides, ravines, and extending for short distances into the grasslands located at the canyon tops. Mountain mahogany and skunkbrush are also present along the canyon slopes and comprise from 20 to 30% of the understory cover. The grassland varies considerably, with some places in areas distant from the canyon rims containing up to a 70% cover of blue gramma and a 20% cover of shrubs including cholla, yucca and snakeweed. Close to the canyon rims there is a transition zone where the trees and larger shrubs become more prominent and blue gramma is reduced in cover to only 10 to 30%. In all, shortgrass prairie covers only 20 to 30% of the entire parcel. The parcel contains a complex mix of aspects, but in general the entire parcel drains to the northeast, and the slopes vary from the cliffs of the canyon to gentle inclines of less than 5% in the grasslands. The soil is loam to fine sandy-loam and the area is moderately grazed, with approximately 5% of the ground exposed. Ownership of the surrounding land is a checkerboard of state lease and BLM land, but mostly it is privately owned land. The parcel is isolated from any active prairie dog complexes with the closest one occurring over eight miles to the north. Except for those areas of shortgrass prairie the parcel does not represent suitable prairie dog habitat, as they usually do not inhabit woodlands where detection of predators is inhibited, or steeper slopes with shallower rocky soils that are not conducive to constructing burrow systems (Koford 1958, Reading and Matchett 1997). Those areas of shortgrass prairie within the parcel are suitable habitat, but the parcel is isolated form known prairie dog complexes and the likelihood it will support prairie dogs in the future is very poor. The habitat found at the parcel, however, is suitable for the endemic and rare triploid checkered whiptail and one was observed at the parcel during the survey. The probability that a viable population of whiptails occupies the parcel is high, but to substantiate this would require further survey work.

Parcel P40

This 40-acre parcel is located in southeast Pueblo County; UTM Northing: 4,187,440 Easting: 560,014. The pictures of the parcel include p53 and p54. The dominant vegetation of the parcel is shortgrass prairie with a 60% cover o blue gramma; accompanying shrubs include cholla, yucca, snakeweed and skunkbrush, which together cover 30% of the parcel. An unnamed tributary of Plum Creek runs east through the parcel's center and pinyon-juniper woodland dominants the tributaries gully. There is an east-facing slope of less than 5% and the soil is a fine sandy-loam. A dry cattle pond and a cattle tank are located within the parcel resulting in intense grazing pressure and 20-30% of the parcel consists of bare ground. Ownership of the surrounding land is a checkerboard of state lease and BLM land, but mostly it is privately owned land. The closest active prairie dog complex is over ten miles from the parcel making colonization form existing populations unlikely. Although the parcel is suitable habitat for prairie dogs the likelihood it will support them in the future is very poor.

Parcel P41

This 75-acre parcel is located in southeast Pueblo County; UTM Northing: 4,188,484 Easting: 563,607. The picture of the parcel is p55. The parcel includes a hill that runs lengthwise across its west side, while an area of level terrain covers the eastern half. The dominant vegetation of the parcel is shortgrass prairie with a 60% cover of blue gramma; accompanying shrubs include

cholla and snakeweed, which together cover 20% of the parcel. Less than 1% of the parcel is covered by opuntia and there is a 7% cover of junipers on the upper slopes of the hill. There is an east-facing slope that varies from 25% along the hill to less than 5% at its base and the soil is a silty clay-loam. The parcel and surrounding grassland is moderately grazed and 10% of the parcel consists of bare ground. Ownership of the surrounding land is a checkerboard of state lease and BLM land, but mostly it is privately owned land. There is an active prairie dog town located less than three miles across unsuitable habitat to the south of the parcel and an abandoned town occurs in the parcel. The hillside in the parcel's west half is poor habitat for prairie dogs, which usually occupy areas with slopes of 9% or less, because steeper slopes have shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002) that are not conducive to constructing burrow systems. The level grasslands within the parcel are suitable habitat for prairie dogs and there is evidence that an old town did occur in the parcel. Only three burrows were observed, however, and all three appeared to be very old. It is unlikely that prairie dogs have occupied the parcel recently and the parcel is isolated from other active complexes and the likelihood it will support prairie dogs in the future is poor.

Parcel P42

This 120-acre parcel is located in southeast Pueblo County; UTM Northing: 4,183,842 Easting: 563,278. The pictures of the parcel include p56 through p58. At the very north tip of the parcel a slight hill drops quickly to level terrain, which then extends across the rest of the parcel. The dominant vegetation of the parcel is shortgrass prairie with a 60% cover of blue gramma and 40% cover of cholla; other accompanying shrubs include yucca and skunkbrush, which together cover 12% of the parcel. There is a 7% cover of junipers on the hill. There is a south-facing slope of less than 5% except for a slope of 25% at the hill and the soil is a fine sandy-loam. The parcel and surrounding grassland is intensely grazed and 20% of the parcel consists of bare ground. Ownership of the surrounding land is a checkerboard of state lease and BLM land, but mostly it is privately owned land. There is an active prairie dog town located on the parcel's southern boundary. The level grasslands within the parcel are suitable habitat for prairie dogs and, although the adjacent prairie dog town is small in size, it appears healthy and the likelihood it will expand in the future to occupy parts of the parcel is very high.

Parcel P43

This 40-acre parcel is located in southeast Pueblo County; UTM Northing: 4,188,350 Easting: 569,262. The pictures of the parcel include p59 and p60. The dominant vegetation of the parcel is shortgrass prairie with a 70% cover of blue gramma; accompanying shrubs include cholla, snakeweed and yucca, which together cover 12% of the parcel. There is a south-facing slope that varies from 5% to 20% and a gully runs through the south part of the parcel. The soil is a silty-clay and the parcel and surrounding grassland is moderately to intensely grazed with 5% of the parcel consisting of bare ground. Ownership of the surrounding land is a checkerboard of state lease and BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning influences population dynamics in the area. The closest active prairie dog colonies are approximately 5 miles to the southwest or northeast across unsuitable terrain making colonization from existing populations unlikely. The level grassland within the parcel is suitable prairie dog habitat, however, the gullied areas of the parcel are not. Prairie dogs will usually occupy areas with slopes of 9% or less, because steeper slopes have shallower rocky soils

(Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002) that are not conducive to constructing burrow systems. The likelihood that the more level terrain of the parcel will support prairie dogs in the future is fair.

Parcel P44
This 40-acre parcel is located in southeast Pueblo County; UTM Northing: 4,187,160 Easting: 569,647. The pictures of the parcel include p61 and p62. The dominant vegetation of the parcel is shortgrass prairie with a 60% cover of blue gramma and a 5% cover of opuntia; accompanying shrubs include snakeweed, cholla, yucca, western sage and four-wing saltbush, which together cover 15% of the parcel. The parcel rises to buttes on the west where juniper covers 15% of the parcel and the slope varies from 10% to 40%. The parcel is bisected by a gully and the soil is a silty-clay. The parcel and surrounding grassland is moderately to intensely grazed with a 20% cover of bare ground. Ownership of the surrounding land is a checkerboard of state lease and BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning influences population dynamics in the area. The closest active prairie dog colonies are approximately five miles to the southwest or northeast across unsuitable terrain making colonization from existing populations unlikely. There is not much suitable prairie dog habitat represented by level grassland within the parcel, but there are a few flatter areas. However, steep slopes and gullies that are not suitable for prairie dogs characterize the majority of the parcel. Prairie dogs will usually occupy areas with slopes of 9% or less, because steeper slopes have shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002) that are not conducive to constructing burrow systems. The likelihood that the parcel will support prairie dogs in the future is poor.

Parcel P45
This 40-acre parcel is located in southeast Pueblo County; UTM Northing: 4,187,958 Easting: 570,070. The pictures of the parcel include p63 and p64. At lower elevation the dominant vegetation is shortgrass prairie and rising to the tops of Sanford Hills juniper woodland dominates. There is a 45% cover of blue gramma, 25% of juniper, and 25% of cholla and snakeweed. The slope varies from 20% to 65% and the parcel is bisected by numerous gullies. The soil is a silty-clay and the parcel and surrounding grassland is moderately to intensely grazed with a 20% cover of bare ground. Ownership of the surrounding land is a checkerboard of state lease and BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning influences population dynamics in the area. The closest active prairie dog colonies are approximately five miles to the southwest or northeast across unsuitable terrain making colonization from existing populations unlikely. There is not much suitable prairie dog habitat represented by level grassland within the parcel, but there are a few flatter areas. However, steep slopes and gullies that are not suitable for prairie dogs characterize the majority of the parcel. Prairie dogs will usually occupy areas with slopes of 9% or less, because steeper slopes have shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002) that are not conducive to constructing burrow systems. The likelihood that the parcel will support prairie dogs in the future is very poor.

Parcel P46

This 166-acre parcel combines two parcels of similar habitat that are located in southeast Pueblo County; UTM Northing: 4,186,374 Easting: 570,481. The pictures of the parcel include p65 through p67. Juniper woodland is the dominant vegetation, covering 20% of the parcel and there is a 25% of blue gramma; accompanying shrubs include snakeweed, cholla, yucca and sage, which together cover 25% of the parcel. There is a west-facing slope of approximately 20% and the soil is a shaly silty-clay. The parcel and surrounding grassland is moderately grazed with a 15% cover of bare ground. Ownership of the surrounding land is a checkerboard of state lease and BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning influences population dynamics in the area. The closest active prairie dog colonies are approximately three miles to the east across unsuitable terrain making colonization from existing populations unlikely. There is not much suitable prairie dog habitat represented by level grassland within the parcel, but there are a few flatter areas. However, steep slopes that are not suitable for prairie dogs characterize the majority of the parcel. Prairie dogs will usually occupy areas with slopes of 9% or less, because steeper slopes have shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002) that are not conducive to constructing burrow systems. The likelihood that the parcel will support prairie dogs in the future is poor.

Parcel P47

This 120-acre parcel is located in southeast Pueblo County; UTM Northing: 4,198,722 Easting: 576,661. The picture of the parcel is p68. The dominant vegetation of the parcel is shortgrass prairie with a 70% cover of blue gramma with less tan a 1% cover of cholla. There is a nominal slope of less than 3% and the soil is a silty clay-loam. The parcel and surrounding grassland is intensely grazed with 20 to 30% of the parcel consisting of bare ground. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Three prairie dog complexes near the parcel were active, suggesting that they may be free from influences of plague and/or poisoning. There are active prairie dog complexes surrounding the parcel with the closest located less than one mile to the parcel's north. The parcel is characterized by very level grassland that is suitable for prairie dogs, Burrowing Owls and Mountain Plovers. The likelihood the parcel will support prairie dogs in the future is good.

Parcel P48

This 40-acre parcel is located in southeast Pueblo County; UTM Northing: 4,198,986 Easting: 578,887. There is no picture of the parcel. The dominant vegetation of the parcel is semi-desert shrubland dominated by four-wing saltbush with an understory of 60% blue gramma. Powell Arroyo bisects the parcel from west to east. There is a nominal slope of less than 3% and the soil is a silty clay-loam. The parcel and surrounding grassland is intensely grazed with 15 to 20% of the parcel consisting of bare ground. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Three prairie dog complexes near the parcel were active, suggesting that they may be free from influences of plague and/or poisoning. There are active prairie dog complexes surrounding the parcel with the closest located approximately 1.5 miles to the parcel's northwest. The shrub cover marginalizes the suitability of this parcel for habitation by prairie dogs as they usually avoid dense shrubs (Koford 1958, Hoogland 1995) where suitability for burrowing and detection of predators is compromised, but prairie dogs will expand existing colonies into less dense shrubland and actively clip the shrubs to there suitability (Osborn 1942). The likelihood that the parcel will

support prairie dogs in the future is fair.

Parcel P49
This 73-acre parcel is located in southeast Pueblo County; UTM Northing: 4,195,789 Easting: 581,502. The pictures of the parcel include p69 and p70. The dominant vegetation of the parcel is shortgrass prairie with a 70% cover of blue gramma and a 5% cover of opuntia; accompanying shrubs include less than a 5% cover of sagebrush. The parcel is level without a discernable slope and the soil is a sandy-loam. The surrounding grassland is moderately grazed with 15% of the parcel consisting of bare ground. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Three prairie dog complexes near the parcel were active, suggesting that they may be free from influences of plague and/or poisoning. Active prairie dog complexes are located north and south of the parcel with the closest within 1.5 miles of the parcel. The parcel is ideal prairie dog and Burrowing Owl habitat, and average habitat for Mountain Plovers. Current prairie dog distributions suggest historical occupancy of the surrounding landscape by prairie dogs, but there is no evidence that they ever occupied the parcel. The likelihood that the parcel will support prairie dogs in the future is good to high.

Parcel P50
This 40-acre parcel is located in southeast Pueblo County; UTM Northing: 4,190,923 Easting: 580,955. The pictures of the parcel include p71 through p73. The dominant vegetation of the parcel is shortgrass prairie with a 70% cover of blue gramma and a 5% cover of opuntia; accompanying shrubs include a 10 to 20% cover of sagebrush. Saunders Arroyo bisects the parcel running east to west through its center and there is a denser cover of saltbrush at the arroyo. The parcel is level without a discernable slope except for at the arroyo and the soil is a sandy-loam. The surrounding grassland is moderately grazed with 10% of the parcel consisting of bare ground. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Three prairie dog complexes near the parcel were active, suggesting that they may be free from influences of plague and/or poisoning. A large reproductive prairie dog complex is located less than one mile to the parcel's north. Areas of the parcel off the arroyo are ideal prairie dog and Burrowing Owl habitat. Current prairie dog distributions suggest historical occupancy of the surrounding landscape by prairie dogs, but there is no evidence that they ever occupied the parcel. There are other nearby parcels with adjacent towns and although not huge in size the complex and associated BLM parcels could potentially serve as a demonstration area for local landowners and land managers. The likelihood that the parcel will support prairie dogs in the future is good to high.

Parcel P51
This 40-acre parcel is located in southeast Pueblo County; UTM Northing: 4,192,514 Easting: 578,549. The pictures of the parcel include p74 and p75. The dominant vegetation of the parcel is shortgrass prairie with a 70% cover of blue gramma and a 5% cover of opuntia; accompanying shrubs include cholla, yucca and snakeweed, which together cover less than 1% of the parcel. The parcel is level without a discernable slope and the soil is a silty clay-loam. The surrounding grassland is intensely grazed with 20 to 30% of the parcel consisting of bare ground. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Three prairie dog complexes near the parcel were active, suggesting that

they may be free from influences of plague and/or poisoning. The parcel is ideal prairie dog Burrowing Owl and Mountain Plover habitat. Current prairie dog distributions suggest historical occupancy of the surrounding landscape by prairie dogs, but there is no evidence that they ever occupied the parcel. There are other nearby parcels with adjacent towns and although not huge in size the complex and associated BLM parcels could potentially serve as a demonstration area for local landowners and land managers. The likelihood that the active complex will expand into the parcel in the future is high.

Parcel P52

This 40-acre parcel is located in southeast Pueblo County; UTM Northing: 4,181,275 Easting: 571,018. The pictures of the parcel include p76 and p81. A tributary of Buffalo Arroyo bisects the parcel resulting in a dichotomy in the vegetation. A 30% cover of juniper woodland with much exposed bedrock and an understory cover of 15% skunkbrush dominate the lip and steep slopes of the arroyo. This is ideal habitat for the triploid checkered whiptail and one was observed on the parcel (see photos 77 to 79). Away from the arroyo the vegetation is dominated by shortgrass prairie with a 50% cover of blue gramma; accompanying shrubs include cholla, yucca and snakeweed, which together cover 20% of the parcel. There is approximately a 10% cover of juniper encroaching upon the grassland from the arroyo. The parcel has steep slopes of up to 45% along the arroyo with level terrain in the grassland areas and the soil is a fine sandy-loam. There is a coral and cattle tank just off the parcel and the resulting livestock activity leaves the parcel and surrounding grassland intensely grazed with 20% of the parcel consisting of bare ground. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning influences population dynamics in the area. The shrub and tree cover marginalizes the suitability of this parcel for habitation by prairie dogs as they usually avoid shrubs and woodlands (Koford 1958, Hoogland 1995) where suitability for burrowing and detection of predators is compromised. The closest active towns are located at least four miles distant from the parcel across unsuitable habitat. The likelihood that the parcel will support prairie dogs in the future is very poor, but the observed whiptail suggests that a viable population of this rare endemic occupies Buffalo Arroyo including areas of the parcel, but to substantiate this would require further survey work.

Parcel P53

This 40-acre parcel is located in central Pueblo County; UTM Northing 4,182,088 Easting: 571,391. The pictures of this parcel include p82 and p83. There is hill along the north side of the parcel, sloping gently south towards Buffalo Arroyo. The dominant community on the parcel is shortgrass prairie with a 40% cover of grass; accompanying shrubs include snakeweed, yucca and cholla, which together cover 15% of the parcel. There is a 10% cover of juniper at the hilltop. The south-facing slope is at 10 to 20% and the soil is a silty clay-loam. The parcel and surrounding grassland are grazed and 30% of the parcel consists of bare ground. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning influences population dynamics in the area. The soil texture and ground vegetation is suitable for prairie dogs, but the slope marginalizes the parcel's suitability as prairie dog habitat. Prairie dogs usually occur on areas with slopes of less than 9%, preferring slopes between 2 and 4% because steeper slopes impede

detection of predators and are susceptible to erosion creating shallower rocky soils (Koford 1958, Reading and Matchett 1997, Assal and Lockwood 2002), which are not conducive to constructing burrow systems. The closest active prairie dog colonies are located at least four miles distant from the parcel across unsuitable habitat and the likelihood that this parcel will support prairie dogs in the future is fair.

Parcel P54
This 40-acre parcel is located in southeast Pueblo County; UTM Northing: 4,183,794 Easting: 579,840. The pictures of the parcel include p84 and p85. The dominant vegetation of the parcel is shortgrass prairie with a 40% cover of blue gramma and 20% cover of threeawn. Opuntia occupies 5% of the surface and accompanying shrubs include cholla, yucca snakeweed and sagebrush, which together cover less than 30% of the parcel. The parcel is level without a discernable slope and the soil is a sandy-loam. The parcel and surrounding grassland are intensely grazed with 15% of the parcel consisting of bare ground. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning influences population dynamics in the area. A small active prairie dog complex is located less than 2 miles east of the parcel and the parcel is average prairie dog and Burrowing Owl habitat. The shrub cover marginalizes the suitability of this parcel for habitation by prairie dogs as they usually avoid dense shrubs (Koford 1958, Hoogland 1995) where suitability for burrowing and detection of predators is compromised, but prairie dogs will expand existing colonies into less dense shrubland and actively clip the shrubs to there suitability (Osborn 1942). The likelihood that the parcel will support prairie dogs in the future is fair.

Sites of Local Significance

A total of 14 areas associated with BLM land were identified as having healthy viable populations of prairie dogs and identified as sites of local significance (Fig. 10). All of these areas are supporting populations of prairie dogs, some also have populations of Burrowing Owls and some have been identified as suitable for Mountain Plovers. Four of these sites could be used as research or demonstration areas for monitoring prairie dogs and examining how plaque and/or land use practices influence population dynamics Table 2.

Table 2. Sites of local significance with potential to act as demonstration areas.

				No. of Individuals Observed		
Site of Local Significance	**Size in Acres**	**No. of Complexes**	**No. of Towns**	**Adults**	**Juveniles**	**Burrowing Owls**
La Junta Municipal Airport	355	1	1	10	0	0
North of Lolita Reservoir	44	1	2	4	0	0
Saunders Arroyo at Whiterock	683	1	5	27	7	14
West of Lake Henry	418	1	5	42	7	0

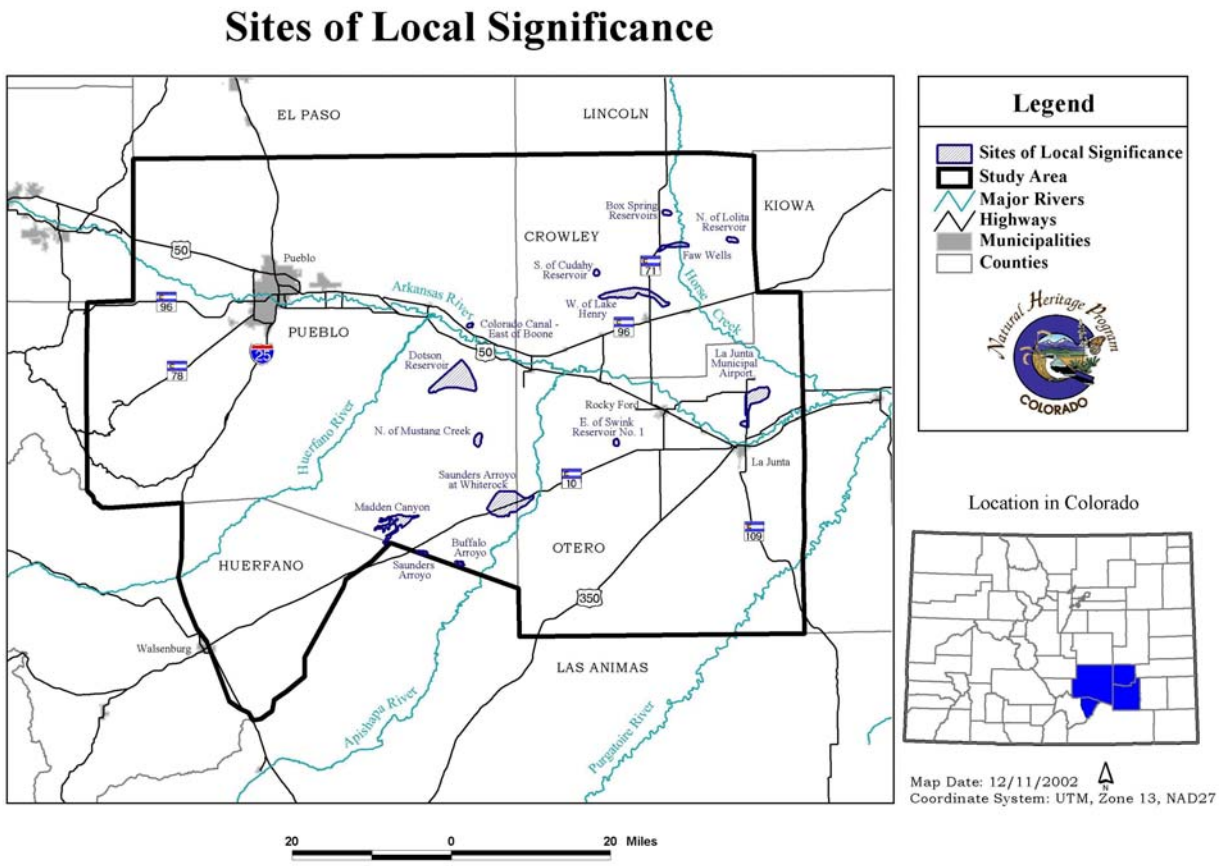

Fig. 10. Map of the study area showing the location of the sites of local significance.

BOX SPRING RESERVOIRS

Biodiversity Rank: B5 General Biodiversity Significance

Protection Urgency Rank: P4 No threat known for foreseeable future.

Management Urgency Rank: M4 Although not currently threatened, future management to maintain the current quality of element occurrences may be needed.

Location: Box Spring Reservoirs is located between Box Spring Reservoirs number 2 and 4.

Legal Description: U.S.G.S. 7.5 minute quadrangle(s): Box Springs. T19S R56W Sections 7 and 8.

Size: 33 acres

Elevation: 4,520 to 4,530

Site Description: This site includes parcel C4 and is located in prairie grassland and the vegetation is co-dominate between blue gramma and alkali sacaton. The site and surrounding grassland are intensely grazed and 30% of the area consists of bare ground. Hydrologic Processes of the area have been modified by construction of the interconnected series of Box Spring Reservoirs, one of which is contained within the site. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land.

Numerous surveyed prairie dog complexes near the site were either active or abandoned suggesting that plague and/or poisoning has a moderate influence on population dynamics in this area. The area is suitable for prairie dogs, Burrowing Owls and Mountain Plovers, however surrounding landowners are antagonistic towards prairie dogs. Numerous surveyed prairie dog complexes near the parcel were either inactive or nonexistent suggesting that plague and/or poisoning influences population dynamics in this area. Although intense grazing degrades the area the colony is surviving, and the degradation of the grassland could be reversed by implementation of an aggressive rotational grazing systems.

Natural Heritage element occurrences at the Box Springs Reservoirs site.

Element	Common Name	Global Rank	State Rank	Federal Status	State Status	Federal Sensitive	EO Rank*
Plant Communities							
Cynomys ludovicianus	**black-tailed prairie dog**	**G4**	**S4**				**B**

*EO Rank is "Element Occurrence" Rank

** Bold type indicates an element occurrence upon which the site rank in based.

Biodiversity comments: This site contains a good (B-ranked) occurrence of the black-tailed prairie dog that is apparently secure (G4S4) on a global scale and within the state.

Boundary Justification: The boundary encompasses the prairie dog complex and enough surrounding suitable shortgrass prairie habitat to allow for expansion of the colony. This habitat supplies appropriate slopes, drainage, vegetation composition and soil type for burrow construction, predator detection and foraging (Hoogland 1995, Reading and Matchett 1997, Assal and Lockwood 2002). Expansion of the prairie dog colony is restricted to the north and south by the reservoirs and the sites boundary was purposely drawn to exclude them.

Protection Rank Comments: The grassland is not threatened by human activity and except for grazing, which prairie dogs seem to tolerate (Licht and Sanchez 1993) throughout their range, the area is little disturbed. Most of the site occurs on private land but it does include large portions of the adjacent BLM land and at present no eminent threat requiring protection is known or anticipated.

Management Rank Comments: Maintaining the current state of the site, precluding mining or land conversion to agricultural uses or development, and special designation for the area would ensure continued habitation by prairie dogs. A survey and monitoring program would assist with detecting trends in the size and distribution of the prairie dog population and with whether plaque influences population viability. No other management needs have been identified for the site.

Prairie dogs acting as ecosystem regulators influence the ecology of many other species; in particular Burrowing Owls, black-footed ferrets and to a lesser extent Mountain Plovers and wintering Ferruginous Hawk populations depend on prairie dogs to meet different aspects of their ecological needs. Managing for prairie dogs will maintain the integrity of this grassland system and enhance biodiversity of the site.

BUFFALO ARROYO

Biodiversity Rank: B2 Very High Biodiversity Significance

Protection Urgency Rank: P4 No threat known for foreseeable future.

Management Urgency Rank: M4 Although not currently threatened, future management to maintain the current quality of element occurrences may be needed.

Location: Buffalo Arroyo is located off of Whiterock Road (C. R. 326) at the Welsh Family home on the Apishapa River Road.

Legal Description: U.S.G.S. 7.5 minute quadrangle(s): Sanford Hills. T26S R61W Sections 13,14, 23 and 24.

Size: 50 acres

Elevation: 4,020 to 5,000 feet

Site Description: This site includes within its boundary large areas of Parcel P52 in Pueblo County. A tributary of Buffalo Arroyo bisects the site resulting in a dichotomy in the vegetation. A 30% cover of juniper woodland with much exposed bedrock and an under story cover of 15% skunkbrush dominate the lip and steep slopes of the arroyo. This is ideal habitat for the triploid checkered whiptail and one was observed on the parcel (see photos 77 to 79). Away from the arroyo the vegetation is dominated by shortgrass prairie with a 50% cover of blue gramma; accompanying shrubs include cholla, yucca and snakeweed, which together cover 20% of the parcel. There is approximately a 10% cover of juniper encroaching upon the grassland from the arroyo. The parcel contains a complex mix of aspects, but in general the entire parcel drains to the east. There are steep slopes of up to 45% along the arroyo with level terrain in the grassland areas and the soil is a fine sandy-loam. There is a coral and cattle tank just off the site and the resulting livestock activity leaves the surrounding grassland including that of the site intensely grazed with 20% of the parcel consisting of bare ground. The observed whiptail suggests that a viable population of this rare species endemic to southeastern Colorado occupies Buffalo Arroyo but to substantiate this would require further survey work.

Hydrological processes are mostly intact in the upper Apishapa watershed, which Buffalo Arroyo drains into. There is a coral and cattle tank just off the site and the resulting livestock activity leaves the surrounding grassland including that of the site intensely grazed with 20% of

the parcel consisting of bare ground. and grazing has to a limited extent impacted species diversity and vegetation structure (i.e. development and diversity of vegetation canopies) of the site. The occurrence of snakeweed in particular is representative of over-grazed range (Weber 1976). Overall, however, grazing has had limited impact on biodiversity within the site because steep canyon slopes that are unsuitable for grazing make up the majority of the site. The habitat of the site is suitable for the endemic and rare triploid checkered whiptail and one was observed during the survey. The probability that a viable population of whiptails occurs here is high, but to substantiate this would require further survey work.

Natural Heritage element occurrences at the Buffalo Arroyo site.

Element	Common Name	Global Rank	State Rank	Federal Status	State Status	Federal Sensitive	EO Rank*
Plant Communities							
Cnemidophorus neotesselatus	**Triploid checkered whiptail**	**G2Q**	**S2**				**B**

*EO Rank is "Element Occurrence" Rank

** Bold type indicates an element occurrence upon which the site rank in based.

Biodiversity comments: This site contains a good (B-ranked) occurrence of the triploid checkered whiptail an endemic species restricted to southeastern Colorado and that is imperiled (G2S2) on a global scale.

Boundary Justification: The boundary encompass the suitable habitat for the whiptail including arroyos, its hillsides, grassland-surrounded rocky arroyo habitat along the tributaries and the shrubby, juniper-grass associations of the valleys and upper reaches of the arroyo (Hammerson 1999). This habitat supplies appropriate slopes, exposure, drainage and soil type for burrows, nests and hibernacula of the whiptail (Knopf 1966).

Protection Rank Comments: The arroyo is not threatened by human activity and except for grazing, which has minimal impact on the whiptail's preferred habitat, the area is little disturbed. Most of the site occurs on private land but it does include large portions of the adjacent BLM land and at present no eminent threat requiring protection is known or anticipated.

Management Rank Comments: Maintaining the current natural state of the site, precluding mining or land conversion to agricultural uses or development and special designation for the area would ensure continued habitation by whiptails. A survey and monitoring program would assist in detecting trends in the size and distribution of the whiptail population. No other management needs have been identified for the site.

COLORADO CANEL – EAST OF BOONE

Biodiversity Rank: B5 General Biodiversity Significance

Protection Urgency Rank: P2 Expected expansion of near by gravel pit within five is expected to threaten existence of the element occurrence at this site.

Management Urgency Rank: M4 Although not currently threatened, future management to maintain the current quality of element occurrences may be needed.

Location: Colorado Canal – East of Boone is located two miles northwest of the intersection of Nepesta Hill Road (C. R. 610) and Highway 96.

Legal Description: U.S.G.S. 7.5 minute quadrangle(s): Nepesta. T21S R60W Sections 19 and 20.

Size: 19 acres

Elevation: 4,490 to 4,430 feet

Site Description: This site contains parts of parcel P21 and is located in located in northeast Pueblo County in rangeland dominated by annual and perennial grasses. A 70% cover of blue gramma dominates the prairie and accompanying shrubs include a 40% cover of cholla. This site could almost be characterized as cholla grassland. The Colorado Canal runs through the site and there is an occasional cottonwood, willow or tamarisk along the canal's bank. There is a south-facing slope of less than 3% and the soil is a silty clay-loam. The site and surrounding grassland is intensely grazed and 20% of the surface consists of bare ground. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. A gravel pit encroaches upon the parcel from the south and its expansion onto the site would threaten existence of the grassland.

Numerous surveyed prairie dog complexes near the site were either active or abandoned suggesting that plague and/or poisoning influences population dynamics in the area. The site is suitable prairie dog habitat and a small reproducing population of prairie dogs presently inhabits the site, but operation of the near by gravel pit is of concern to the continued existence of the colony. The colony is small but appears healthy with five individuals observed including one pup and it may be recovering from the 2000-2001 plaque epidemic that swept through the area; however, this is unsubstantiated.

Natural Heritage element occurrences at the Colorado Cannel – East of Boone site.

Element	Common Name	Global Rank	State Rank	Federal Status	State Status	Federal Sensitive	EO Rank*
Plant Communities							
Cynomys ludovicianus	**black-tailed prairie dog**	**G4**	**S4**				**B**

*EO Rank is "Element Occurrence" Rank

** Bold type indicates an element occurrence upon which the site rank in based.

Biodiversity comments: This site contains a good (B-ranked) occurrence of the black-tailed prairie dog that is apparently secure (G4S4) on a global scale and within the state.

Boundary Justification: The boundary encompasses the prairie dog complex and enough surrounding suitable shortgrass prairie habitat to allow for expansion of the colony. At the south end the boundary is constrained by unsuitable habitat represented by mined gravel pits. This

habitat supplies appropriate slopes, drainage, vegetation composition and soil type for burrow construction, predator detection and foraging of prairie dogs (Hoogland 1995, Reading and Matchett 1997, Assal and Lockwood 2002).

Protection Rank Comments: Expansion of the gravel pit in the area will result in loss of prairie dog habitat and could compromise viability of the colony. The grassland is grazed, but prairie dogs seem to tolerate grazing (Licht and Sanchez 1993) throughout their range. Most of the site occurs on private land but it does include large portions of the adjacent BLM land.

Management Rank Comments: Maintaining the current state of the site, precluding mining or land conversion to agricultural uses or development, and special designation for the area would ensure continued habitation by prairie dogs. A survey and monitoring program would assist with detecting trends in the size and distribution of the prairie dog population and with whether plaque influences population viability. No other management needs have been identified for the site.

Prairie dogs acting as ecosystem regulators influence the ecology of many other species; in particular Burrowing Owls, black-footed ferrets and to a lesser extent Mountain Plovers and wintering Ferruginous Hawk populations depend on prairie dogs to meet different aspects of their ecological needs. Managing for prairie dogs will maintain the integrity of this grassland system and enhance biodiversity of the site.

DOTSON RESERVOIR

Biodiversity Rank: B5 General Biodiversity Significance

Protection Urgency Rank: P4 No threat is known for the foreseeable future.

Management Urgency Rank: M4 Although not currently threatened, future management to maintain the current quality of element occurrences may be needed.

Location: Dotson Reservoir is located at Dotson Reservoir in Pueblo County.

Legal Description: U.S.G.S. 7.5 minute quadrangle(s): Nepesta, Flying A Ranch, Chicos Well. T22S R60W Sections 18, 19, 30 and 31; and T22S R61W Sections 11 to 15, 21 to 20, 31 and 32.

Size: 721 acres

Elevation: 4,661 to 4,420 feet

Site Description: This site is located in east-central Pueblo County in rangeland dominated by annual and perennial grasses and contains BLM parcels P25 and P26. An 80% cover of blue gramma dominates the prairie, which is without any shrub cover. The site includes Dotson Reservoir and borders Nepesta Reservoir to the south, each of which is dry and has a 10% cover of tamarisk and cottonwoods along their banks. Slopes on the site are less than 5% and the soil

is a sandy-loam. Due to its proximity near the reservoirs the site and surrounding grassland are intensely grazed and 10% of the parcel consists of bare ground. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land.

Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning influences population dynamics in the area. The parcel is suitable habitat for prairie dogs, Burrowing Owls and potentially Mountain Plover and a small, reproducing prairie dog complex occurs within the site. The colony is small but appears healthy with 21 individuals observed including seven pups and it may be recovering from the 2000-2001 plaque epidemic that swept through the area; however, this is unsubstantiated. There are two other abandoned prairie dog colonies within the site that represent potential areas for recolonization by the active complex

Natural Heritage element occurrences at the Dotson Reservoir site.

Element	Common Name	Global Rank	State Rank	Federal Status	State Status	Federal Sensitive	EO Rank*
Plant Communities							
Cynomys ludovicianus	**black-tailed prairie dog**	**G4**	**S4**				**B**

*EO Rank is "Element Occurrence" Rank

** Bold type indicates an element occurrence upon which the site rank in based.

Biodiversity comments: This site contains a good (B-ranked) occurrence of the black-tailed prairie dog that is apparently secure (G4S4) on a global scale and within the state.

Boundary Justification: The boundary encompasses the prairie dog complex and enough surrounding suitable shortgrass prairie habitat to allow for expansion of the colony. The boundary was also drawn to include a number of abandoned towns that could serve as opportunities for resettlement by prairie dogs in the future. This habitat supplies appropriate slopes, drainage, vegetation composition and soil type for burrow construction, predator detection and foraging of prairie dogs (Hoogland 1995, Reading and Matchett 1997, Assal and Lockwood 2002).

Protection Rank Comments: The grassland is not threatened by human activity and except for grazing, which prairie dogs seem to tolerate (Licht and Sanchez 1993) throughout their range, the area is little disturbed. Most of the site occurs on private land but it does include BLM land and at present no eminent threat requiring protection is known or anticipated.

Management Rank Comments: Maintaining the current state of the site, precluding mining or land conversion to agricultural uses or development, and special designation for the area would ensure continued habitation by prairie dogs. A survey and monitoring program would assist with detecting trends in the size and distribution of the prairie dog population and with understanding whether plaque influences population viability. No other management needs have been identified for the site.

Prairie dogs acting as ecosystem regulators influence the ecology of many other species; in particular Burrowing Owls, black-footed ferrets and to a lesser extent Mountain Plovers and

wintering Ferruginous Hawk populations depend on prairie dogs to meet different aspects of their ecological needs. Managing for prairie dogs will maintain the integrity of this grassland system and enhance biodiversity of the site.

EAST OF SWINK RESERVOIR NO. 1

Biodiversity Rank: B5 General Biodiversity Significance

Protection Urgency Rank: P4 No threat known for foreseeable future.

Management Urgency Rank: M4 Although not currently threatened, future management to maintain the current quality of element occurrences may be needed.

Location: East of Swink Reservoir No. 1 is located 2.5 miles northeast of Swink Reservoir No. 1.

Legal Description: U.S.G.S. 7.5 minute quadrangle(s): Manzanola and Timpas NE. T23S R57W Sections 31; and T24S R57W Sections 6

Size: 29 acres

Elevation: 4,460 to 4,490

Site Description: This site contains parcel O10 and is located in northwest Otero County in rangeland dominated by annual and perennial grasses. The predominant grass is blue gramma and accompanying shrubs include yucca and cholla, which together cover 1% of the parcel. The landscape is very open and without much vegetative ground structure. Soil on the parcel varies from silty clay-loam to clay and 20% of the parcel consists of bare ground. There is an east-facing slope of less than 5% and the parcel and surrounding grassland are moderately to intensely grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Grazing on the site is moderate and the grassland appears in good health and is functioning properly.

This site represents suitable prairie dog, Burrowing Owl and Mountain Plover habitat and prairie dogs presently inhabit the site. The prairie dog complex is reproductively active, but it is composed of a small town and is distant from other active complexes. The likelihood that the existing colony will persist on the site into the future is high. Numerous surveyed prairie dog complexes near the site were either active or abandoned suggesting that plague and/or poisoning has a moderate influence on population dynamics in this area. The grassland is moderately grazed grazing degrades the area the colony is surviving, and the degradation of the grassland could be reversed by implementation of an aggressive rotational grazing systems.

Natural Heritage element occurrences at the East of Swink Reservoir No 1 site.

Element	Common Name	Global Rank	State Rank	Federal Status	State Status	Federal Sensitive	EO Rank*
Plant Communities							

Cynomys ludovicianus	**black-tailed prairie dog**	**G4**	**S4**				**B**

*EO Rank is "Element Occurrence" Rank
** Bold type indicates an element occurrence upon which the site rank in based.

Biodiversity comments: This site contains a good (B-ranked) occurrence of the black-tailed prairie dog that is apparently secure (G4S4) on a global scale and within the state.

Boundary Justification: The boundary encompasses the prairie dog complex and enough surrounding suitable shortgrass prairie habitat to allow for expansion of the colony. This habitat supplies appropriate slopes, drainage, vegetation composition and soil type for burrow construction, predator detection and foraging (Hoogland 1995, Reading and Matchett 1997, Assal and Lockwood 2002). Expansion of the prairie dog colony is restricted to the north and south by the reservoirs and the sites boundary was purposely drawn to exclude them.

Protection Rank Comments: The grassland is not threatened by human activity and except for grazing, which prairie dogs seem to tolerate (Licht and Sanchez 1993) throughout their range, the area is little disturbed. Most of the site occurs on private land but it does include large portions of the adjacent BLM land and at present no eminent threat requiring protection is known or anticipated.

Management Rank Comments: Maintaining the current state of the site, precluding mining or land conversion to agricultural uses or development, and special designation for the area would ensure continued habitation by prairie dogs. A survey and monitoring program would assist with detecting trends in the size and distribution of the prairie dog population and with whether plaque influences population viability. No other management needs have been identified for the site.

Prairie dogs acting as ecosystem regulators influence the ecology of many other species; in particular Burrowing Owls, black-footed ferrets and to a lesser extent Mountain Plovers and wintering Ferruginous Hawk populations depend on prairie dogs to meet different aspects of their ecological needs. Managing for prairie dogs will maintain the integrity of this grassland system and enhance biodiversity of the site.

FAW WELLS

Biodiversity Rank: B5 General Biodiversity Significance

Protection Urgency Rank: P4 No threat known for foreseeable future.

Management Urgency Rank: M4 Although not currently threatened, future management to maintain the current quality of element occurrences may be needed.

Location: Faw Wells is located 1.75 miles south of Box Spring Reservoir No. 5. and Faw Wells adjoins the site to the east.

Legal Description: U.S.G.S. 7.5 minute quadrangle(s): Lake Henry. T19S R56W Sections 31 to 34; and T20S R56W Section 6.

Size: 100 acres

Elevation: 4,420 to 4,445

Site Description: Prairie dogs are present on this site parcel that is located in northeastern Crowley County and contains parts pf BLM parcel C10. The site consists of shortgrass prairie dominated by blue gramma along with an 8% cover of opuntia. Horse creek meanders through the area crossing the site in two different locations. At each of these two crossing the vegetation includes scattered cottonwoods and sagebrush with some rabbitbrush making creek beds riparian zones less suitable for prairie dogs. There is an east-facing slope of less than 5% and the associated soil is loamy-sand to sandy-loam. The site and surrounding grassland are intensely grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land.

Numerous surveyed prairie dog complexes near the parcel were either abandoned, reduced in size or nonexistent suggesting that plague and/or poisoning influences population dynamics in this area. An active prairie dog complex exists on the site and suitable habitat exists for Burrowing Owls and Mountain Plovers, but surrounding landowners are antagonistic towards prairie dogs and there has been poisoning practiced in the area in the past. The complex is located on the site is reproducing, but is composed of small towns on private ranchland. The complex appears to be rebounding from the 2000-2001 plaque epidemic that swept through the area, however, this is unsubstantiated. The likelihood that this site will continue to support prairie dogs in the future is very high.

Natural Heritage element occurrences at the Faw Wells site.

Element	Common Name	Global Rank	State Rank	Federal Status	State Status	Federal Sensitive	EO Rank*
Plant Communities							
Cynomys ludovicianus	**black-tailed prairie dog**	**G4**	**S4**				**B**

*EO Rank is "Element Occurrence" Rank

** Bold type indicates an element occurrence upon which the site rank in based.

Biodiversity comments: This site contains a good (B-ranked) occurrence of the black-tailed prairie dog that is apparently secure (G4S4) on a global scale and within the state.

Boundary Justification: The boundary encompasses the prairie dog complex and enough surrounding suitable shortgrass prairie habitat to allow for expansion of the complexes three colonies. This habitat supplies appropriate slopes, drainage, vegetation composition and soil type for burrow construction, predator detection and foraging (Hoogland 1995, Reading and Matchett 1997, Assal and Lockwood 2002)).

Protection Rank Comments: The grassland is not threatened by human activity and except for grazing, which prairie dogs seem to tolerate (Licht and Sanchez 1993) throughout their range, the

area is little disturbed. Most of the site occurs on private land but it does include large portions of the adjacent BLM land and at present no eminent threat requiring protection is known or anticipated.

Management Rank Comments: Maintaining the current natural state of the site, precluding mining or land conversion to agricultural uses or development and special designation for the area would ensure continued habitation by prairie dogs. A survey and monitoring program would assist with detecting trends in the size and distribution of the prairie dog population and with whether plaque influences population viability. No other management needs have been identified for the site.

Prairie dogs acting as ecosystem regulators influence the ecology of many other species; in particular Burrowing Owls, black-footed ferrets and to a lesser extent Mountain Plovers and wintering Ferruginous Hawk populations depend on prairie dogs to meet different aspects of their ecological needs. Managing for prairie dogs will maintain the integrity of this grassland system and enhance biodiversity of the site.

LA JUNTA MUNICIPAL AIRPORT

Biodiversity Rank: B5 General Biodiversity Significance

Protection Urgency Rank: P2 Within five years continued development in the area is expected to threaten existence of the element occurrence at this site.

Management Urgency Rank: M1 New management action is required or element occurrences could be lost or irretrievably degraded within 1 year.

Location: La junta Municipal Airport is located two miles north of the intersection of Highway 109 and Otero County Road 194.

Legal Description: U.S.G.S. 7.5 minute quadrangle(s): Cheraw and Hadley. T22S R55W Section 36; T22S R54W Sections 31 and 32; T23S R55W Sections 1,2, 11 through 14, 23-25; and T23S R54W Sections 5 through 7.

Size: 355 acres

Elevation: 4,140 to 4,262 feet

Site Description: This site contains parts of BLM parcel O3 and is located in northwest Otero County in rangeland dominated by annual and perennial grasses. The predominant grass is blue gramma and accompanying shrubs include a 20% cover of sagebrush, with yucca and cholla together comprising 10% of the ground cover. There is a southeast-facing slope of less than 5% and the associated soil is a silty clay-loam. The area of the site includes residential development and the development associated with La Junta Municipal Airport, which borders the site to its east. There are also gravel pits near the south end of the site and all of these influences constrain

the boundary of the site on its south end to a narrow strip of land occupied by prairie dogs. North of the airport the site opens up onto level terrain and shortgrass prairie that was once occupied by a large prairie dog complex, which is know abandoned.

The site and surrounding grassland is grazed and an active prairie dog complex is occupies the site's south end. The complex appears to be rebounding from the 2000-2001 plaque epidemic that swept through the area, however, this is unsubstantiated. The prairie dog town is huge, but it has been subject to poisoning in the past and only 10 dogs were observed, all were adults and one was a pregnant female. Seven burrowing owls were also observed at the site. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Numerous surveyed prairie dog towns inside the site were abandoned suggesting that plague and/or poisoning influences population dynamics in this area. The area is suitable for prairie dogs and Burrowing Owls and the prairie dog colony and other near by complexes could be used as a demonstration area for local landowners and land managers, but plaque and poisoning may prevent long-term viability of prairie dogs at this site.

Natural Heritage element occurrences at the La Junta Municipal Airport site.

Element	Common Name	Global Rank	State Rank	Federal Status	State Status	Federal Sensitive	EO Rank*
Plant Communities							
Cynomys ludovicianus	**black-tailed prairie dog**	**G4**	**S4**				**C**

*EO Rank is "Element Occurrence" Rank
** Bold type indicates an element occurrence upon which the site rank in based.

Biodiversity comments: This site contains a fair (C-ranked) occurrence of the black-tailed prairie dog that is apparently secure (G4S4) on a global scale and within the state.

Boundary Justification: The boundary encompasses the prairie dog complex and enough surrounding suitable shortgrass prairie habitat to allow for expansion of the colony. At the south end the boundary is constrained by unsuitable habitat represented by mined gravel pits, residential development and the development of La Junta Municipal Airport. North of the airport the site opens onto shortgrass prairie to include a number of abandoned towns that could serve as opportunities for resettlement by prairie dogs in the future. This habitat supplies appropriate slopes, drainage, vegetation composition and soil type for burrow construction, predator detection and foraging of prairie dogs (Hoogland 1995, Reading and Matchett 1997, Assal and Lockwood 2002). Expansion of the prairie dog colony is restricted to the south end of the site by the airport, gravel pits and residential development.

Protection Rank Comments: Continued development in the area will result in loss of prairie dog habitat and could compromise viability of the complex. The grassland is grazed, but prairie dogs seem to tolerate grazing (Licht and Sanchez 1993) throughout their range. Most of the site occurs on private land but it does include large portions of the adjacent BLM land.

Management Rank Comments: There is evidence that prairie dogs have been poisoned at the site and the practice has the potential to adversely affect the occurrence. New management practices curtailing poisoning would benefit the occurrence and special designation for the area

would ensure continued habitation by prairie dogs. A survey and monitoring program would assist with detecting trends in the size and distribution of the prairie dog population and with whether plaque influences population viability.

Prairie dogs acting as ecosystem regulators influence the ecology of many other species; in particular Burrowing Owls, black-footed ferrets and to a lesser extent Mountain Plovers and wintering Ferruginous Hawk populations depend on prairie dogs to meet different aspects of their ecological needs. Managing for prairie dogs will maintain the integrity of this grassland system and enhance biodiversity of the site.

MADDEN CANYON

Biodiversity Rank: B2 Very High Biodiversity Significance

Protection Urgency Rank: P4 No threat known for foreseeable future.

Management Urgency Rank: M4 Although not currently threatened, future management to maintain the current quality of element occurrences may be needed.

Location: Madden Canyon is located due east of Red Top Road approximately 2.5 miles north of its junction with Highway 10.

Legal Description: U.S.G.S. 7.5 minute quadrangle(s): Myers Canyon and North Rattlesnake Butte. T25S R62W Sections 13 to 17, 19 to 24, 27 to 30, and 32 and 33.

Size: 288 acres

Elevation: 4,960 to 5,800 feet

Site Description: This site includes within its boundary large areas of Parcel P39 in Pueblo County. Lone Jack and Madden Canyons define the character, vegetation and topography of the site and it is these two high walled canyons and their tributaries that define the site boundaries. Pinyon-juniper woodland covers from 10-45% of the canyon slopes and ravines, and extends for short distances into the grassland located at the canyon tops. Mountain mahogany and skunkbrush are also present along the canyon slopes and comprise from 20 to 30% of the under story cover. The grassland varies considerably, in places distant from the canyon rims and at the canyon bottoms blue gramma comprises up to a 70% of the cover with 20% of the ground covered by shrubs including cholla, yucca and snakeweed. Close to the canyon rims there is a transition zone where the trees and larger shrubs become more prominent and blue gramma is reduced in cover to 10 or 30%. In all, shortgrass prairie covers only 10% of the entire site. The parcel contains a complex mix of aspects, but in general the entire parcel drains to the northeast, and the slopes vary from the cliffs of the canyon to gentle inclines of less than 5%. The soil is loam to fine sandy-loam and along the slopes and at the cliffs much bare rock is exposed.

Hydrological processes are mostly intact in the upper Apishapa watershed which Jack and

Madden canyons feed into. The area is moderately grazed, with approximately 5% of the ground exposed and grazing has to a limited extent impacted species diversity and vegetation structure (i.e. development and diversity of vegetation canopies) of the site. The occurrence of snakeweed in particular is representative of over-grazed range (Weber 1976). Overall, however, grazing has had limited impact on biodiversity within the site because steep canyon slopes that are unsuitable for grazing make up the majority of the site. The habitat of the site is suitable for the endemic and rare triploid checkered whiptail and one was observed during the survey. The probability that a viable population of whiptails occurs here is high, but to substantiate this would require further survey work.

Natural Heritage element occurrences at the Madden Canyon site.

Element	Common Name	Global Rank	State Rank	Federal Status	State Status	Federal Sensitive	EO Rank*
Plant Communities							
Cnemidophorus neotesselatus	**Triploid checkered whiptail**	**G2Q**	**S2**				**B**

*EO Rank is "Element Occurrence" Rank
** Bold type indicates an element occurrence upon which the site rank in based.

Biodiversity comments: This site contains a good (B-ranked) occurrence of the triploid checkered whiptail an endemic species restricted to southeastern Colorado and that is imperiled (G2S2) on a global scale.

Boundary Justification: The boundary encompass the suitable habitat for the whiptail including canyons, arroyos, hillsides, grassland-surrounded rocky arroyo habitat along tributaries and the shrubby, juniper-grass associations of the valleys and canyon lip of Madden and Jack canyons (Hammerson 1999). This habitat supplies appropriate slopes, exposure, drainage and soil type for burrows, nests and hibernacula of the whiptail (Knopf 1966).

Protection Rank Comments: The escarpment and canyons are not threatened by human activity and except for grazing, which has minimal impact on the whiptail's preferred habitat, the area is little disturbed. Most of the site occurs on private land but it does include large portions of the adjacent BLM land and at present no eminent threat requiring protection is known or anticipated.

Management Rank Comments: Maintaining the current natural state of the site, precluding mining or land conversion to agricultural uses or development and special designation for the area would ensure continued habitation by whiptails. A survey and monitoring program would assist in detecting trends in the size and distribution of the whiptail population. No other management needs have been identified for the site.

NORTH OF LOLITA RESERVOIR

Biodiversity Rank: B5 General Biodiversity Significance

Protection Urgency Rank: P4 No threat known for foreseeable future.

Management Urgency Rank: M4 Although not currently threatened, future management to maintain the current quality of element occurrences may be needed.

Location: North of Lolita Reservoir is located four miles west-northwest of Houston Lakes and 5.5 miles north of Lolita Reservoir.

Legal Description: U.S.G.S. 7.5 minute quadrangle(s): Todd Point. There is no township designation for this area..

Size: 44 acres

Elevation: 4,650 to 4,660

Site Description: Prairie dogs occupy this site that is located in northeastern Crowley County. The site contains within its boundary parts of BLM parcel C12. The site consists of shortgrass prairie dominated by blue gramma and threeawn, and about 15% of the cover consists of a weedy forb. There is a south-facing slope of less than 1% and associates soils are clay. The parcel and surrounding grassland is grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land and the landowners are antagonistic towards prairie dogs. Poisoning has been practiced in the area in the past.

Numerous surveyed prairie dog complexes near the parcel were either abandoned, reduced in size or nonexistent suggesting that plague and/or poisoning influences population dynamics in this area. In addition to prairie dogs, one adult Burrowing Owl was observed on the parcel, but evidence of breeding was not observed for either species. A large reproducing complex of prairie dogs occurs south of the site and this and the sites complex could represent an opportunity for a demonstration area for local landowners and land managers, but plaque may prevent long-term viability of prairie dogs at this site. There is also suitable habitat for Mountain Plovers at this site.

Natural Heritage element occurrences at the North of Lolita Reservoir site.

Element	Common Name	Global Rank	State Rank	Federal Status	State Status	Federal Sensitive	EO Rank*
Plant Communities							
Cynomys ludovicianus	**black-tailed prairie dog**	**G4**	**S4**				**B**

*EO Rank is "Element Occurrence" Rank

** Bold type indicates an element occurrence upon which the site rank in based.

Biodiversity comments: This site contains a good (B-ranked) occurrence of the black-tailed prairie dog that is apparently secure (G4S4) on a global scale and within the state.

Boundary Justification: The boundary encompasses the prairie dog complex and enough surrounding suitable shortgrass prairie habitat to allow for expansion of the complexes two small colonies. This habitat supplies appropriate slopes, drainage, vegetation composition and soil type for burrow construction, predator detection and foraging (Hoogland 1995, Reading and Matchett 1997, Assal and Lockwood 2002)).

Protection Rank Comments: The grassland is not threatened by human activity and except for grazing, which prairie dogs seem to tolerate (Licht and Sanchez 1993) throughout their range, the area is little disturbed. Most of the site occurs on private land but it does include large portions of the adjacent BLM land and at present no eminent threat requiring protection is known or anticipated.

Management Rank Comments: Maintaining the current natural state of the site, precluding mining or land conversion to agricultural uses or development, and special designation for the area would ensure continued habitation by prairie dogs. A survey and monitoring program would assist with detecting trends in the size and distribution of the prairie dog population and with whether plaque influences population viability. No other management needs have been identified for the site.

Prairie dogs acting as ecosystem regulators influence the ecology of many other species; in particular Burrowing Owls, black-footed ferrets and to a lesser extent Mountain Plovers and wintering Ferruginous Hawk populations depend on prairie dogs to meet different aspects of their ecological needs. Managing for prairie dogs will maintain the integrity of this grassland system and enhance biodiversity of the site.

NORTH OF MUSTANG CREEK

Biodiversity Rank: B5 General Biodiversity Significance

Protection Urgency Rank: P4 No threat is known for the foreseeable future.

Management Urgency Rank: M4 Although not currently threatened, future management to maintain the current quality of element occurrences may be needed.

Location: North of Mustang Creek is located on the Flying A Road (C. R. 729) 11.5 miles south of Nepesta in Pueblo County.

Legal Description: U.S.G.S. 7.5 minute quadrangle(s): Flying A Ranch and Yellowbank Creek. T23S R60W Sections 29 to 32; and T24S R60W Sections 5 and 6.

Size: 70 acres

Elevation: 4,630 to 4,540 feet

Site Description: This site is located in southeast Pueblo County in rangeland dominated by annual and perennial grasses and contains BLM parcel P30. A 65% cover of blue gramma dominates the prairie, which is without any shrubs and opuntia covers more than 5% of the surface. The parcel is located in rolling terrain and the soil is a silty clay-loam. The parcel and surrounding grassland are intensely grazed and 30% of the parcel consists of bare ground. Ownership of the surrounding land is a checkerboard of state lease, private and BLM land, but

mostly it is state owned land.

Numerous surveyed prairie dog complexes near the parcel were active with healthy reproducing populations, suggesting that they may be free from influences of plague and/or poisoning. The parcel is suitable habitat for prairie dog, Burrowing Owls and Mountain Plovers, and an active prairie dog colony is located within the site. The colony is small but appears healthy with over 20 individuals observed including numerous pups and it may be recovering from the 2000-2001 plaque epidemic that swept through the area; however, this is unsubstantiated. The likelihood that this parcel will support prairie dogs in the future is very high.

Natural Heritage element occurrences at the North of Mustang Creek site.

Element	Common Name	Global Rank	State Rank	Federal Status	State Status	Federal Sensitive	EO Rank*
Cynomys ludovicianus	**black-tailed prairie dog**	**G4**	**S4**				**A**

*EO Rank is "Element Occurrence" Rank
** Bold type indicates an element occurrence upon which the site rank in based.

Biodiversity comments: This site contains an excellent (A ranked) occurrence of the black-tailed prairie dog that is apparently secure (G4S4) on a global scale and within the state.

Boundary Justification: The boundary encompasses the prairie dog complex and enough surrounding suitable shortgrass prairie habitat to allow for expansion of the colony. This habitat supplies appropriate slopes, drainage, vegetation composition and soil type for burrow construction, predator detection and foraging of prairie dogs (Hoogland 1995, Reading and Matchett 1997, Assal and Lockwood 2002).

Protection Rank Comments: The grassland is not threatened by human activity and except for grazing, which prairie dogs seem to tolerate (Licht and Sanchez 1993) throughout their range, the area is little disturbed. Most of the site occurs on private land but it does include large portions of the adjacent BLM land and at present no eminent threat requiring protection is known or anticipated.

Management Rank Comments: Maintaining the current state of the site, precluding mining or land conversion to agricultural uses or development, and special designation for the area would ensure continued habitation by prairie dogs. A survey and monitoring program would assist with detecting trends in the size and distribution of the prairie dog population and with understanding whether plaque influences population viability. No other management needs have been identified for the site.

Prairie dogs acting as ecosystem regulators influence the ecology of many other species; in particular Burrowing Owls, black-footed ferrets and to a lesser extent Mountain Plovers and wintering Ferruginous Hawk populations depend on prairie dogs to meet different aspects of their ecological needs. Managing for prairie dogs will maintain the integrity of this grassland system and enhance biodiversity of the site.

SAUNDERS ARROYO

Biodiversity Rank: B5 General Biodiversity Significance

Protection Urgency Rank: P4 No threat is known for the foreseeable future.

Management Urgency Rank: M4 Although not currently threatened, future management to maintain the current quality of element occurrences may be needed.

Location: Saunders Arroyo is located 0.4 miles east of Cedar Crest on Highway 10 in southeastern Pueblo County.

Legal Description: U.S.G.S. 7.5 minute quadrangle(s): Myers Canyon. T26S R61W Section 7; T26S R62W Section 12.

Size: 25 acres

Elevation: 5,260 to 5370 feet

Site Description: This site is located in southeast Pueblo County in rangeland dominated by annual and perennial grasses and contains parts of BLM parcel P42. At the very north tip of the parcel a slight hill drops quickly to level terrain, which then extends across the rest of the parcel. The dominant vegetation of the parcel is shortgrass prairie with a 60% cover of blue gramma and 40% cover of cholla; other accompanying shrubs include yucca and skunkbrush, which together cover 12% of the parcel. There is a 7% cover of junipers on the hill. The slope is south-facing at less than 5% except for at the hill where it is 25% and the soil is a fine sandy-loam. The parcel and surrounding grassland is intensely grazed and 20% of the parcel consists of bare ground. Ownership of the surrounding land is a checkerboard of state lease and BLM land, but mostly it is privately owned land.

Numerous surveyed prairie dog complexes near the site were both abandoned and active, suggesting that plague and/or poisoning may influence population dynamics in this area. There is an active prairie dog town located in the site. The site is suitable habitat for prairie dogs and, although the adjacent prairie dog town is small in size, it appears healthy and the likelihood it will expand in the future is very high.

Natural Heritage element occurrences at the Saunders Arroyo site.

Element	Common Name	Global Rank	State Rank	Federal Status	State Status	Federal Sensitive	EO Rank*
Cynomys ludovicianus	**black-tailed prairie dog**	**G4**	**S4**				**A**

*EO Rank is "Element Occurrence" Rank

** Bold type indicates an element occurrence upon which the site rank in based.

Biodiversity comments: This site contains a fair (C ranked) occurrence of the black-tailed prairie dog that is apparently secure (G4S4) on a global scale and within the state.

Boundary Justification: The boundary encompasses the prairie dog complex and enough surrounding suitable shortgrass prairie habitat to allow for expansion of the colony. This habitat supplies appropriate slopes, drainage, vegetation composition and soil type for burrow construction, predator detection and foraging of prairie dogs (Hoogland 1995, Reading and Matchett 1997, Assal and Lockwood 2002).

Protection Rank Comments: The grassland is not threatened by human activity and except for grazing, which prairie dogs seem to tolerate (Licht and Sanchez 1993) throughout their range, the area is little disturbed. Most of the site occurs on private land but it does include large portions of the adjacent BLM land and at present no eminent threat requiring protection is known or anticipated.

Management Rank Comments: Maintaining the current state of the site, precluding mining or land conversion to agricultural uses or development, and special designation for the area would ensure continued habitation by prairie dogs. A survey and monitoring program would assist with detecting trends in the size and distribution of the prairie dog population and with understanding whether plaque influences population viability. No other management needs have been identified for the site.

Prairie dogs acting as ecosystem regulators influence the ecology of many other species; in particular Burrowing Owls, black-footed ferrets and to a lesser extent Mountain Plovers and wintering Ferruginous Hawk populations depend on prairie dogs to meet different aspects of their ecological needs. Managing for prairie dogs will maintain the integrity of this grassland system and enhance biodiversity of the site.

SAUNDERS ARROYO AT WHITEROCK

Biodiversity Rank: B5 General Biodiversity Significance

Protection Urgency Rank: P4 No threat is known for the foreseeable future.

Management Urgency Rank: M4 Although not currently threatened, future management to maintain the current quality of element occurrences may be needed.

Location: Saunders Arroyo at Whiterock is located along Highway 10 at Whiterock in southeastern Pueblo County.

Legal Description: U.S.G.S. 7.5 minute quadrangle(s): Apishapa Bridge and Snowden Lake. T25S R59W Sections 4 through 8 and 18; T25S R60W Section 1 through 3, 9 through 16, 22 and 23.

Size: 683 acres

Elevation: 4,570 to 4,745 feet

Site Description: This site is located in southeast Pueblo County in rangeland dominated by annual and perennial grasses and contains BLM parcels O16, P49, P51 and parts of P50. The dominant vegetation of the parcel is shortgrass prairie with a 70% cover of blue gramma and a 5% cover of opuntia; accompanying shrubs include less than a 5% cover of sagebrush. In some areas you can find cholla, yucca and snakeweed, but they only cover approximately 1% of the ground when they occur. The site is level without a discernable slope and the soil is a sandy-loam. The surrounding grassland is moderately grazed with 15% of the parcel consisting of bare ground. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land.

A prairie dog complex on the site and two others near the site were active, suggesting that they may be free from influences of plague and/or poisoning. The complex appears healthy and was reproductive with 27 prairie dogs being observed including seven pups, and there were 15 Burrowing Owls observed including 2 hatchlings. The site is ideal prairie dog and Burrowing Owl habitat, and average habitat for Mountain Plovers. Current prairie dog distributions suggest historical occupancy of the surrounding landscape by prairie dogs, and the likelihood that the high will support prairie dogs in the future is high. The prairie dog complex on this site along with the other near by complexes and the associated BLM parcels could potentially serve as a demonstration area for local landowners and land managers.

Natural Heritage element occurrences at the Saunders Arroyo at Whiterock site.

Element	Common Name	Global Rank	State Rank	Federal Status	State Status	Federal Sensitive	EO Rank*
Cynomys ludovicianus	**black-tailed prairie dog**	**G4**	**S4**				**A**

*EO Rank is "Element Occurrence" Rank
** Bold type indicates an element occurrence upon which the site rank in based.

Biodiversity comments: This site contains an excellent (A ranked) occurrence of the black-tailed prairie dog that is apparently secure (G4S4) on a global scale and within the state.

Boundary Justification: The boundary encompasses the prairie dog complex and enough surrounding suitable shortgrass prairie habitat to allow for expansion of the colony. This habitat supplies appropriate slopes, drainage, vegetation composition and soil type for burrow construction, predator detection and foraging of prairie dogs (Hoogland 1995, Reading and Matchett 1997, Assal and Lockwood 2002).

Protection Rank Comments: The grassland is not threatened by human activity and except for grazing, which prairie dogs seem to tolerate (Licht and Sanchez 1993) throughout their range, the area is little disturbed. Most of the site occurs on private land but it does include BLM land and at present no eminent threat requiring protection is known or anticipated.

Management Rank Comments: Maintaining the current state of the site, precluding mining or land conversion to agricultural uses or development, and special designation for the area would ensure continued habitation by prairie dogs. A survey and monitoring program would assist with detecting trends in the size and distribution of the prairie dog population and with understanding whether plaque influences population viability. No other management needs have been identified for the site.

Prairie dogs acting as ecosystem regulators influence the ecology of many other species; in particular Burrowing Owls, black-footed ferrets and to a lesser extent Mountain Plovers and wintering Ferruginous Hawk populations depend on prairie dogs to meet different aspects of their ecological needs. Managing for prairie dogs will maintain the integrity of this grassland system and enhance biodiversity of the site.

SOUTH OF CUDAHY RESERVOIR

Biodiversity Rank: B5 General Biodiversity Significance

Protection Urgency Rank: P4 No threat known for foreseeable future.

Management Urgency Rank: M4 Although not currently threatened, future management to maintain the current quality of element occurrences may be needed.

Location: South of Cudahy Reservoir is locate 0.5 south of Cudahy Reservoir.

Legal Description: U.S.G.S. 7.5 minute quadrangle(s): Hero Hill and Antelope Mesa. T20S R58W Sections 14, 15, 22 and 23.

Size: 27 acres

Elevation: 4,500 to 4,530 feet

Site Description: Prairie dogs occupy the northern edge of this 78-acre parcel that is located in central Crowley County and contains parts of BLM parcels C16 and C17. The site consists of shortgrass prairie dominated by alkali sacaton along with a 10% cover of rabbitbrush (*Chrysothamnus* spp.), opuntia and cholla (*Cylindropuntia imbricata*). There is a northwest facing slope of less than 5% and 20% of the site consists of bare ground. The associated soil is stoney-clay and the parcel and surrounding grassland is intensely grazed. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Hydrologic Processes of the Bob Creek drainage have been modified by damming and formation of Cudahy reservoir, which restricts expansion of the prairie dog town to the north of the site.

Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning has a moderate influence on population dynamics in this area. There is a breeding colony of prairie dogs located at the northern edge of this parcel that appears to be rebounding from the 2000-2001 plaque epidemic that swept through the area, however, this is unsubstantiated. The complex is reproductively active, but is composed of small towns on private ranchland and surrounding landowners are antagonistic towards prairie dogs. An adult Burrowing Owl was observed in the colony, although breeding was not verified and the area is also suitable for Mountain Plovers. The likelihood that this parcel will continue to support prairie dogs and Burrowing Owls are very high.

Natural Heritage element occurrences at the South of Cudahy Reservoir site.

Element	Common Name	Global Rank	State Rank	Federal Status	State Status	Federal Sensitive	EO Rank*
Plant Communities							
Cynomys ludovicianus	**black-tailed prairie dog**	**G4**	**S4**				**B**

*EO Rank is "Element Occurrence" Rank
** Bold type indicates an element occurrence upon which the site rank in based.

Biodiversity comments: This site contains a good (B-ranked) occurrence of the black-tailed prairie dog that is apparently secure (G4S4) on a global scale and within the state.

Boundary Justification: The boundary encompasses the prairie dog complex and enough surrounding suitable shortgrass prairie habitat to allow for expansion of the complexes two small colonies. This habitat supplies appropriate slopes, drainage, vegetation composition and soil type for burrow construction, predator detection and foraging (Hoogland 1995, Reading and Matchett 1997, Assal and Lockwood 2002)).

Protection Rank Comments: The grassland is not threatened by human activity and except for grazing, which prairie dogs seem to tolerate (Licht and Sanchez 1993) throughout their range, the area is little disturbed. Most of the site occurs on private land but it does include large portions of the adjacent BLM land and at present no eminent threat requiring protection is known or anticipated.

Management Rank Comments: Maintaining the current state of the site, precluding mining or land conversion to agricultural uses or development, and special designation for the area would ensure continued habitation by prairie dogs. A survey and monitoring program would assist with detecting trends in the size and distribution of the prairie dog population and with whether plaque influences population viability. No other management needs have been identified for the site.

Prairie dogs acting as ecosystem regulators influence the ecology of many other species; in particular Burrowing Owls, black-footed ferrets and to a lesser extent Mountain Plovers and wintering Ferruginous Hawk populations depend on prairie dogs to meet different aspects of their ecological needs. Managing for prairie dogs will maintain the integrity of this grassland system and enhance biodiversity of the site.

WEST OF LAKE HENRY

Biodiversity Rank: B5 General Biodiversity Significance

Protection Urgency Rank: P4 No threat known for foreseeable future.

Management Urgency Rank: M4 Although not currently threatened, future management to maintain the current quality of element occurrences may be needed.

Location: West of Lake Henry is located west of the lake, which is adjacent to the sites east boundary.

Legal Description: U.S.G.S. 7.5 minute quadrangle(s): Hero Hill, Lake Henry, Ordway, Sugar City. T20S R58W Sections 35 and 36; T20S R57W Sections 31 to 36; T21S R58W Sections 1 and 2; T21S R57W Sections 1 to 6, T21S R56W Sections 5 and 6.

Size: 418 acres

Elevation: 4,350 to 4,450

Site Description: This site located in central Crowley County is characterized by level terrain that is dominated by shortgrass prairie and contains the BLM parcels C22 and C23. The predominant grass is blue gramma and accompanying shrubs include a 1 to 10% cover of rabbitbrush. The associated soil is sandy-loam and the parcel and surrounding grassland is grazed with 5% of the site consisting of bare ground. Ownership of the surrounding land is a checkerboard of state lease and some BLM land, but mostly it is privately owned land. Hydrologic Processes of the area have been modified by construction of Lake Henry, the Colorado Canal and a system of canals that feed irrigation water to agricultural lands south of the site. The site was drawn to exclude the canal works and agricultural lands.

Numerous surveyed prairie dog complexes near the parcel were either active or abandoned suggesting that plague and/or poisoning has a moderate influence on population dynamics in this area. The area is suitable for prairie dogs and Burrowing Owls; however, surrounding landowners are antagonistic towards prairie dogs. An active prairie dog complex with a large breeding population composed of five moderate sized towns and over 50 observed individuals occurs on the site. Comparison to past recorded data suggests that size of the complex has not fluctuated in recent years, indicating that plague or poisoning have not recently been factors of influence. The site and its active prairie dog complex could represent an opportunity for a demonstration area for local landowners and land managers. The likelihood that this parcel will support prairie dogs in the future is very high.

Natural Heritage element occurrences at the West of Lake Henry Site.

Element	Common Name	Global Rank	State Rank	Federal Status	State Status	Federal Sensitive	EO Rank*
Plant Communities							
Cynomys ludovicianus	**black-tailed prairie dog**	**G4**	**S4**				**B**

*EO Rank is "Element Occurrence" Rank

** Bold type indicates an element occurrence upon which the site rank in based.

Biodiversity comments: This site contains a good (B-ranked) occurrence of the black-tailed prairie dog that is apparently secure (G4S4) on a global scale and within the state.

Boundary Justification: The boundary encompasses the prairie dog complex and enough surrounding suitable shortgrass prairie habitat to allow for expansion of the complexes two small colonies. This habitat supplies appropriate slopes, drainage, vegetation composition and soil type for burrow construction, predator detection and foraging (Hoogland 1995, Reading and

Matchett 1997, Assal and Lockwood 2002). Expansion of the prairie dog complex is restricted to the east and south by Lake Henry and irrigated agricultural lands the sites boundary was purposely drawn to exclude.

Protection Rank Comments: The grassland is not threatened by human activity and except for grazing, which prairie dogs seem to tolerate (Licht and Sanchez 1993) throughout their range, the area is little disturbed. Most of the site occurs on private land but it does include large portions of the adjacent BLM land and at present no eminent threat requiring protection is known or anticipated.

Management Rank Comments: Maintaining the current state of the site, precluding mining or land conversion to agricultural uses or development, and special designation for the area would ensure continued habitation by prairie dogs. A survey and monitoring program would assist with detecting trends in the size and distribution of the prairie dog population and with whether plaque influences population viability. No other management needs have been identified for the site.

Prairie dogs acting as ecosystem regulators influence the ecology of many other species; in particular Burrowing Owls, black-footed ferrets and to a lesser extent Mountain Plovers and wintering Ferruginous Hawk populations depend on prairie dogs to meet different aspects of their ecological needs. Managing for prairie dogs will maintain the integrity of this grassland system and enhance biodiversity of the site.

DISCUSSION

A number of active prairie dog complexes (55) were identified during this project. It is interesting to note that in most instances these complexes included both active and abandoned colonies and whenever Burrowing Owls or Mountain Plovers were observed it was in association with a prairie dog town. The fact that many visited towns were abandoned suggests that plaque and/or poisoning may play a role in the population dynamics of prairie dogs in Eastern Colorado. A number of the prairie dog complexes identified through this project were designated as Sites of Local Significance that bring together high quality occurrences on BLM land, and some of these sites could be used as research or demonstration areas (see Table 2).

It is interesting to note that of the 175 prairie dog towns identified on NDIS and visited during this project, only 88 were active and of these 88, 23 had experienced a reduction in area occupied by the colony. Sixty-six of the 175 visited colonies were abandoned and at an additional 21 colonies no evidence existed of a colony having ever occupied the mapped location. Some towns designated as abandoned may actually be occupied because visitation to each town occurred only once and active towns with dogs below ground during visitation could be misclassified as abandoned. It is difficult to assess how frequently misclassification occurred, but observation of dilapidated mound cones and holes with debris and spider webs were used as supporting evidence for classification; and an estimate of a 10% error rate in classifications is probably conservative.

Research using ground survey methodologies is probably necessary to ground truth estimates of

prairie dog population sizes and distributions in Eastern Colorado determined through NDIS or through the current aerial photography surveys being conducted by the Colorado Division of Wildlife. Continued monitoring of towns identified during this survey at or near BLM parcels would assist in determining how human practices such as poisoning and livestock production influence prairie dog population dynamics. Long term monitoring would also assist in understanding the dynamics of plaque epidemics in prairie dog populations and plaques role in prairie dog population dynamics. Continued survey efforts on BLM lands throughout Eastern Colorado offer an opportunity to collaborate with CDOW on ground truthing efforts for the aerial survey work currently being undertaken by the CDOW. Such additional survey work at BLM parcels throughout Eastern Colorado could identify additional opportunities for conservation planning and assist in understanding the population size and distribution of black-tailed prairie dogs in Colorado.

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APPENDIX I

Summary data from the parcels visited in the study area during summer 2002.

Parcel #	Survey Date	Picture #	PCA Name	Northing	Easting	Acres	BLM Acres Occupied by Prairie Dogs	Dominant Community	Distance to BTPD Town	Habitat Suitability Ranking	Species List
C2	8/9/2002	1 and 2	none	4263906	610491	320	0	shortgrass prairie	5 miles	fair	Horned Lark, Pronghorn (4), Lark Sparrow, grasshoppers
C3	8/16/2002	4 and 5	none	4257192	610030	168	0		3 miles	high	Western Kingbird
C4	8/16/2002	6 and 7	Box Springs Reservoir	4252291	613350	123	0	shortgrass prairie	.10 mile	high	
C5	8/17/2002	8 and 10	none	4252833	622562	755	0	shortgrass prairie	3 miles	high	Horned Larks and Pronghorn Antelope
C6	8/17/2002	11 and 12	none	4250570	622031	150	0	shortgrass prairie	2.5 miles	fair	Barn Swallow and Jackrabbit
C7	8/17/2002	13 and 15	none	4248693	612554	40	0	shortgrass prairie	2.25 miles	fair	
C8	8/17/2002	16 and 17	none	4246792	622862	80	0	shortgrass prairie	1.5 miles east, 3.5 miles west and 2.7 miles south	fair	
C9	8/17/2002	18 and 19	none	4245830	625309	10	0	shortgrass prairie	0.5 and 2.5 miles	good	
C10	8/17/2002	20 and 22	Faw Wells	4245792	617050	80	7	shortgrass prairie	occupied	high	
C11	8/17/2002	23 and 24	none	4248384	622821	15	0	shortgrass prairie	1.5 and 4 miles	fair	
C12	8/17/2002	25 and 27	North of Lolita Reservoir	4246600	626103	8	3	shortgrass prairie	occupied	high	
C13	8/17/2002	28 and 29	none	4243894	622918	38	0	shortgrass prairie	2, 3.75, and 2 miles	fair	Loggerheaded Shrike juvenile and Morning Dove
C14	8/19/2002	30 and 31	none	4244521	602131	60	0	shortgrass prairie	4.25 miles	fair	
C15	8/19/2002	32 and 33	none	4241745	602180	52	0	shortgrass prairie	3.25 miles	fair	Swainson's Hawk
C16	8/18/2002	34 thru 36	South of Cudahy Reservoir	4240824	597969	187	0	forb dominated grassland	0.5 mile	high	
C17	8/18/2002	37 and 38	South of Cudahy Reservoir	4239844	598933	78	0	shortgrass prairie		high	Burrowing Owl
C18	8/19/2002	39 and 40	none	4238319	593573	80	0	shortgrass prairie	3.25 miles	fFair	Horned Lark and Prairie Falcon
C19	8/18/2002	41 thru 43	none	4237856	600615	173	0	shortgrass prairie	1.5 mile	good	Western Meadowlark and Scaled Quail
C20	8/18/2002	44 thru 46	none	4237905	601830	165	0	shortgrass prairie	1.75 mile	good	Scaled Quail and Western Meadowlarks
C21	8/18/2002	47 and 48	none	4235284	5977555	24	0	shortgrass prairie	1 mile	fair	
C22	8/18/2002	49 and 50	West of Lake Henry	4235330	600198	28	0	shortgrass prairie	0.10 mile	fair	

C23	8/19/2002	51 and 52	West of Lake Henry	4235330	600198	264	0	shortgrass prairie	0.10 mile	high	
C24	8/9/2002	53 thru 55	none	4235261	613986	50	0	shortgrass prairie	0.75 mile	fair	Western Grebe, Double-crested Cormoraut, Ring-billed Gull, American Avocet, Killdeer, lesser earless lizard, and Red-tailed Hawk
C25	8/18/2002	56 and 57	none	4229222	588225	40	0	sand sagebrush	1.0 mile	low	Prairie Rattlesnakes, Bullsnake, American Kestrel, Horned Larks, and Burrowing Owl
C26	8/18/2002	58 and 59	none	4222074	596178	86	0	semi-desert shrubland	>7 miles	low r	Northern Flicker and Western Meadowlark
C27	8/9/2002	60 thru 62	none	4224246	613389	66	0	shortgrass prairie	5 miles	fair	
C28	8/8/2002	63 and 64	none	4229762	626307	73	0	shortgrass prairie	3.35 miles	fair	Western Kingbird
H1	7/2/2002	1 thru 3	none	4189617	515531	80	0	semi-desert shrubland	>11 miles	low r	
H2	7/2/2002	4 thru 7	none	4190414	525011	36	0	shortgrass prairie	>11 miles	low	Morning Dove
H3	7/16/2002	8 thru 10	none	4193629	531039	64	0	pinyon-juniper woodland	>11 miles	low	Desert cottontail and Morning Doves
H4	7/16/2002	11 thru 13	none	4187813	526594	752	0	pinyon-juniper woodland	>11 miles	low	earless lizard, Nighthawk, Morning Dove, grasshoppers, and Western Kingbird
H5	7/1/2002	14 thru 19	none	4187899	538715	1314	0	pinyon-juniper woodland	>11 miles	high	Roadrunner, Mockingbirds, pronghorns, Morning Dove, striped skunk (scat), Lark Sparrow, and Loggerhead Shrink
H6	7/1/2002	20 and 21	none	4185653	545906	45	0	shortgrass prairie	>11 miles	good	Horned Lark
H7	7/1/2002	22 and 23	none	4181653	551165	158	0	shortgrass prairie	>11 miles	fair	
H8	7/2/2002	24 and 25	none	4185590	516525	35	0	shortgrass prairie	>11 miles	good	
H9	7/2/2002	26 and 27	none	4180524	520367	130	0	shortgrass prairie	>11 miles	high	pronghorn and grasshoppers
H10	7/2/2002	28 and 29	none	4174666	516119	127	0	shortgrass prairie	>11 miles	low r	
H11	7/2/2002	30 and 31	none	4176277	517763	280	0	shortgrass prairie	>11 miles	low	
H12	7/17/2002	32 and 33	none	4818703	525419	164	0	shortgrass prairie	>11 miles	high	grasshoppers and Lark Sparrow
H13	7/17/2002	34 and 35	none	4179653	524438	80	0	shortgrass prairie	>11 miles	fair	grasshoppers
H14	7/17/2002	36 thru 38	none	4178015	524438	255	0	semi-desert shrubland	>11 miles	low	Horned Lark and coyote
H15	7/17/2002	39 and 40	none	4177171	526266	157	0	semi-desert shrubland	>11 miles	low	Horned Lark
H16	7/1/2002	41 and 42	none	4177169	529266	685	0	shortgrass prairie	>11 miles	fair	jackrabbit, pogonomyrmix (ant)
H17	7/1/2002	43 and 44	none	4174544	530873	440	0	shortgrass prairie	>11 miles	fair	Rough-legged Hawk and Horned Larks
H18	7/1/2002	45 and 50	none	4174141	527467	923	0	shortgrass prairie	>11 miles	low	Horned Lark and Prairie Falcon
H19	7/1/2002	51 and 52	none	4173958	524258	160	0	semi-desert shrubland	>11 miles	low	Meadowlark and Horned Lark
H20	7/17/2002	53 and 54	none	4175396	522624	40	0	shortgrass prairie	>11 miles	good	

H21	7/1/2002	55 and 56	none	4172504	527862	40	0	semi-desert shrubland	>11 miles	low	
H22	8/6/2002	57 thru 60	none	4171286	530675	40	0	shortgrass prairie	>11 miles	low	
H23	7/18/2002	61 thru 65	none	4179263	530675	362	0	shortgrass prairie	>11 miles	good	Roadrunner, collard Lizard, Morning Doves, Nighthawk, Western Kingbird, spotted ground squirrel
H24	8/18/2002	66 and 67	none	4179090	536707	155	0	shortgrass prairie	>11 miles	fair	Western Meadowlark
H25	8/18/2002	68 and 69	none	4180686	537086	40	0	pinyon-juniper woodland	>11 miles	fair	Western Meadowlark
H26	7/1/2002	70 and 71	none	4178343	540158	80	0	pinyon-juniper woodland	>11 miles	low	Bullsnake
H27	unvisited		none	4175115	536512		0		>11 miles		
H28	unvisited		none	4174900	534267		0		>11 miles		
H29	7/17/2002	72 and 73	none	4170959	534737	40	0	shortgrass prairie	>11 miles	fair	
H30	7/17/2002	74 thru 77	none	4168816	538787	163	0	shortgrass prairie	>11 miles	high	gopher burrows, ground squirrel burrows, and earless lizard
H31-35	unvisited		none				0		>11 miles		
H36	8/6/2002	78 and 79	none	4155234	531834	45	0	shortgrass prairie	>11 miles	fair	Lark Sparrows and a Redtailed Hawk nest west of the paster road on cotton wood.
H37	8/6/2002	80 thru 82	none	4153568	532427	245	0	shortgrass prairie	>11 miles	fair	Pronghorns, Nighthawk, Western Kingbird and coyotes
H38	8/7/2002	83 and 84	none	4154099	524828	123	0	pinyon-juniper woodland	>11 miles	low	Scrub Jay, Lark Sparrow, Hummingbird and woodrat
O1	7/25/2002	1 thru 4	none	4225459	638845	41	0	tamarisk	3.0 miles	low	Meadowlarks
O2	8/8/2002	5 thru 8	none	4216368	628428	93	0	cotton-wood willow riparian woodland	0.2 miles	low	Mourning Dove, Killdeer, Redtailed Hawk, whitetail deer, cottontail rabbit, coyote and Barn Swallow
O3	7/25/2002	9 thru 11	La Junta Municipal Airport	4209916	628428	309	0	shortgrass prairie	Town adjacent to east boundary	fair	prairie dogs and Burrowing Owls
O4	7/25/2002	12 and 13	none	4209103	626846	437	0	sand sagebrush	1.0 mile	fair	Horned Lark
O5	7/25/2002	14 thru 16	none	4216368	612136	48	0	cottonwood willow riparian woodland	3.4 miles	low	
O6	8/8/2002	17 thru 19	none	4210478	618485	112	0	cottonwood willow riparian woodland	2 miles	low	Killdeer and Great Blue Heron
O7	8/8/2002	20 thru 22	none	4207517	623368	48	0	riparian woodland	2 miles	low	Swaninson's Hawk, Lewis's Woodpecker, Mourning Dove, ground squirrel, Common Grackle, and red squirrel
O8	7/18/2002	23 thru 25	none	4198423	638306	960	0	shortgrass prairie	0.2 miles	high	Nighthawk
O9	7/26/2002	26 thru 28	none	4209386	607934	85	0	shortgrass prairie	<0.5 miles	high	

O10	7/26/2002	29 thru 31	East of Swink Reservoir No. 1	4206050	602934	42	27	shortgrass prairie	occupied	high	
O11	7/18/2002	32 and 33	none	4202041	602385	326	0	shortgrass prairie	1.5 miles	good	Turkey vulture
O12	7/8/2002	34 thru 36	none	4195062	606673	80	0	semi-desert shrubland	0.5 miles	fair	badger burrow, ground squirrel burrow, and Loggerhead Shrike
O13	8/8/2002	37 thru 40	none	4213789	621198	21	0	riparian woodland	4.5 miles east	low	Western Grebe, White-faced Ibis (10), Great Egeret (3), Great Blue Heron, and Ring-billed Gulls
O14	6/29/2002	41 and 42	none	4200442	584487	80	0	shortgrass prairie	<0.2 miles	high	grasshoppers
O15	6/29/2002	43 and 44	none	4201870	585272	37	0	shortgrass prairie	1 mile southwest	good	pronghorns (8), grasshoppers, and Horned Lark
O16	6/28/2002	45 and 46	Saunders Arroyo at Whiterock	4194607	585369	38	1	shortgrass prairie	occupied	high	
P1	6/7/2002	1	none	4251803	522867	40	0	juniper woodland	2 miles south	low	
P2	6/7/2002	2	none	4247586	520265	170	0	shortgrass prairie	0.25 miles northeast	fair	
P3	6/9/2002	3	none	4230559	504770	40	0	juniper woodland and juniper savanna	none near	fair	
P4	6/7/2002	4 and 5	none	4226503	506396	80	0	juniper woodland	none near	low	Redtailed Hawk, Swallows, Western Meadowlark, and Horned Larks
P5	6/8/2002	6	none	4234100	521357	40	0	juniper woodland	4.5 miles south	low	
P6	6/8/2002	7	none	4232500	522942	40	0	juniper woodland	2.5 miles north	low	Sparrow
P7	6/8/2002	8	none	4232500	522942	40	0	juniper woodland	3 miles southeast	fair	
P8	6/7/2002	9	none	4232500	522942	40	0	shortgrass prairie	1.25 miles southeast	good	
P9	6/7/2002	10 and 11	none	4226640	516471	40	0	pinyon-juniper woodland	2 miles east	low	cottontail rabbit
P10	6/25/2002	12 and13	none	4221987	512850	40	0	shortgrass prairie	3.5 miles	low	Lark Sparrow (>12), elk (3), pocket gopher, and Northern Mockingbird
P11	2/7/2002	14 and 16	none	4206154	519723	80	0	pinyon-juniper woodland	none near	low	domestic goat and horse scat
P12	5/31/2002	none	none	4260746	566173	40	0	shrubland	1.5 miles south	low	
P13	5/31/2002	17 and 18	none	4256263	563726	1257	0	western units shrubland/ eastern units shortgrass prairie	0.5 miles of the eastern unit	high	unidentified sparrow, Western Meadowlarks, lizard, Lark Sparrows, six-lined racerunner, and Horned Larks
P14	5/31/2002	19 and 20	none	4252470	564152	915	0	shrubland	1.5 miles east	low	six-lined racerunner, Horned Larks, and Lark Sparrows
P15	5/31/2002	19 and 20	none	4248432	565615	2093	0	shrubland		low	
P16	5/31/2002	21 and 22	none	4244466	566935	2560	0	shrubland	0.25 miles west	low	

P17	5/31/2002	none	none	4241365	563935	160	0	codominateshrub grassland	0.5 miles	fair	
P18	6/26/2002	23 and 24	none	4237404	566410	120	0	shortgrass prairie	1 mile west	good	Lark Sparrow
P19	6/26/2002	25 and 26	none	4239493	569182	40	0	shortgrass prairie	1.5 miles northeast	fair	Nighthawk
P20	6/12/2002	27 and 28	none	4233504	574953	2110	0	shortgrass prairie	1 mile south	fair	Western Meadowlark and Horned Lark
P21	6/11/2002	29	Colorado Canal - East of Boone	4229483	573523	195	1	shortgrass prairie		high	Meadowlark, Nighthawk, coyote, cottontail, Roadrunner and Lark Sparrow
P22	6/12/2002	none	none	4226774	577139	20	0	shortgrass prairie		low	Western Meadowlarks
P23	6/11/2002	30	none	4223646	562803	40	0	shortgrass prairie	2 miles south	fair	Western Meadowlark, Killdeer, ground squirrel, and pronghorn
P24	6/11/2002	31 and 32	none	4222425	562993	115	0	shortgrass prairie	0.25 mile south	high	swift fox, Western Meadowlark, ground squirrel, and pronghorn
P25	6/26/2002	33 and 34	Dotson Reservoir	4220488	570481	70	0	shortgrass prairie	0.25 mile south	high	pronghorn
P26	6/26/2002	35	Dotson Reservoir	4215848	565521	240	0	shortgrass prairie		high	
P27	6/26/2002	36 and 37	none	4215265	570520	200	0	shortgrass prairie	2 miles east, north and west	good	
P28	6/11/2002	none	none	4209818	580178	80	0	shortgrass prairie	0.5 mile northeast	good	
P29	6/11/2002	38	none	4207727	576381	160	0	shortgrass prairie	1 mile east	good	
P30	6/11/2002	39	North of Mustang Creek	4205889	574154	230	0	shortgrass prairie	0.25 mile north and south	high	lizard
P31	6/11/2002	none	none	4215149	556266	80	0	shortgrass prairie	6 miles east	fair	Horned Lark and western harvester ants
P32	6/25/2002	40 and 41	none	4223074	540453	84	0	shortgrass prairie	none near	fair	Horned Lark, Lark Sparrow, earless lizard and grasshoppers
P33	6/25/2002	42 and 43	none	4214439	532219	87	0	shortgrass prairie	none near	low	Ash-throated Flycatcher
P34	6/25/2002	44 and 45	none	4210589	533476	40	0	shortgrass prairie	none near	low	Lark Sparrow and Longerhead Shrike
P35	6/25/2002	46 and 47	none	4207363	534290	80	0	pinyon-juniper woodland	none near	low	Ash-throated Flycatcher and Lark Sparrow
P36	6/10/2002	none	none	4203253	555013	80	0	shortgrass prairie	3 miles	low	Western Meadowlark
P37	6/10/2002	none	none	4201646	556029	324	0	shortgrass prairie	1.5 miles	fair	Red-tailed Hawk and Western Kingbird
P38	6/10/2002	48	none	4197256	559289	655	0	shortgrass prairie	3.5 miles north	low	eastern fence lizard and Western Meadowlark
P39	6/10/2002	49 thru 52	Madden Canyon	4189426	558569	803	0	pinyon-juniper woodland	8 miles north	low	Western Meadowlark, Horned Lark, Lark Sparrows, grasshoppers, and Raven
P40	6/27/2002	53 and 54	none	4187440	560014	40	0	shortgrass prairie	10 miles	low	

P41	6/10/2002	55	none	4188484	563607	75	0	shortgrass prairie	3 miles south	low	Crow, Golden Eagle, jackrabbit, and evidence of fox dens
P42	6/27/2002	56 thru 58	Saunders Arroyo	4183842	563278	120	0	shortgrass prairie		high	chollared lizard, Grasshoppers and Morning Dove
P43	6/29/2002	59 thru 60	none	4188350	569262	40	0	shortgrass prairie	5 miles southwest or northwest	fair	Lark Sparrow, Western Kingbird, and Western Meadowlark
P44	6/29/2002	61 and 62	none	4187160	569647	40	0	shortgrass prairie	5 miles southwest or northwest	low	Northern Mockingbird
P45	6/29/2002	63 and 64	none	4187958	570070	40	0	shortgrass prairie	5 miles southwest or northwest	low	Lark Sparrows and Turkey Vulture
P46	6/29/2002	65-67	none	4186374	570481	166	0	juniper woodland	3 miles east	low	Horned Larks, Western Kingbird and an Owl
P47	6/11/2002	68	none	4198722	576661	120	0	shortgrass prairie	1 mile north	good	
P48	6/11/2002	none	none	4198986	578887	40	0	semi-desert shrubland	1.5 miles northwest	fair	Horned Lark
P49	6/29/2002	69 and 70	Saunders Arroyo at Whiterock	4195789	581502	73	0	shortgrass prairie	1.5 miles north and south	high	Western Kingbird, Horned Larks, western harvester ants, and rodent burrows
P50	6/28/2002	71 thru 73	Saunders Arroyo at Whiterock	4190923	580955	40	0	shortgrass prairie	1 mile north	high	
P51	6/28/2002	74 and 75	Saunders Arroyo at Whiterock	4192514	578549	40	0	shortgrass prairie	0.1 mile east	high	
P52	6/28/2002	76 thru 81	Buffalo Arroyo	4181275	571018	40	0	shortgrass prairie	4 miles	low	Lark Sparrow, plateau lizard, triploid checkered whiptail, Western Kingbird, and Morning Dove
P53	6/28/2002	82 and 83	none	4182088	571391	40	0	shortgrass prairie	4 miles	fair	
P54	6/26/2002	84 and 85	none	4183794	579840	40	0	shortgrass prairie	2 miles east	fair	

APPENDIX II

COLORADO NATURAL HERITAGE PROGRAM
BTPD DATA SHEET

BLM Parcel ID:_____ Date: ____-____-____ (yr-m-d) Observer(s) _____

Site Visit Chronology

Date	Surveyors

Photos taken: _____

UTM Zone:_____ Northing:_____ Easting: _____

LOCATORS:
County: _____ Quadcode: _____ Quadname: _____
Townrange: _____ Section: _____ TRS Note: _____
Directions from a Prominent Feature on a Map: _____
_____
_____
Road Directions to Site: _____
_____
_____
_____

ANIMAL SPECIES PRESENT

Species Name	date observed	date observed	date observed	Revisit needed?

Size + Condition + Landscape Context = predicted viability (e.g. "big + not weedy + excellent surroundings = A")
Size:_____
(How big is it?)
Condition : _____
(Quality of biotic and abiotic features/processes, stand maturity, species composition, stability of substrate, water quality, etc).
Landscape context : _____
(Quality of biotic and abiotic factors/processes of surrounding landscape, structure, extent, condition (fragmentation, hydrologic manipulation, etc.)

SITE DESCRIPTORS:
Total Tree cover: _____% Tree cover (%) by species: _____
Total Shrub cover: _____% Shrub cover (%) by species:_____
Total Graminoid cover: _____% Gram cover (%) species: _____
Total Forb cover: _____% Forb cover (%) by species: _____
Other comments (age class, reproduction, etc.): _____
_____
_

Site Description: (aspect, slope, geology, soils, % dominant veg cover as available):

Min Elev: _____ Max Elev: _____ Size in Acres: _____
Cultural Features: _____
STEWARDSHIP:
Land Use Comments: _____

Natural Hazards Comments: _____

Exotic Species Comments: _____

Off Site Consideration: _____

Info Needs: _____

Management Needs: _____

Management Comments: _____

What threats are found in this site and what are their sources? _____

Which species do these threats affect? _____

How does each particular stress affect the element(s)? _____

Will the stresses increase in the future? _____

Can the threats/stresses be reversed? _____

Management Urgency Comments: _____

MAP:
Sitemap(did you include a map?): Y N Map Date: _____ Mapper: _____
Route Walked: Y N

Species List:

APPENDIX III

Project name: _____
New: Y N Update: Y N Update eonum: _____

COLORADO NATURAL HERITAGE PROGRAM
ANIMAL ELEMENT OCCURRENCE FIELD FORM

General:
Element Common Name: _____
Element Scientific Name: _____
Observer(s):_____Survey Date:_____

Locational Information:
Quadname: _____Quadcode (if known): _____
Surveysite Name (from 7.5 Quad): _____
County: _____Elevation (range if applicable):_____
Legal Description (TRS & quarter quarter): _____
UTM Zone:_____Northing:_____Easting:_____

Type of Source Feature: ☐ **Single Source EO** ☐ **Multi-Source EO**
Size of observed feature: ☐ **none (point)** ____**sq. meters** _____ **sq. miles** _____ **acres**
Conceptual Feature Type: ☐ **Point** ☐ **Line** ☐ **Polygon**
Spatial Uncertainty: ☐**Negligible** ☐**Linear** ☐**Areal-Delimited** ☐**Areal-Estimated**
If Areal-Delimited, delimited by what?_____
If Areal-Estimated, ESTIMATED UNCERTAINTY = ____**meters** ____**feet** ____**miles**
(You are accurate to within *x* meters of the actual location.)

Directions:
Driving and hiking directions: _____
_____
_____
_____
_____

Occurrence data (Size, Condition, Landscape Context):
NUMBER OF INDIVIDUALS: _____ AGE(S) AND SEX(ES) (if known): _____
REPRODUCTIVE EVIDENCE: _____
EVIDENCE OF DISEASE, PREDATION OR INJURY: _____
EODATA ADDITIONAL COMMENTS: _____
_____
_____
_____
_____

General Habitat Description: (dominant plant community, habitat description, etc.) _____

ASSOCIATED VERTEBRATE TAXA: _____

EXOTIC SPECIES: _____

Management comments (past/present/future recommendations): _____

PREDOMINANT LAND USES: _____

Protection comments (Are there any protection plans or strategies in place?): _____

Land Owner: _____
Owner comments (special requests, permissions, circumstances): _____

Additional Comments: _____

Photo numbers (if applicable): _____
Specimens: Y N **Collection Numbers**: _____

Complete Below This Line if no EO Specifications exist
SIZE: A B C D (abundance, density) comments_____

CONDITION: A B C D (productivity, vigor of individuals)
comments_____

LANDSCAPE CONTEXT: A B C D (condition and extent of surrounding landscape)
comments_____

Eorank summary comments: _____

Eorank: A B C D E F H X **subrank:** i r **Eorank date:**_____

Bestsource: _____
_____Sourcecode:_____COUS